TECHNICAL UNIVERSITY OF LIBEREC

Faculty of Textile Engineering

Chantelle Bekker

DIPLOMA THESIS

2010

Technical University of Liberec

Faculty of Textile Engineering

Textile Technology

Department of Textile Technology

Analysis of fabrics with higher cut resistance

Chantelle Bekker

Supervisor: Prof. Ing. Jiří Militký CSc.

Number of text pages:	55
Number of pictures:	28
Number of tables:	12
Number of appendices:	7

Statement

I am aware of the fact that my thesis is fully covered by the law No 121/2000 on copyright, especially section 60 - school work. I understand that TUL is entitled to a licensing agreement to use my thesis and declare that the agreement and MS using any of my diploma thesis (sale, loan, etc.).

I am aware of that the use of their thesis or grant a license to its I use only with the consent of TUL, who has the right of me to request a reasonable contribution to cover costs incurred by the university to create works (until the actual amount).

Diploma thesis I developed separately using the literature and in consultation with my supervisor and consultant.

Date : 17th May 2010

Signature : _____

Acknowledgements

I would like to express my gratitude to my university supervisor Prof. Ing. Jiří Militký CSc. for his support and professional leading. I would also like to thank the Technical University of Liberec for their encouragement and use of their equipment. Furthermore, I would like to thank all staff in the department of Textile Technology with all their help within the laboratories and contribution towards analysis of my results.

Annotation

The aim of this diploma thesis is to perform tests for cut resistance on a set of fabrics, after which the results would be analyzed. However because the test for cut resistance is very problematic, the study also aims to show that correlations exists between the standard blade cut resistant test , ball bursting test and tensile strength test. The theoretical part of this diploma work presents a description of cut resistance as well as the basic information on cut resistant standards. The experimental part is aimed at evaluating results from the blade cut resistant tests, ball bursting tests and tensile tests done on woven textiles.

Key words: cut resistance, cut performance standards, stress-strain curves and paired correlation.

Anotace

Cílem této diplomové práce je provést zkoušky odolnosti proti prořízntutí na řadě tkanin, a analyzovat jejich výsledky. Ovšem jelikož je test odolnosti proti prořezu velmi komplikovaný, tato studie se také snaží nalézt korelace mezi standardním testem proti prořezu, testem ‚průtlak kuličkou' a zkouškou tahem. Teoretická část diplomové práce obsahuje popis testování odolnosti vůči prořezu, a také i základní informace o dalších testovacích metodách. Experimentální část je zaměřena na zhodnocení výsledků odolnosti proti prořezu klasickým testem proti prořezu, testem „průtlak kuličkou" a zkouškou tahem prováděných na textiliích.

Klíčová slova: odolnost vůči prořezu, normy hodnocení prořezu, pracovní křivky, korelace.

Table of Contents

List of symbols and abbreviations

ASTM	American Society for Testing and Materials
CF	Cover Factor
Co	Cotton
CPP	Cut Protection Performance
EN	European standard
FN	Nominal Force
FF	Frictional Force
FR	Resultant Cutting Force
ISO	International organization for standardization
PP	Polypropylene
TDM	Tomodynameter (Cut resistance device)

a	[ktex$^{2/3}$.m^{-1}]	Phrix's twist coefficient
A	[m]	Distance of warp thread
B	[m]	Distance of weft thread
D	[m]	Real yarn diameter
D_e	[m]	Yarn Diameter
D_m	[m]	Mean warp/weft diameter
D_{wa}	[m]	Diameter of warp yarn
D_{we}	[m]	Diameter of weft yarn
E	[Pa]	Young's modulus
G_p	[kg m^{-2}]	Planar weight of weave (Areal mass)
h_{wa}	[m]	Warp binding weave height
h_{we}	[m]	Weft binding weave height
k_n	[-]	Coefficient of fiber number
k_p	[-]	Material and fiber orientation parameter
l_y	[km]	Yarn length
m_y	[g]	Yarn mass
M	[m]	Parameter of material and technology
r	[m]	Radius
S	[m^2]	Yarn cross-sectional area

s_{wa}	[%]	Warp take up
s_{we}	[%]	Weft take up
S_{wa}	[1/m]	Set of warp
S_{we}	[1/m]	Set of weft
t	[m]	Thickness of fabric
T	[tex]	Yarn fineness
t_f	[tex]	Fineness of fibers
T_{wa}	[tex]	Fineness of warp yarn
T_{we}	[tex]	Fineness of weft yarn
V_f	[m^2]	Volume of fibers
V_y	[m^2]	Total yarn volume
Z	[m^{-1}]	Yarn twist
α	[$ktex^{1/2}.m^{-1}$]	Koechlins twist coefficient
μ	[-]	Yarn packing density
μ_m	[-]	Limit packing density
ρ	[$kg.\ m^{-3}$]	Fiber mass density
γ	[$kg\ .m^{-3}$]	Yarn mass density
σ	[N/m^2]	Normal stress
τ	[N/m^2]	Shear stress

1. Introduction

A sliding sharp edge penetrating material is one of the most dangerous cases of cutting because it requires the smallest applied load. A better understanding of the cutting mechanism is a fundamental step to develop new and better performing protective materials. There is no exact definition of the term “cut-resistance” available within the textile industry today. However the testing of cut resistance is based on the method for determining the so called cut-on resistance of textile materials which means the resistance against the cutting-on by a sharp-edged tool after the tool is stabbed in, according to information in [1]. Therefore it is used to measure the amount of force that a textile material can withstand before an object, like a blade is able to penetrate it or cause some damage. The more force a textile material is able to withstand, the more cut resistant the particular material becomes. Cut resistant fabrics are generally made by yarns with elongated thin metal wires, high functional fibres such as aramids, nylon and polyester. New product developments focus on getting advantages such as puncture resistance by a suitable combination of speciality fibres and weave structure.

Cut resistant materials are very important, not only for the protection of the human workforce but in recent times also in the automotive production lines. Vehicle seats may also be made with flexible metal fibre layers with a rubber coating to improve cut resistance. Thus it is vital that the concept of cut-resistance not only be understood but also improved to insure continuous safety for all at risk. Cut resistant fabrics have to be designed and developed based on the type of application, thus different parameters have to be looked at individually.

Figure 1: Cut resistant gloves made from Aramid fibres [23].

The aim of this thesis is to describe the most popular cut resistant test methods and standards associated with it. However because the test for cut resistance is very problematic and unpredictable and there are no standards which are able to measure all parameters, it is important for industry to develop new methods for the analysis of cut resistance. Therefore another aim of this study is also to show that correlations exist between the standard cut resistant test, ball bursting test and tensile strength test. The ball bursting test as well as the tensile strength test present many similarities of parameters tested by the cut resistance tests. Mean values, standard deviations and coefficient of variations were calculated from selected parameters in all tests performed. These calculations were then used to compare the parameters using paired correlation, partial correlation as well as the stepwise regression method of analyses.

2. Theoretical Part

2.1 Cut resistance

The cut resistance of fabrics is an important attribute for some special applications. The effect of cutting depends strongly on blade sharpness, speed, sample holder geometry, shape of the blade and the load applied. Thus it can be seen that a possible definition for cut resistance can be defined as the force, which causes the blade to cut through the fabric to a transverse length.

2.2.1 Fabric parameters that influence cut resistance

The cut resistance of fabric is highly dependent on the weft and warp density. A higher weft and warp density will give a higher cut resistance. Whereas the cut resistance of a single thread is dependent on the tensile strength of the reinforcing material, the clamping length of a single thread as well as the yarn thickness. A higher yarn diameter will ensure a higher cut resistance, according to information in [2]. There are many parameters to consider when looking at the material itself, these include:

- Warp fineness (tex)
- Warp density (number of yarns per cm)
- Weft fineness (tex)
- Weft density (number of yarns per cm)
- Thickness of woven fabric (mm) (directly connected with yarn fineness)
- Weight per unit area. (g/mm^2)
- Fabric construction (-)

The parameters of both yarn and fabric have a great influence, not only on the end product but also on the limitations of the processes as it is being developed. Therefore it is known that the structure of fibre has an influence on the yarn produced

there of and the structure of yarn has an influence on the fabric produced thereof. This can clearly be illustrated by the diagram below:

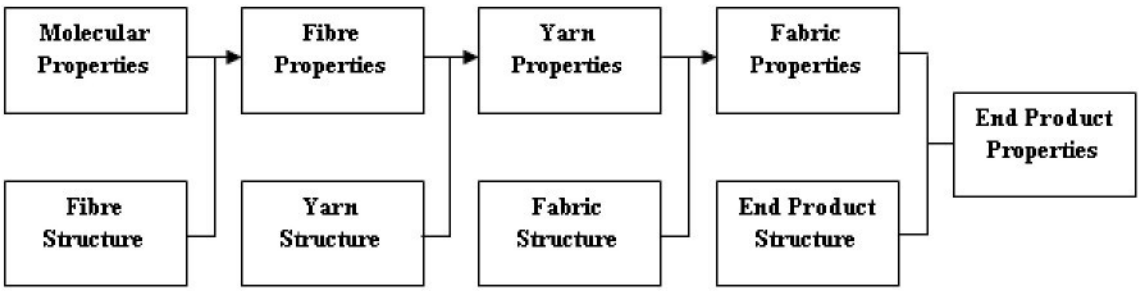


Figure 2: Flow diagram showing effects of different technological properties [14].

The main yarn structural characteristics are yarn diameter, packing density and orientation of fibers. Yarn fineness is the ratio between yarn mass m_p and yarn length l_y Yarn fineness is ratio between yarn mass m_y and yarn length l_y:

$$T = \frac{m_y}{l_y} = S\rho = \frac{\pi D_e \rho}{4} \tag{1}$$

The product of the effective yarn's cross-section area S, (sum of fiber areas in yarn cross-section and fiber mass density ρ, (the diameter of effective yarn cross-section area S (used in eq. (1)), is denoted as the effective yarn diameter D_e and that results in the lowest possible yarn diameter, eliminating air gaps. For definition of real yarn diameter and yarn packing density μ as ratio between fiber volume V_f and whole yarn volume V_y, can be calculated by Neckar in [16] as follows:

$$\mu = \frac{V_f}{V_y} = \frac{D_e^2}{D^2} = \frac{4T}{\pi D^2 \rho} \tag{2}$$

Real yarn diameter D is derived from equation (2) and has the following form:

$$D = \sqrt{\frac{4T}{\pi\mu\rho}} = \sqrt{\frac{4T}{\pi\gamma}} \tag{3}$$

From eq. (3) it is evident, that yarn diameter is a function of yarn fineness, packing density and fiber mass density. Packing density can be described as ratio

between yarn mass density γ and fiber mass density ρ, too. In eq. (3) the product $\mu\,\rho$ can be replaced by yarn mass density γ. Packing density is in fact dependent on the distance from the yarn center. In the yarn core there are fibers that are usually more compact than on the periphery where the portion of air gaps is higher. Yarn diameter is an intuitive idea and it is often replaced by the diameter of the cylinder that covers the majority of closely packed fibers. The yarn diameter divides yarn structure into the yarn core and the yarn surface layers. The structure of yarn core influences the yarn's mechanical properties. The fibers lying outside of the yarn's diameter are denoted as hairiness. For practical purposes it is useful to assume the mean value of packing density μ to be computed form radial packing density trace. The mean packing density μ is a ratio of the sum of fiber areas in the circle having diameter D and the total area of this circle value (1-μ) is in fact total yarn porosity i.e. portion of yarn volume filled by air. The effective pore diameter based on fiber diameter, fiber shape and packing density is described by Neckar in [16]. Number of fibers in yarn cross-section n can be expressed by relation:

$$n = \frac{k_n T}{t_f} \tag{4}$$

where the ratio between yarn fineness T and fiber fineness t_f expresses number of fibers in a parallel bundle cross-section and k_n is coefficient of fiber number which depends on yarn material and technology, according to information in [16]. A basic technological yarn parameter is twist Z equal to number of turns per meter of yarn. Instead of Z and yarn fineness T the twist factors were introduced for practical needs. Koechlin's twist factor is defined by the following relationship:

$$\alpha = ZT^{1/2} \tag{5}$$

and Phrix's twist factor has the form:

$$a = ZT^{2/3} = \alpha T^{1/6} \tag{6}$$

Twist factors are dependent on the fiber type, spinning technology and the projected use of the yarn's utilization, whether for weaving, knitting etc. The exact description of fiber arrangement in yarn is very complicated. The simple yarn helix model (see. Fig. 3) can be used for practical purposes, according to information in [6].

For this model the cylindrical yarn shape and cylindrical fibers are assumed. The fiber axis creates a coaxial system of helix trajectories.

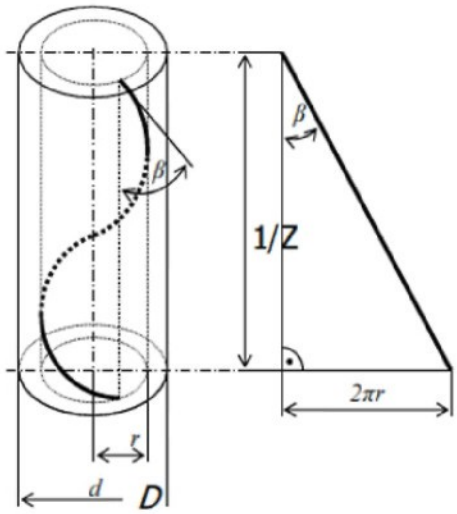


Figure 3: Helix model of yarn [6].

Relation between tangents of helix angle of fiber axes trajectory on the radius *r* and twist has the form:

$$tg\beta = 2\pi rZ \tag{7}$$

For surface fiber with helix trajectory on yarn radius *D*/2 we can obtain the so called twist intensity:

$$tg\beta = \pi DZ \tag{8}$$

Generally, it is valid that finer yarns have lower fiber numbers in cross-section and they are spun with higher twist. At higher twist results in fibers which are more compressed, the mean packing density increases and the yarn diameter decreases. The relationship between yarn fineness, diameter and twist is usually described by Koechlin's theory or Phrix's correction. On the base of yarn internal mechanics the following relation between yarn fineness T, twist Z and packing density μ was derived by Neckar [16].

$$\frac{\left(\frac{\mu}{\mu_m}\right)^{5/2}}{\left[1-\left(\frac{\mu}{\mu_m}\right)^3\right]^3} = \frac{M\sqrt{\pi}}{2\mu_m^{5/2}\sqrt{\rho}} \times \left(Z\,T^{1/4}\right)^2 \tag{9}$$

This relationship is based on the following assumptions: the fiber arrangement in the yarn is according to a helix model, fibers are compressed due to yarn twist, compression is caused by the outer fibrous layers and thickness of layer is constant. Inter-fiber pressure has the form:

$$p = \frac{k_p \mu^3}{\left[1 - \left(\frac{\mu}{\mu_m}\right)^3\right]^3} \tag{10}$$

In eq. (9) and eq. (10) ρ is the fiber density, μ_m is the limit packing density, k_p is material and fiber orientation parameter and M the material and technology parameter. A suitable value of parameter M for ring and rotor cotton yarns was evaluated by Neckar, [16] and for compact yarns was evaluated by Kremenakova, in [10].

Classical construction parameters of fabric are sett of warp S_{wa}, sett of weft S_{we}, fineness of the warp yarns T_{wa}, fineness of the weft yarns T_{we}, the planar weight of weave (areal mass) G_P, and the thickness of fabric t. The simple Pierce's model of fabric interlacing is shown in the Fig. 20 Yarn deformations in binding point are neglected and the yarn's circular profile is assumed. The binding weave is replaced by two circular arches and one linear section. For the distance of warp thread A and distance of weft thread B it is valid that:

$$A = \frac{1}{S_{wa}} \quad , \quad B = \frac{1}{S_{we}} \tag{11}$$

The diameter of warp yarn D_{wa} and the diameter of weft yarn D_{we} can be calculated by using eq. (3). Warp binding weave height h_{wa} and weft binding weave height h_{we} is the distance between the fabric axis and the yarn warp/weft axis. Relative warp waviness e_{wa} and relative weft waviness e_{we} is ratio between the warp/weft binding hight h_{wa}, h_{we} and mean warp/weft diameter D_m

$$e_{wa} = \frac{h_{wa}}{D_m} \, , e_{we} = \frac{h_{we}}{D_m} \, , e_{wa} + e_{we} = 1 \, , D_m = \frac{(D_{wa} + D_{we})}{2} \tag{12}$$

Relative waviness is determined from the interlacing of individual yarns in fabric, according to information in [17]. The ratio between warp and weft yarn length in a weave repeat l_{wa}, l_{we} and warp/weft distance A, B between threads is used for computation of warp/weft yarn shortening (take-up) s_{wa}, s_{we} by:

$$s_{wa} = \frac{(l_{wa} - A)}{A}, s_{we} = \frac{(l_{we} - B)}{B} \tag{13}$$

The fabric density ρ_f is simply defined as ratio between fabric planar weight of weave G_P and thickness t:

$$\rho_f = \frac{G_p}{t_f} \tag{14}$$

For an ideal arrangement of yarns in a fabric, thickness is defined as:

$$t = \left[(D_{wa} + D_{we}) + \left|\left[\frac{D_{wa} + D_{we}}{2} \times e_{wa} - \frac{D_{wa} + D_{we}}{2} \times (1 - e_{wa})\right]\right|\right] \times f^m \times \beta_r \tag{15}$$

where e_{wa} is warp waviness, β_r is yarn widening, f is factor of thread's interlacing and m is interlacing exponent. Interlacing factor f for ground weaves is defined as ratio between the number of interlacing points in the weave and the number of pick transitions from back on face of fabric reversely. Interlacing exponent m describes the position of threads in the non-interlacing parts. Parameter f^m is so called fabric weave coefficient and for a plain weave is 1, for twill weave is 1.43 and for a satin weave is 1.47. For balanced weaves is e_{wa} = 0.5 and thickness is simply sum of warp and weft diameters, according to information in [17].

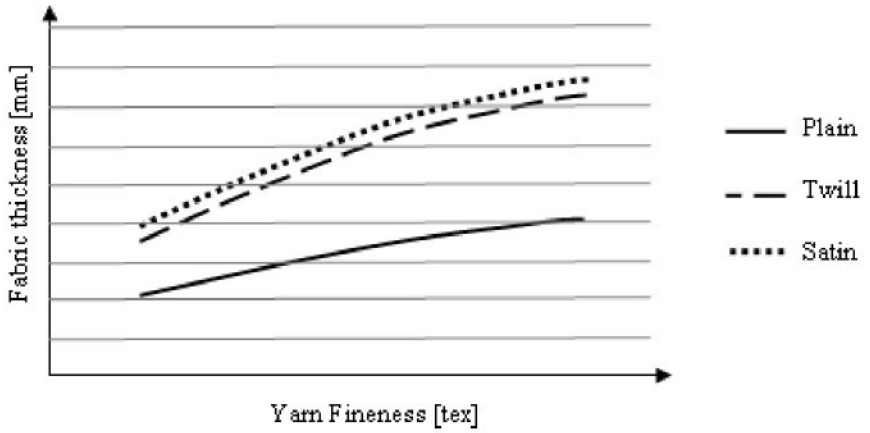


Figure 4: Relation between yarn fineness and fabric thickness in three different fabrics [14].

Fabric areal mass G_p, depends on warp and weft yarn fineness, warp and weft sett and warp and weft take-up (shortening) and is calculated by:

$$G_p = S_{wa}T_{wa}(1 + s_{wa}) - S_{we}T_{we}(1 + s_{we}), G_{pi} = S_{wa}T_{wa} - S_{we}T_{we} \qquad (16)$$

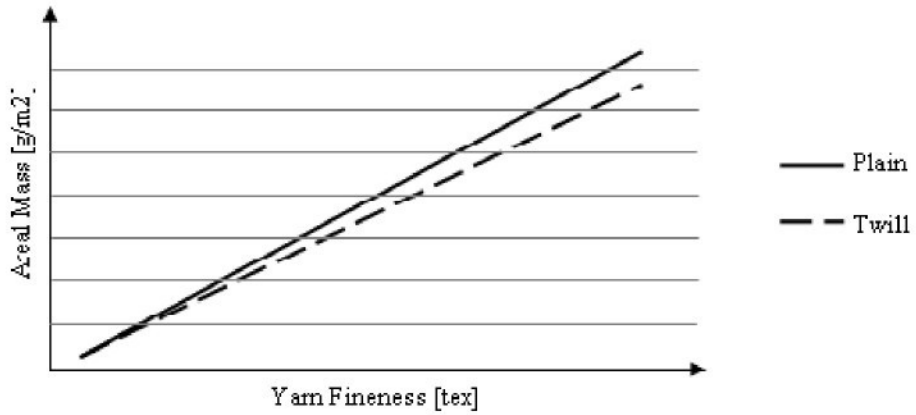


Figure 5: Relation between yarn fineness and area mass in two different fabrics [14].

Fabric packing density μ_f is ratio between fiber volume V and fabric macroscopic volume V_f and can be express as a ratio between fabric density ρ_f and fiber densityρ, as well. Fabric density is defined as areal mass of fabric Gp (i.e. mass per surface area) divided by fabric thickness t. Fabric packing density is the function of fiber mass density, fabric areal mass and thickness by:

$$\mu_f = \frac{V}{V_f} = \frac{\rho_f}{\rho} = \frac{G_p}{t\rho} \qquad (17)$$

The classical Pierce definition of the cover factor *CF* is based on the idealized projection of fabric into a plane. The *CF* is defined as the area of yarn in the solid unit cell rectangle *Ay:*

$$A_y = \frac{D_{we}}{S_{wa}} + \frac{D_{wa}}{S_{we}} - D_{wa}D_{we} \tag{18}$$

divided by the area of dotted lines bounded rectangle.

$$A_C = (S_{wa}S_{we})^{-1} \tag{19}$$

The *CF* is calculated by:

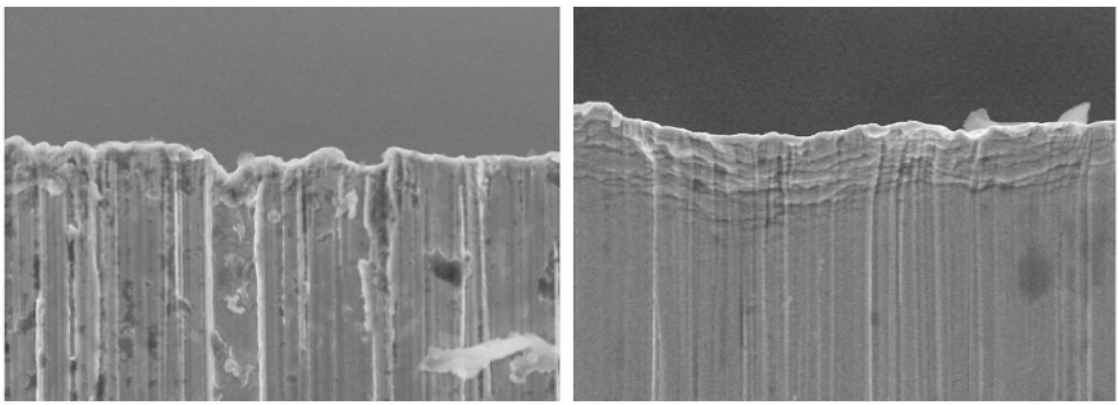
$$CF = D_{wa}S_{wa} + D_{we}S_{we} - D_{wa}S_{wa}D_{we}S_{we} \tag{20}$$

2.2.2 Machine factors that influence cut resistance

The cut resistance of any material to cutting may also depend on the way the cutter is applied. An example: if scissors is the cutter, the fabric yarns are stressed in shear and tension. If the fabric is placed on a surface such as a table and a knife is drawn across it, the fabric is stressed in shear and compression. A fabric gripped at its edges and slashed with a knife may be cut in tension and shear, according to information in [22]. Cut resistance is highly sensitive to the condition of the blade edge. However with a blunter blade, the initiation of fibre breakage was delayed and higher peak stresses were sustained, leading to increased cut energy. Ceramic blades may be more efficient than metallic blades. It is also important to measure the effect of pretension on cut resistance since fabric layers toward the back of a multi-ply fragment impact barrier will be stretched and loaded in tension before being contacted by the edge of a sharp blade. Test methods often attempt to compensate for blade variation by specifying blade shape and then by cutting a control material and comparing the cut resistance of that control with the resistance of the test sample, according to information in [3].

Different pretensions are able to shift to lower stresses and strains, resulting in earlier fibre failure and reduce the cut energy. Cut resistance therefore depends on the test variables mentioned above since both cut energy and failure initiation strain

decrease with decreasing slice angle, blade sharpness and yarn pretension, according to information in [26].



(a) (b)

Figure 6: a) Morphology of blade at 10µm [22]. b) Deformed blade edge after cut test at 10µm [22].

Two razor-sharp blades may be ground to measurably the same angle, but may still have differences in exact profile and hardness at the extremity of the contact edges. The blade edge is often blunted by the action of cutting the sample. Thus, the advantage of cutting fabric with an inclined blade is immense. The effect is due in part to the enhanced shear component imposed on the tensile state in the yarn and the exposure of fresh, sharp edge to the yarn as the blade advances.

The following forces are present in a cutting process: a normal force - FN, which is applied at the blade-material point of contact; a frictional force - FF, which develops when the blade slides and penetrates the material; the resultant cutting force FR, which is the resultant vector of FN and FF. Figure 7(a) represents the case of a material where the coefficient of friction FF is much higher than FN, which is typical of some rubber materials. Figure 7(b) represents the case of a material for which FN is higher than FF, which is typical for knitted fibre materials such as Spectra® and Kevlar®. An increase in the friction coefficient can enhance or reduce the cut resistance, depending on the thickness, the Young modulus, and the micro-structure of the material. The total energy required propagate a cut strongly depends on two components: a lost energy dissipated by the gripping force exerted by the material on the blade sides; and an essential cutting energy at the tip of the blade. These energies have opposite effects on the cut resistance of a material. An increase in the energy dissipated in friction due to gripping of the

material on the blade sides, increases the cut resistance. Conversely, an increase in the frictional force at the blade's edge reduces the cut resistance, as determined by ASTM F 1790 and ISO 13997. Thus an increase in the friction coefficient augments both energies and can result in two opposite effects on cut performance. The magnitude of these forces, which differ from material to material, are important when selecting the right test method for evaluating the cut resistance of protective materials, according to information in [13].

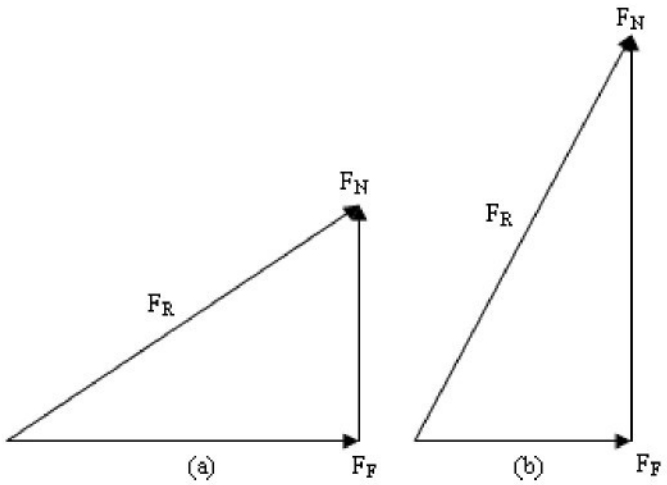


Figure 7: Schematic presentation of all forces involved in the cutting process.

2.3 Cut resistance standards

Cut resistance can be tested through various ways, however according to international standards there are only three testing methods used in industry. These three methods include the Cut Protection Performance Tester, the Coup test method and the TDM test method. These testing methods in conjunction with the international standard each follow certain procedures and guidelines.

Globally there are three different standards that are accepted by industry to measure cut-resistant properties with three different methods namely; the European standard EN 388, the ASTM F 1790 standard mainly used in North America and the ISO 13997 which is used worldwide. These different standards are not identical and do not correlate, thus causing confusion for end users in their specification process of selecting the right product for their application, according to information in [7].

Table 1: Different cut resistant standards and testing methods, retrieved from [7].

Standard	Test Method	Region
ASTM F 1790 97	CPP (old version)	North America / Canada
ASTM F 1790 05	CPP / TDM 100	North America / Canada
ISO 13997	TDM 100	North America / Canada / Europe
EN 388	Coup test	All regions except North America

2.3.1 ASTM F 1790

The Cut Protection Performance Tester was designed to measure a single distance travelled by the cutting edge under a constant load throughout the entire test. The equipment then generates what is known as load-distance data. The test apparatus consist out of a motorized arm which holds the cutting edge. This cutting edge is in direct contact with the material specimen, mounted on a mandrel. As the arm pushes down on the blade, it moves across the material. Weights installed on the plate on the horizontal arm result in twice the normal force applied on the blade before a test. This is due to the 2:1 ratio of the arms. However, when the blade moves down, a frictional force develops when the blade slides and penetrates the material pushes the mechanism down, which results in an increased cutting force equal to FN + FF. For the same reason, when the blade goes up, the cutting resultant force is FN - FF, which results in a lower cut resistance value. The higher the frictional coefficient, the higher the error will be in the cutting results obtained with this test apparatus, according to information in [13]. This action takes place up until the force, generated by the constant load causes the material to sustain a cut right through. The blade is only moved once over the material. The distance travelled by the blade, from the initial contact with the material to the point at which the material is cut, is recorded with specialized software for each specific load.

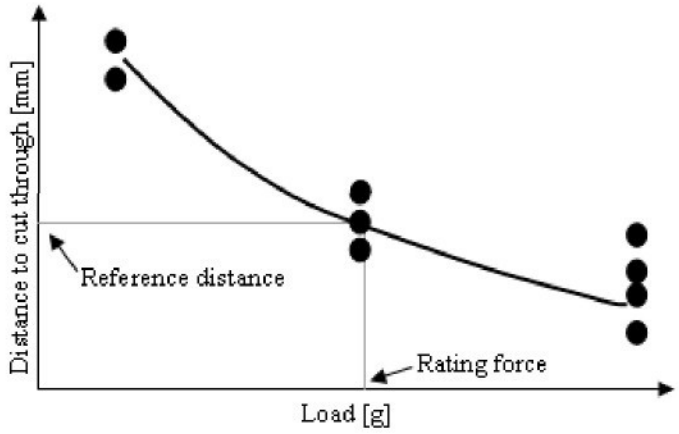


Figure 8: Example of Load vs. Distance graph [13].

Weights are added onto the arm assembly after each cut, this then increases the cutting load, allowing for shorter cutting distances. Multiple cuts are made for each material sample. The distance travelled by the blade, in order to cut through the material decreases exponentially as the loads placed on the arm assembly are increased. A curve is used to determine the cut resistance of the material. The actual weight of the loads which will cause the material to obtain a cut in a transverse of 25mm is seen as the reference load value in kilograms. Cut resistance is therefore defined as the reference load for this particular testing method, the load required to cut a material at a distance of 25mm, according to information in [27].

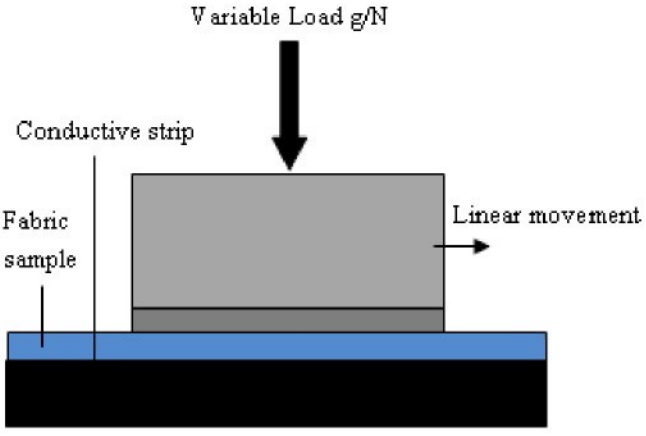


Figure 9: Schematic representation of the Cut Protection Performance Tester.

Materials having a higher Cut Protection Performance Tester reference load show higher cut resistance when using this particular test method.

2.3.2 ISO 13997

The tomodynamometer or TDM 100 was developed at the Institut de recherché Robert-Sauve. The force at the material-blade point of contact is applied normally to the blade through a double Watt's mechanism. This mechanism ensures that the sample holder has a precise vertical movement. The arm lengths have a ratio of 2:1 so that the weight installed on the plate results in twice the normal force applied directly on the sample holder.

The particular Watt's mechanism used on this apparatus ensures that equilibrium is reached even if the level arm is not in a perfect horizontal position. It also ensures that materials up to 20 mm thick can be tested without introducing errors into the test results. The cut is detected by contact of the blade with a thin strip of aluminium foil positioned under the sample. The blade displacement length until a cut occurs is recorded for different values of the nominal force applied to the razor blade. The resistance to cutting is reported as the force creating a cut through the sample after a 20mm course of the razor blade, according to information in [13]. Furthermore, the mechanism used eliminates the problems caused by frictional forces.

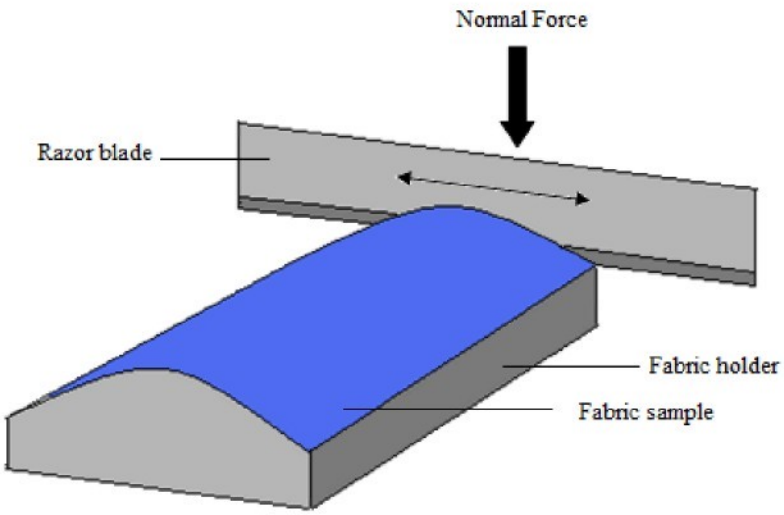


Figure 10: Schematic representation of the TDM test.

Table 2: Differences between ISO 13997 and ASTM F 1790.

ISO 13997	ASTM F 1790
Normal force constant	Normal force variable and a function of the material's coefficient of friction
Blade speed constant	Blade speed sinusoidal
Cut resistance calculated at 20 mm blade displacement	Cut resistance calculated at 25 mm blade displacement
Sample installation: the sample is placed on the double phase tape in direct contact with the conductive material	Sample installation: the sample is placed on the double phase tape. The blade should cut through the sample material and the double phase tape to contact the conductive material
Correction for blade sharpness is done as follows : C = 20/l (l is the cutting stroke on fabric sample at 5 N)	Correction for blade sharpness is done as follows : C = 25/l (l is cutting stroke on fabric sample at 400 g)

Because of the differences in the test apparatus and procedures, the results obtained with the ISO 13997 and ASTM F 1790 cutting test methods cannot be compared. Differences between the results obtained with both test methods are smaller for materials with negligible coefficients of friction, and significant differences are expected for materials with high coefficients of friction, according to information in [1].

2.3.3 EN 388

The apparatus used in the Coup testing method consist of a circular blade which is free and rotating under a constant pressure from standardized weights. This blade is moved forwards and backwards on the surface of the material specimen, over a fixed distance or stroke length. The blade has a diameter of 45 mm, which corresponds to a circumference of 141 mm. A weight of 5 N is used for the cutting test. At the bottom is the straight sample holder, 90 mm in length with 5 slots, each 5 mm wide, according to information in [12]. The blades slide into the slots on the material, driven by a motor

describing simultaneously an alternative horizontal movement and rotating in the direction opposite its movement. The sample material is fixed on a conductive material. When the blade comes in contact with the conductive material, the test stops and a counter indicates the number of cycles the blade has made to achieve cut through. A cotton reference material is used to control blade sharpness. A test is performed on the control material before and after a test on the sample material. Thus, the test sequence is repeated five times.

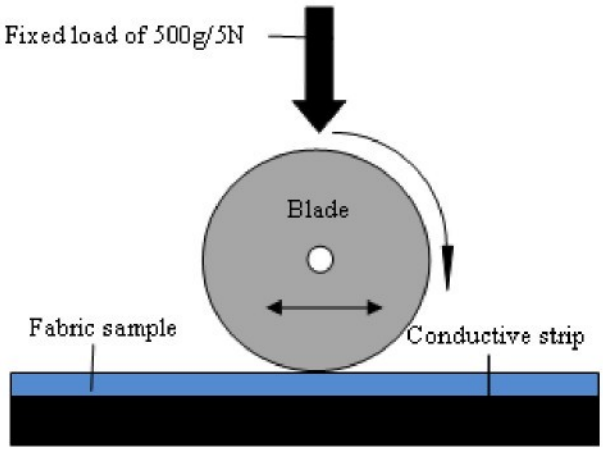


Figure 11: Schematic representation of the Coup test.

When multiple layered materials are to be tested, the layers are assembled as they would be in the garment or any other end product requiring the test. Two test samples are selected, where each sample is tested five times and the mean blade cut index thus calculated. A performance level is awarded according to the lower mean blade cut index of the two samples, according to information in [7]. This testing method however is less useful for materials with a higher cut resistance that rapidly blunt blades, according to information in [3]. EN 388 describes results in the form of a Cut Index Level (I). The Cut Index Level (I) can be calculated by the following equations, according to information in [21]. C_n is the number of tenth of cycles necessary to cut the n^{th} pilot sample and T_n is the number of tenth of cycles necessary to cut the n^{th} testing sample. We define i_n as the cutting index of the n^{th} sample.

$$i_n = \frac{(\bar{C}_n - T_n)}{\bar{C}_n} \tag{21}$$

$$\bar{C}_n = \frac{(C_n - C_{n+1})}{2} \tag{22}$$

I_1 and I_2 are the cutting index of the two sequences of 5 tests. They are determined as follows:

$$I_1 = \frac{1}{5}\sum_{n=1}^{5} i_n \tag{23}$$

$$I_2 = \frac{1}{5}\sum_{n=6}^{10} i_n \tag{24}$$

The final cutting index 'I' is the minimum value of I_1 and I_2.

$$I = Min(I_1 - I_2) \tag{25}$$

It is important to note that the EN 388 cut level does not correspond with the same ASTM F 1790 level. CPP/TDM indicates how much force/load is needed to cut through the fabric. Coup test indicate how many repetitive cut on the same position are needed to cut through, according to information in [26]. The EN 388 is a European standard designed to assess the performance of a fabric or layers of fabric for their ability to resist heavy rubbing, cutting by a blade or sharp object, tearing and puncture by a pointed object. The test procedure includes a separate test for each of these properties, and a performance level is awarded according to each result, according to information in [26]. The minimum test results required to achieve the various performance levels are listed below:

Table 3: The Cut Index Level (I), [7].

Test / Property	Performance level				
	1	2	3	4	5
Abrasion resistance – cycles	100	500	2000	8000	-
Blade Cut Resistance Index	1.20	2.50	5.00	10.00	20.00
Tear Resistance – Newton's	10	25	50	70	-
Puncture Resistance – Newton's	20	60	100	150	-

Abrasion resistance test is carried out using an instrument known as a Martindale tester in which the material to be tested is placed on a bed and a rubbing head of fixed size and weight, covered with a standard abrasive material, is moved in a circular motion over the test specimen. Four samples of the material are tested and the test result is the number of cycles required to rub through the material. The performance level of a single material is decided by the lowest result of the four tests in accordance with the table above. The blade cut resistance test follows the EN 388 standard using the Coup test whilst the whilst the tear resistance test takes a sample of material to be tested is prepared in a standard way and clamped in the jaws of a strength testing machine. This process is similar to the tensile testing method. The jaws are moved apart at constant speed and the force needed to tear the material measured. For single materials the performance level is given by the lowest result of four tests. For multiple layer items each layer is tested separately. The performance level is based on the lowest individual result of the most tear resistant material. Puncture resistance is measured on the same principle as the ball bursting test method.

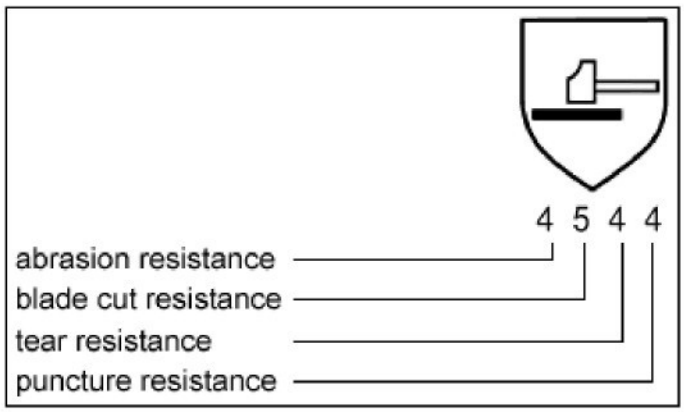


Figure 12: Cut index representation n articles.

Figure 12 details the testing categories for EN388: 2003. A tested item is given a performance rating of 1 to 4 (lowest to highest) on some or all of the listed categories. The 'blade cut resistance' test is an exception as it measures from 1 to 5. Often an 'x' will replace one or more of the numbers, this means that the corresponding test was not performed, according to information in [5].

2.4 Fabric strength testing methods

Cut resistance has been said to be the amount of force required to cut through a material or a yarn. Therefore it can be seen that the strength of the fabric is of utmost importance. However, there are many methods of testing fabric strength as well as yarn strength. These test methods should not be forgotten as they may very well have some correlation to cut resistance. Two such test methods are the ball bursting test and the tensile strength tests, both methods are very reliable and simple in operation.

2.4.1 Ball bursting test

This method describes the procedure for determining the bursting strength of woven fabrics by forcing a steel ball through a clamped area of fabric. A ring clamp mechanism having an internal diameter of 44.45 ± 0.2 mm and means of support so as to keep it raised at least 25 mm. A polished steel ball 25.4 ± 0.02 mm in diameter that can be pressed against the fabric in the opening of the clamping mechanism by means of a plunger or rod, according to information in [8]**.** The burst strength and cross section of the sphere is determined by the formula:

$$Burst\ Strength = \frac{Force}{Cross\ section\ of\ sphere} \tag{26}$$

$$cross\ section = \frac{\pi d^2}{4} \tag{27}$$

The burst strength shall be reported as the average of ten samples of any given material tested. The sample is horizontally clamped between two plates, which have a centric circular clearance. Measured values are the maximum force (bursting force) and the bursting index (bursting force related to the sample weight). The specimen is placed on the lower plate of the fixture and the machine is then started. Specimen clamping is performed automatically and consequently the test is carried out without any influence of the operator. The ball-burst strength was defined as the maximum force recorded prior to rupture of the device.

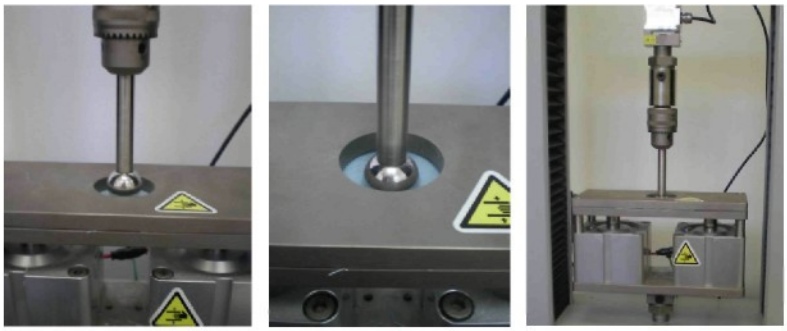


Figure 13: Series of photographs shown stepwise movement of sphere.

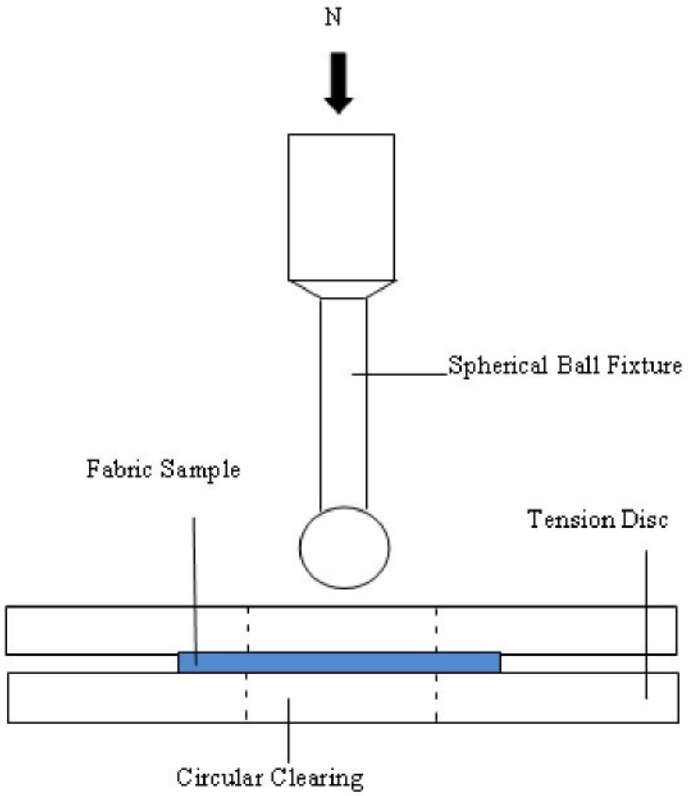


Figure 14: Schematic diagram showing main parts of the ball bursting test.

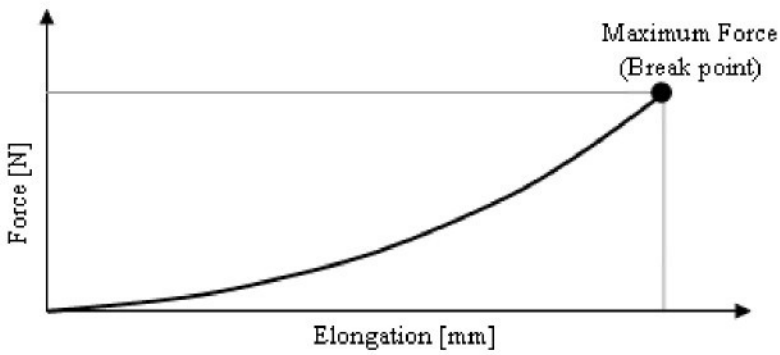


Figure 15: Ideal stress-strain curve for a ball bursting test.

The results from the ball bursting tests are not directly compatible with those from the diaphragm type of bursting tests as they are measured in units of force only and not in units of force per unit area. The advantage of the test is that it can be carried out on a standard universal strength tester with a suitable attachment. There is also no limit to the amount a sample can be extended as there is with the diaphragm test. The US Standard specifies a diameter ball (25.4mm) with a clamp diameter of (44.45mm) and a speed of (305mm/min). The standard shows an attachment which is used in the tensile mode on a standard strength testing machine. The British Standard for coated fabrics specifies very similar dimensions with a ball diameter of 25.2mm, a clamp diameter of 45mm and a testing speed of 5mm/s, according to information in [5]. It is simpler when carrying out this test to use an attachment which operates in the compression mode, if the testing machine is capable of this.

2.5.2 Tensile test

Measurement of tensile stress-strain properties is the most common mechanical measurement on fabrics. It is used to determine the behaviour of a sample while under an axial stretching load. From this, the breaking load and the elongation can be obtained [28]. The principle of the tensile strength test is relative easy to understand. A test sample (300mm*50mm) is held at two points, by mechanical clamps. These clamps are then extended in opposite directions until the sample breaks. Tensile properties such as tensile strength, Young's Modulus, strain and stress at break, energy to rupture were determined by Testometric mechanical test instrument. The full-scale load of mechanical test machine was 100kN and the cross head speed was 100mm/min for the mechanical tests. The test results were taken from WINTEST software program supplied from Testometric. Tests were performed at room temperature (23^{o}C) and at least ten specimens for each fabric sample were tested. There are three different ways of carrying out tensile tests with regard to the way of extending the specimen, each of which is historically associated with a particular design of testing instrument, according to information found in [15]:

- Constant rate of extension (CRE) in which the rate of increase of specimen length is uniform with time and the load measuring mechanism moves a negligible distance with increasing load.
- Constant rate of traverse (CRT) in which the pulling clamp moves at a uniform rate and the load is applied through the other clamp which moves appreciably to actuate a load measuring mechanism so that the rate of increase of load or elongation is usually not constant and is dependent on the extension characteristics of the specimen. The angle that the pendulum has travelled through at the breaking point is then a measure of load.
- Constant rate of loading (CRL) in which the rate of increase of the load is uniform with time and the specimen is free to elongate, this elongation being dependent on the extension characteristics of the specimen at any applied load.

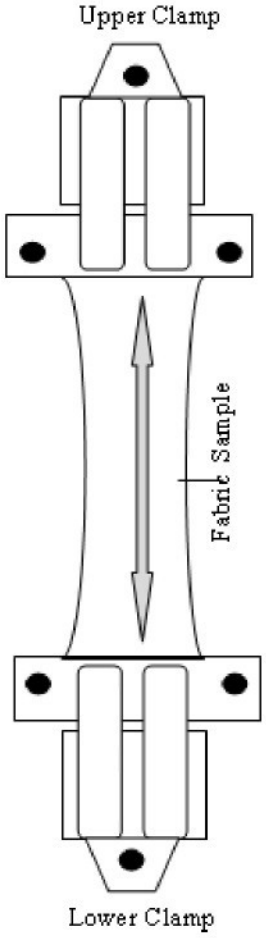


Figure 16: Schematic representation of the tensile test.

Most modern machines operate on the constant rate of extension principle where the moving jaw is driven by a screw thread moving at a constant rotational speed. The construction of the machine depends on its ultimate load capacity. The most important consideration is that any flexure of the machine, at the maximum load, should be less than the expected accuracy of extension measurement. The extension, in the absence of an extensometer, is derived from measuring the load at fixed time intervals, thus relying on the accuracy of the crosshead speed for deriving the distance travelled. If accurate measurement of extension is required, an extensometer should be used. The speeds of crosshead movement found on these instruments range from 0.5 to 500mm/min or up to 1000mm/min in some cases.

The load in these strength testers is measured via a load cell in which the deflection of a comparatively stiff beam is measured using either a strain gauge or a linear displacement transducer, according to information found in [15]. This gives a system in which the change in position with increasing load is negligible. The accuracy of the load measurement depends on the capacity of the load cell. Most instruments are quoted as being accurate to within ±1% of the indicated load. This accuracy, however, does not extend to the lower end of the load cell range. To obtain the greatest accuracy it is necessary to use load cells at the upper end of their capacity limit. This implies that if fibres, yarns and fabrics are all to be tested with the same machine, then three different load cells of appropriate ranges are needed.

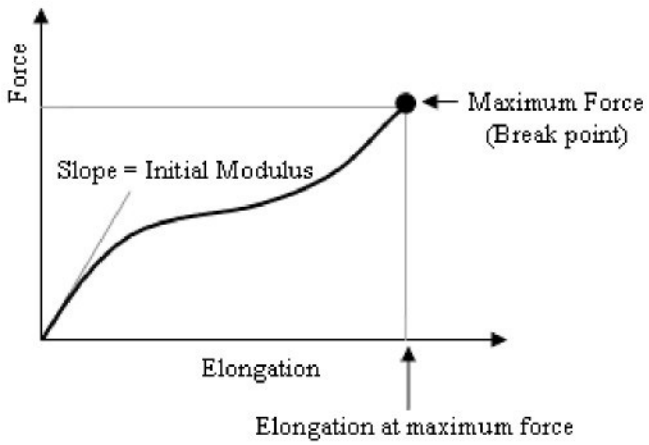


Figure 17: Tensile strength test curve (sharp break) [28].

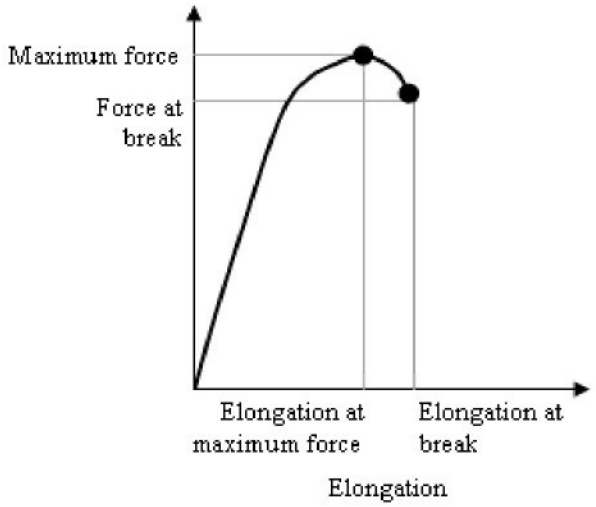


Figure 18: Tensile strength test curve (percentage break) [28].

The tensile force recorded at the moment of rupture is referred to as the tensile strength at break. Stress is a way of expressing the force on a fabric in a way that allows for the effect of the cross-sectional area of the specimen on the force needed to break it, therefore stress is calculated by:

$$Stress = \frac{Force\ applied}{cross - sectional\ area} \tag{27}$$

When testing yarn for its tensile strength the linear density of the yarn is used instead of the cross-sectional area as a measure of yarn thickness. This allows the strengths of yarns of different linear densities to be compared. It is defined as the ratio of force to the linear density:

$$specific\ stress = \frac{force}{linear\ density} \tag{28}$$

`The preferred unit is N/tex, other units which are found in the industry are: gf/denier and cN/dtex. The elongation that a specimen undergoes is proportional to its initial length. Strain expresses the elongation as a fraction of the original length:

$$Strain = \frac{\Delta l}{l_o} \tag{29}$$

Where Δl = elongation of sample and l_o = initial clamp length which is usually 200mm.

3. Experimental Part

3.1 Formulation of experiment

This experiment was divided into two aims. The first aim was to measure cut resistance of a set of fabrics (see Tab. 4) on the blade cut resist instrument to see which yarn or fabric geometries had the biggest influence on cut resistance. The second aim of this experiment was to find a correlation between parameters of three different strength tests, using the same fabric set as mentioned in table 4. These three tests include the blade cut resistant test, ball bursting test and tensile test. The experimental blade cut resistant test instrument is the main focus of the experiment. The fabric set consisted out of fifteen woven fabrics. These fifteen fabrics had three different weave structures namely plain, twill and satin, different compositions of polypropylene and cotton and lastly different weft setts. These fabrics were produced by a local company named SPOLSIN and form part of the 4_23_008 batch number.

Table 4: List of different fabrics.

Material Code	Composition	Weave
1	100% PP	plain
2	100% PP	twill
3	100% PP	satin
4	100% Co	plain
5	100% Co	twill
6	100% Co	satin
7	65% PP 35% Co	plain
8	65% PP 35% Co	twill
9	65% PP 35% Co	satin
10	50% PP 50% Co	plain
11	50% PP 50% Co	twill
12	50% PP 50% Co	satin
13	35% PP 65% Co	plain
14	35% PP 65% Co	twill
15	35% PP 65% Co	satin

The material codes 1 to 15, represent fabrics tested in warp direction, where as material codes 16 to 30 represents fabrics tested in weft direction (see Appendix 1, for a complete list of all fabrics). The weave structure selected was that of plain, twill and satin. Different weave structures also influence the cut resistance of fabrics because of the amount of contact point in the weave structure as well as the warp and weft densities. The weave structures chosen are some of the more easily accessible weaves and show great differences among themselves. Below the different weave structures used can be seen:

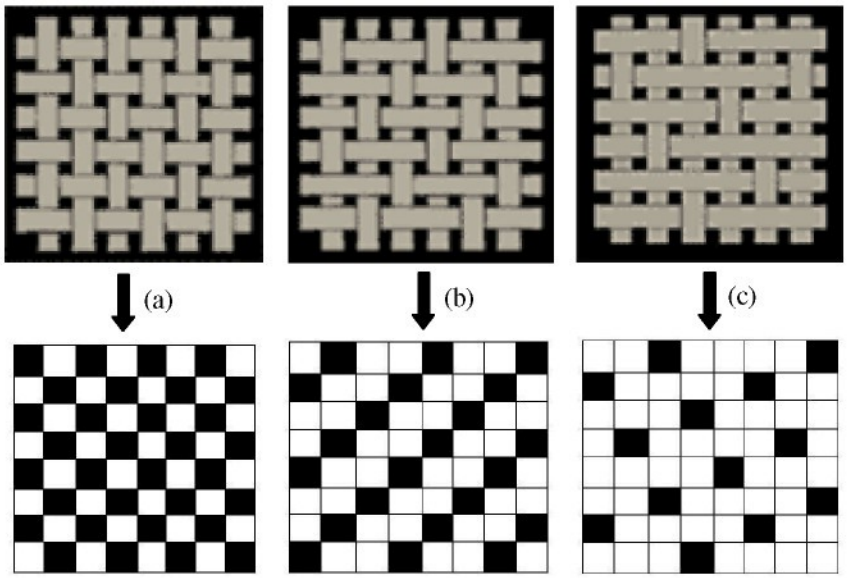


Figure 19: Diagram showing a) Plain weave, b) Twill weave and c) Satin weave [27].

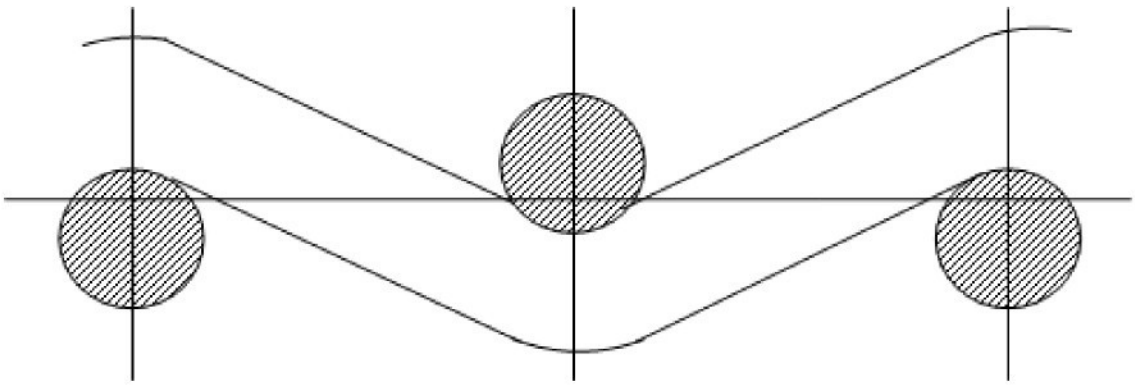


Figure 20: Illustration showing contact points between warp and weft yarns.

Table 5: Tested yarn geometries and structural parameters [20].

Material Code	Polypropylene Ratio	Fineness [tex]	Calculated Fineness [tex]	Yarn Strength [N]
1	0	45	45	12.319
2	0	45	45	12.319
3	0	45	45	12.319
4	1	45	45.1	7.745
5	1	45	45.1	7.745
6	1	45	45.1	7.745
7	0.5	45	44.8	8.796
8	0.5	45	44.8	8.796
9	0.5	45	44.8	8.796
10	0.35	45	44.96	7.11
11	0.35	45	44.96	7.11
12	0.35	45	44.96	7.11
13	0.65	45	44.9	7.164
14	0.65	45	44.9	7.164
15	0.65	45	44.9	7.164

Table6: Tested fabric geometries and structural parameters [20].

Material Code	Machine sett		Thickness	Areal Mass
	warp[1/10cm]	weft[1/10cm]	[mm]	[g/m^2]
1	180	72	0.78	146.5
2	180	180	0.725	183.15
3	180	180	0.9	204.9
4	180	72	0.565	131.15
5	180	160	0.545	185.6
6	180	180	0.735	189.35
7	180	72	0.705	143.9
8	180	134	0.66	182.75
9	180	180	0.84	185.25
10	180	72	0.655	137.85
11	180	134	0.66	175.4
12	180	180	0.815	200.85
13	180	72	0.63	139.4
14	180	165	0.605	197
15	180	180	0.78	189.4

The information from the tables above was obtained from the testing laboratories in the Faculty of Textile Technology in the Technical University of Liberec. This information was used in processing of test results. Information from material codes 16 to 30 are similar to that of material codes 1 to 15 (see appendix 1 for more information). The test done for information of yarn strength, fabric thickness, and areal mass was done using internal standards which correspond to international standards.

3.2 Blade cut resistant test

This blade cut resistant test method describes the procedure for determining the cut resistance of woven fabrics by forcing a steel blade through a clamped area of fabric. A ring clamp mechanism having an internal diameter of 44.45 ± 0.2 mm and means of support so as to keep it raised at least 25 mm. The support is the Testometric M350-10CT material testing machine was used as an operator. The steel blade is added as an extra fixture. The Testometric M350-10 CT has a crosshead guidance system, which provides precise alignment and smooth running. A polished steel blade 110 mm in length is pressed against the fabric in the clearing circle of the clamping mechanism by means of a plunger or rod. The blade penetrates the fabric up to ± 70mm at a speed of up to 1000 mm/min. For this experiment a constant speed of 100 mm/min was used as it showed the least amount of errors occurring. A pretension is also applied at 1N. When the blade has reached the penetrating length of 70 mm, it stops and is retracted. Stress-strain curves are then plotted.

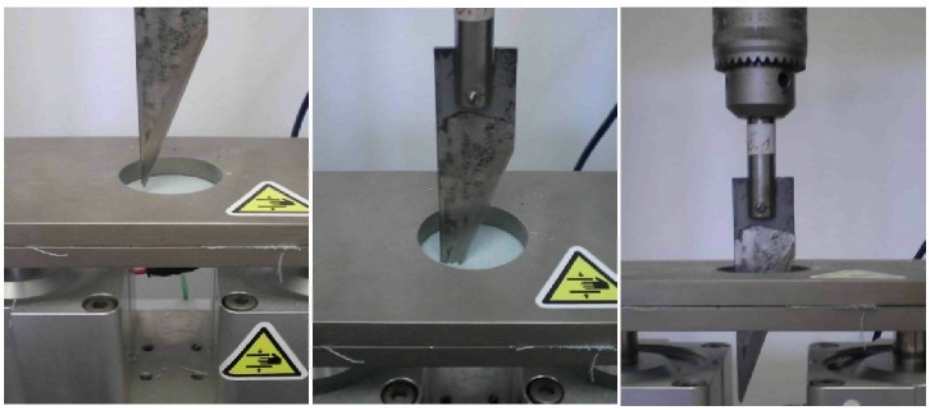


Figure 21: Step by step penetration of fabric by the blade.

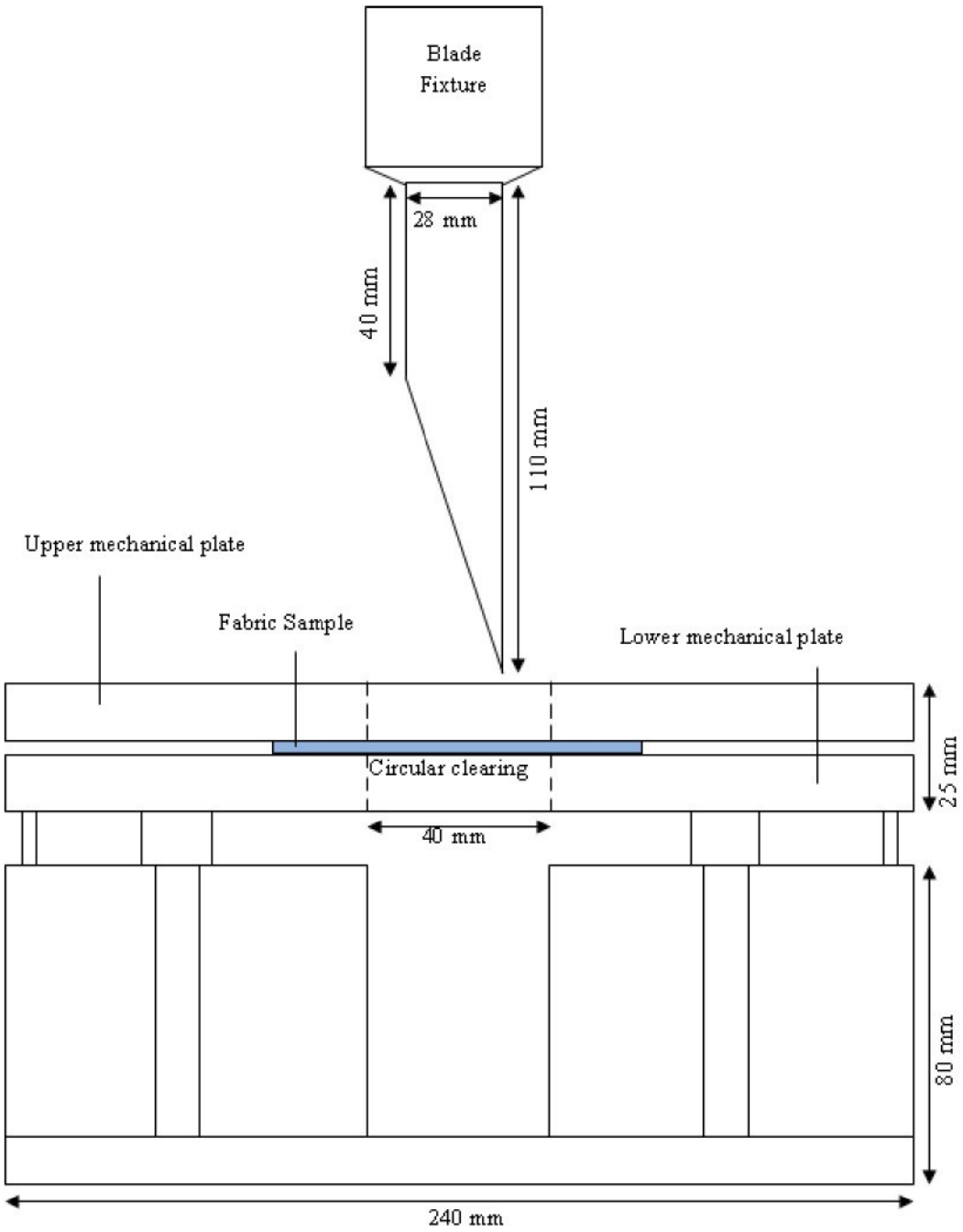


Figure 22: Schematic representation of the experimental cut resistance test.

From the illustration on the previous page, the dimensions of the instrument can clearly be seen. This instrument is fairly simple to operate however, extreme care must be taken with the position of the testers hands as the blade is relatively sharp and the reaction time of the hydraulic foot pedal is very fast. The procedure for the blade cut resistance test is as follows:

- Samples are prepared using cut resistant standards, having a size of 100mm by 100mm. Ten samples of each fabric is needed for both warp and weft directions.
- The Testometric M350-10 CT allows for custom calibration and therefore the chosen speed of 100 mm/min and pretension of 1N is entered.
- The fabric sample is then placed between the upper and lower mechanical plate, whilst holding the foot pedals which is responsible for the opening and closing of these plates.
- The test is then started and the steel blade moves down into the circular clearing within both the upper and lower mechanical plate. The fabric is cut and the data is recorded by the winTest™ system.

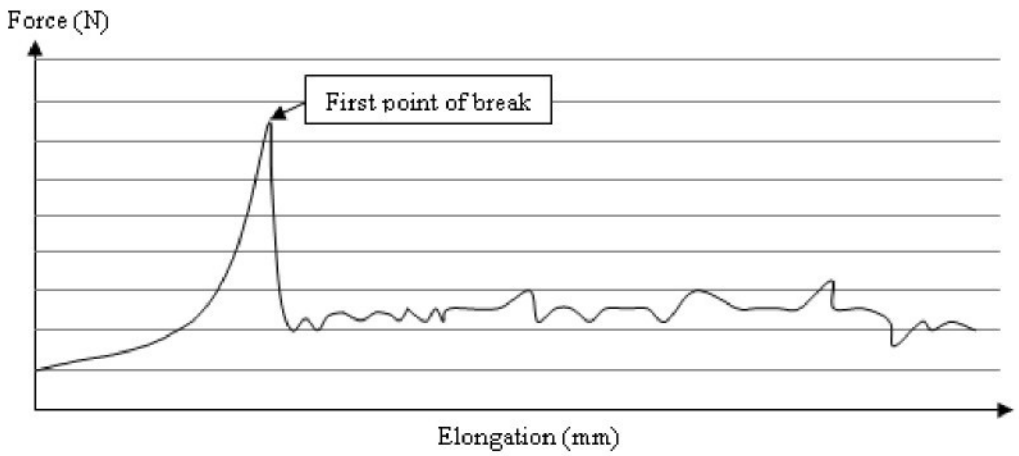


Figure 22: Example of stress-strain curves taken from blade cut resist test method.

The experimental blade cut resistance design has similar principles to the previously mentioned standards. The non-uniformity of selected parameters and end results leads the next aim of this work. This is to find some correlation between the experimental cut resistance test and popular strength tests. These strength tests are the

ball bursting test and the tensile strength test. These three test have very similar parameters, all expressed in the same manner. These parameters include force, stress, strain and elongation. Stress is defined as force per area. Stress normal to the plane is usually named normal stress and can be expressed by:

$$\sigma = \frac{F_n}{A} \tag{30}$$

where σ = normal stress (Pa or N/m^2), F_n = normal component force (N) and A = area (m^2). Strain is defined as deformation of a solid due to stress and can be expressed by:

$$\varepsilon = \frac{dl}{l_o} = \frac{\sigma}{E} \tag{31}$$

where dl = change of length (m), l_o = initial length (m), ε = unit less measure of engineering strain and E = Young's modulus (Pa).

4. Results and Discussion

4.1 Primary data analysis

The experimental blade cut resistance method defines cut resistance as the area under the stress strain curve. Therefore for the purposes of evaluating cut resistance of the fabrics tested it was necessary to calculate the area under the stress strain curve by using a simple MATLAB program which can be seen in appendix 5. The area under the stress strain curve is then equal to the cutting resistance of fabrics and has a unit of [g/N]. In the table below the average cut resistance of each fabric can be seen. This data was then used to compare different fabrics in relation to their cut resistance value.

Table 7: Cut resistance for fabrics, shown as the area under the stress-strain curve.

Material Code	Area under stress-strain curve	Material Code	Area under stress-strain curve
1	218.826 [g/N]	16	80.772 [g/N]
2	297.476 [g/N]	17	148.488 [g/N]
3	329.016 [g/N]	18	217.051 [g/N]
4	157.369 [g/N]	19	43.923 [g/N]
5	229.586 [g/N]	20	120.753 [g/N]
6	224.592 [g/N]	21	213.618 [g/N]
7	161.083 [g/N]	22	41.899 [g/N]
8	302.27 [g/N]	23	130.693 [g/N]
9	238.621 [g/N]	24	183.631 [g/N]
10	202.103 [g/N]	25	46.049 [g/N]
11	233.046 [g/N]	26	124.359 [g/N]
12	202.103 [g/N]	27	195.999 [g/N]
13	136.499 [g/N]	28	10.335 [g/N]
14	275.488 [g/N]	29	111.374 [g/N]
15	197.187 [g/N]	30	191.269 [g/N]

From Fig. 23 it is possible to conclude that fabric samples 1, 2 and 3 show the biggest cut resistance values and thus it can be said that polypropylene fibre has a higher cut resistance than cotton. It is also seen that fabric samples 2, 5, 8, 11 and 14 shows a series of fabrics with the same weave structure that generally have a higher cut resistance, this series has twill weave structure. A similar trend is observed in both warp and weft direction. The plain weave structure generally represents the least cut resistance. This can be attributed to the greater number of contact point or intersections

per unit area of the twill weave structure which enables the cutting force to be shared by a greater number of threads and hence a higher cut resistance. In a simpler way, this is because of the better stress propagation as more number of threads takes up and shares the cutting force. In general, the cut resistance of all the weave structures in the warp direction is higher than in the weft direction. This is attributed to the higher number of warp yarns compared to the weft yarns per unit length.

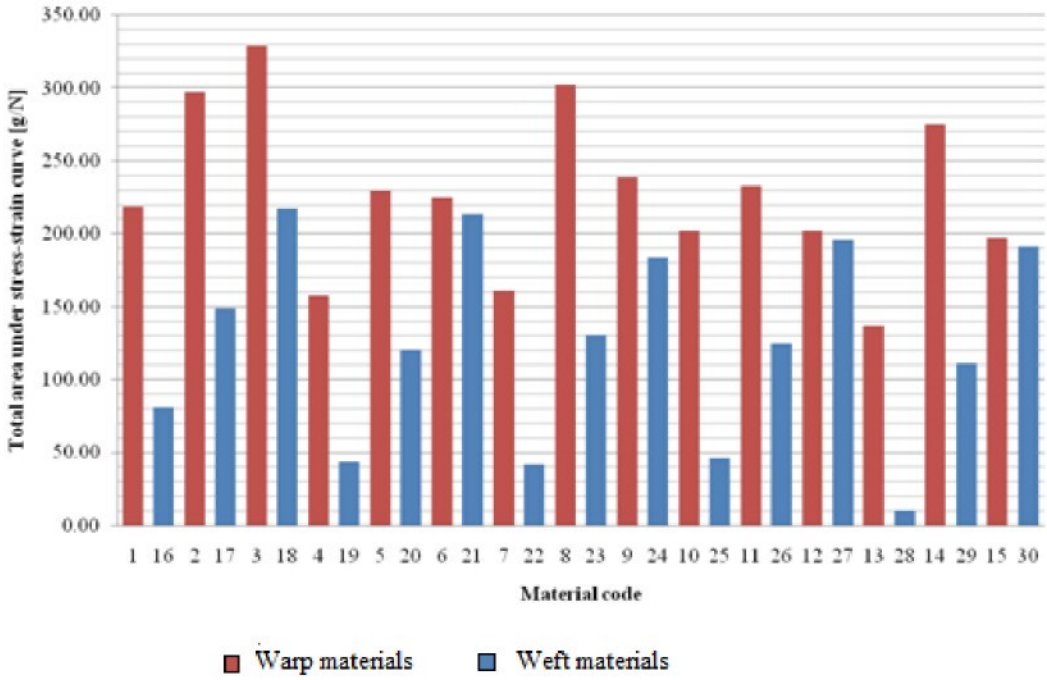


Figure 23: Cut resistance of all tested fabrics.

The effect of the weave densities on cut resistance of tested fabrics is also shown in Fig. 23. Fabric samples shown in the red colour represent samples tested in warp direction, where as fabric samples shown in the blue colour represent samples tested in the weft direction. An explanation for the fast differences in cut resistance values is shown in Fig. 24 and Fig. 25, where it is possible to see the effect of both the warp and weft densities of the fabric, a higher density allows for a higher cut resistance in the direction to which it is applied.

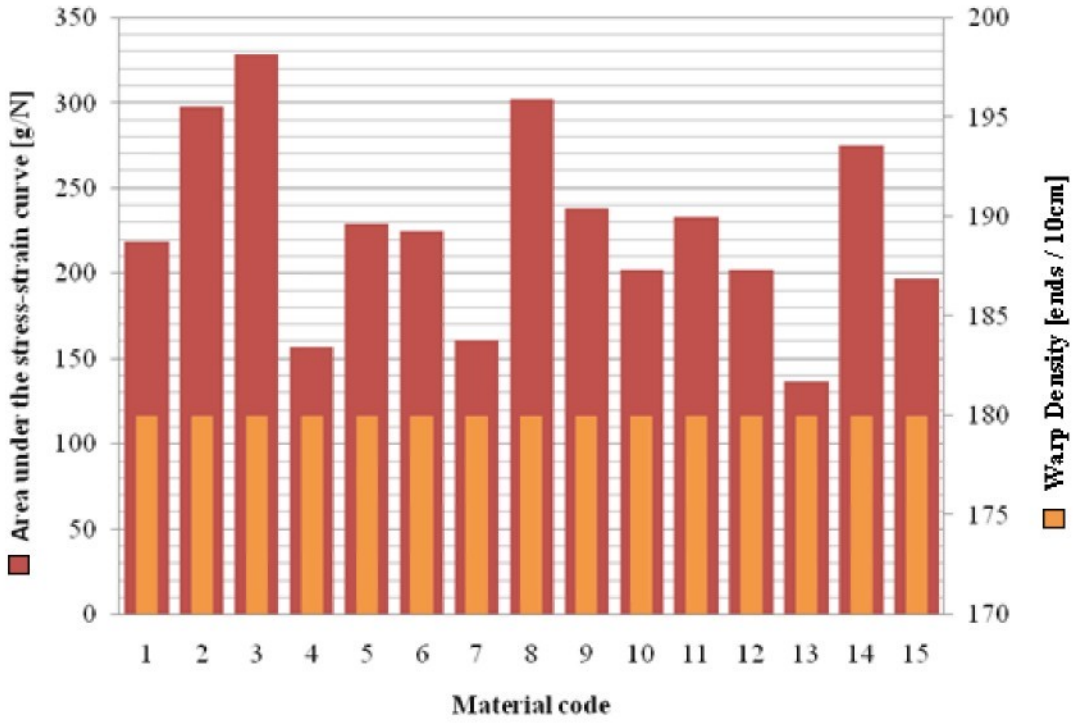


Figure 24: Cut resistance values in relation to the warp density.

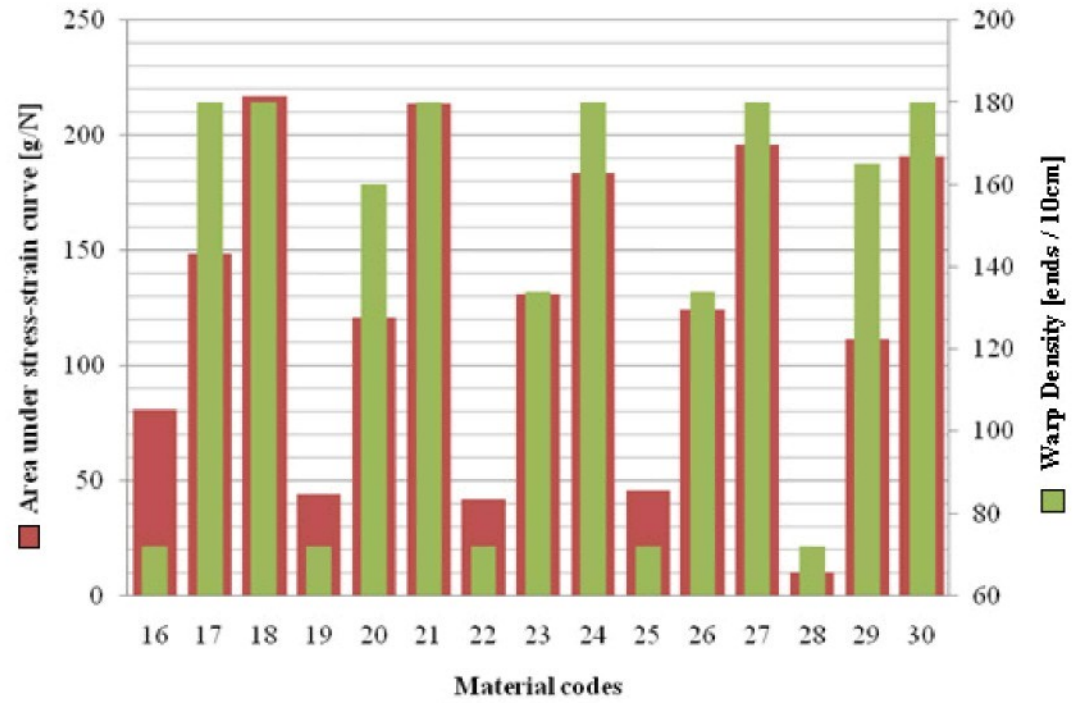


Figure 25: Cut resistance values in relation to the weft density.

4.2 Secondary data analysis

The correlation between the blades cut resistance test, the ball bursting test and the tensile strength test can be shown by correlating different parameters from the test done by the researcher. The selection of different parameters was done in order of importance as well as those parameters which the three tests had in common. The selected parameters can be seen in Tab. 8, below:

Table 8: List of parameters tested.

Parameter	Description and unit
Par.1	Work at highest force [N/mm]
Par.2	Elongation at break [mm]
Par.3	Highest force [N]
Par.4	Work at highest force [N/mm]
Par.5	Elongation at break [mm]
Par.6	Highest force [N]
Par.7	Work at break [N/mm]
Par.8	Work at highest force [N/mm]
Par.9	Elongation at break [mm]
Par.10	Elongation at highest strength [%]
Par.11	Highest force [N]
Par.12	Work at break [N/mm]
Par.13	Yarn Strength [N]

Parameters 1 to 3 are results from the ball bursting test, parameters 4 to 7 are from the blade cut resistance test, parameters 8 to 12 are from the tensile strength test and parameter 13 is an individual parameter from yarn tests done by the laboratories of the Department of Textile Technology at the Technical University of Liberec. All tests done in this study were done according to the internal standard of the Department of Textile Technology at the Technical University of Liberec, in accordance to international and industrial standards. The mean test results can be seen in Tab. 9 as well as Tab. 10 for all fabric material codes.

Table 9: Test results for ball bursting test and blade cut resistance test for all material codes.

	Ball bursting test			Blade cut test			
	N/mm	mm	N	N/mm	mm	N	N/mm
Material Code	Par. 1	Par. 2	Par. 3	Par. 4	Par. 5	Par. 6	Par. 7
1	4040.00	16.09	796.05	26.46	9.33	5.75	206.00
2	7134.50	18.08	1202.50	56.25	15.14	12.45	224.00
3	9391.00	18.02	1522.50	40.73	13.21	9.65	335.00
4	703.50	7.58	307.50	26.69	13.00	4.26	154.00
5	1518.00	9.06	623.75	41.60	11.51	15.35	274.00
6	1072.50	7.81	460.80	24.10	10.16	10.70	208.00
7	1911.50	11.77	501.35	22.61	6.77	5.70	171.00
8	3412.50	13.34	771.10	31.27	8.50	11.00	316.00
9	4121.50	13.14	907.20	40.89	8.23	13.70	246.00
10	1153.50	9.44	382.35	20.65	8.15	4.95	162.00
11	1750.00	10.75	561.70	44.82	14.64	12.85	244.00
12	1838.00	10.11	601.20	29.56	8.81	10.85	207.00
13	1848.50	10.66	656.50	29.73	6.22	10.15	144.00
14	1833.50	10.30	660.60	33.45	12.22	10.60	265.00
15	1335.00	8.88	508.50	27.79	6.41	9.75	202.00
16	3954.50	15.66	790.50	16.50	6.23	3.70	87.00
17	7010.50	17.91	1180.50	19.05	5.86	6.40	158.00
18	9041.50	17.97	1491.00	32.46	9.88	6.95	228.00
19	744.50	7.73	325.55	9.18	6.17	3.20	45.00
20	1553.50	9.15	623.20	24.26	5.26	11.35	142.00
21	965.00	7.63	423.45	33.14	8.14	12.30	184.00
22	2251.00	12.26	554.70	14.64	4.91	7.05	52.00
23	3391.50	13.61	768.05	29.70	6.39	10.80	135.00
24	4205.00	13.43	902.30	45.82	9.04	13.30	200.00
25	1051.00	9.15	367.50	7.86	4.34	3.00	46.00
26	1780.50	10.85	564.40	19.42	5.88	8.35	122.00
27	1804.00	10.11	585.05	25.30	6.30	9.40	204.00
28	923.00	8.62	357.20	4.88	3.00	2.70	27.00
29	869.50	8.48	339.95	35.05	6.28	11.40	143.00
30	1335	8.9875	490.6	18.0305	5.935	6.7	191
Standard deviation	**2411.90**	**3.42**	**320.56**	**11.80**	**3.10**	**3.55**	**76.69**
Mean (average)	**2798.12**	**11.55**	**674.25**	**27.73**	**8.20**	**8.81**	**177.40**
Coefficient of variation	**0.86**	**0.30**	**0.48**	**0.43**	**0.38**	**0.40**	**0.43**

Table 10: Test results for tensile strength test for all material codes.

	Tensile strength test					
	N/mm	mm	%	N	N/mm	N
Material Code	Par. 8	Par. 9	Par 10.	Par. 11	Par. 12	Par. 13
1	54699.41	84.55	42.28	1312.05	70425.11	12.32
2	63786.83	99.10	49.55	1299.50	77642.86	12.32
3	45272.80	70.30	35.15	1302.75	55802.55	12.32
4	8174.22	19.81	9.91	944.10	9952.45	7.75
5	9229.99	25.10	12.55	1004.70	9739.67	7.75
6	6535.77	16.22	8.11	928.80	9312.28	7.75
7	16782.12	41.72	20.86	924.20	26552.24	8.80
8	22767.47	52.00	26.00	991.30	28324.74	8.80
9	16050.89	37.80	18.90	922.95	24288.45	8.80
10	10186.52	30.24	15.12	863.25	10939.37	7.11
11	11893.78	39.92	19.96	854.10	12536.82	7.11
12	8591.49	28.48	14.24	798.45	10924.08	7.11
13	10489.29	29.25	14.62	904.40	11416.66	7.16
14	12591.52	36.58	18.29	921.25	12640.68	7.16
15	7850.83	23.18	11.59	844.20	9922.25	7.16
16	13073.29	56.06	28.03	441.15	18572.37	12.32
17	40833.59	73.03	36.52	1015.50	44605.04	12.32
18	40860.84	69.51	34.75	1199.40	51174.02	12.32
19	2552.29	19.69	9.85	317.63	4018.00	7.75
20	8120.58	26.42	13.21	811.55	8740.00	7.75
21	8342.72	29.61	14.81	846.00	10413.81	7.75
22	7363.37	37.60	18.80	372.89	11633.16	8.80
23	17703.56	48.03	24.01	691.30	22233.67	8.80
24	16888.60	48.31	24.16	781.30	25529.19	8.80
25	3922.13	28.83	14.41	317.67	5571.75	7.11
26	8406.67	32.36	16.18	611.10	10066.97	7.11
27	11753.92	40.27	20.13	805.00	14705.85	7.11
28	3637.38	27.42	13.71	325.81	4824.95	7.16
29	12029.66	38.15	19.07	844.40	12328.40	7.16
30	9736.496	35.9295	17.9645	804.1	11036.692	7.164
Standard deviation	**15666.17**	**20.12**	**10.06**	**273.64**	**19358.90**	**1.98**
Mean (average)	**17004.27**	**41.52**	**20.76**	**833.36**	**21195.80**	**8.63**
Coefficient of variation	**0.92**	**0.48**	**0.48**	**0.33**	**0.91**	**0.23**

The results from Tab. 9 and Tab. 10 were used in a MATLAB program to find paired and partial correlation between the parameters (see appendix 6). Correlation is a measure of the relation between two or more variables. The measurement scales used should be at least interval scales, but other correlation coefficients are available to handle other types of data. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while a value of +1.00 represents a perfect positive correlation. A value of 0.00 represents a lack of correlation. The most widely-used type of correlation coefficient is Pearson r, also called linear or product-moment correlation. Simple linear correlation known as Pearson correlation assumes that the two variables are measured on at least interval scales and it determines the extent to which values of the two variables are "proportional" to each other. The value of the correlation coefficient does not depend on the specific measurement units used. The regression line or least squares line corresponds to the lowest possible sum of the squared distances of all the data points from this line. As mentioned before, the correlation coefficient (r) represents the linear relationship between two variables. If the correlation coefficient is squared, then the resulting value will represent the proportion of common variation in the two variables. From the MATLAB program used to calculate correlation between the selected parameters a colour map such as Fig. 26 and Fig. 27 is retrieved.

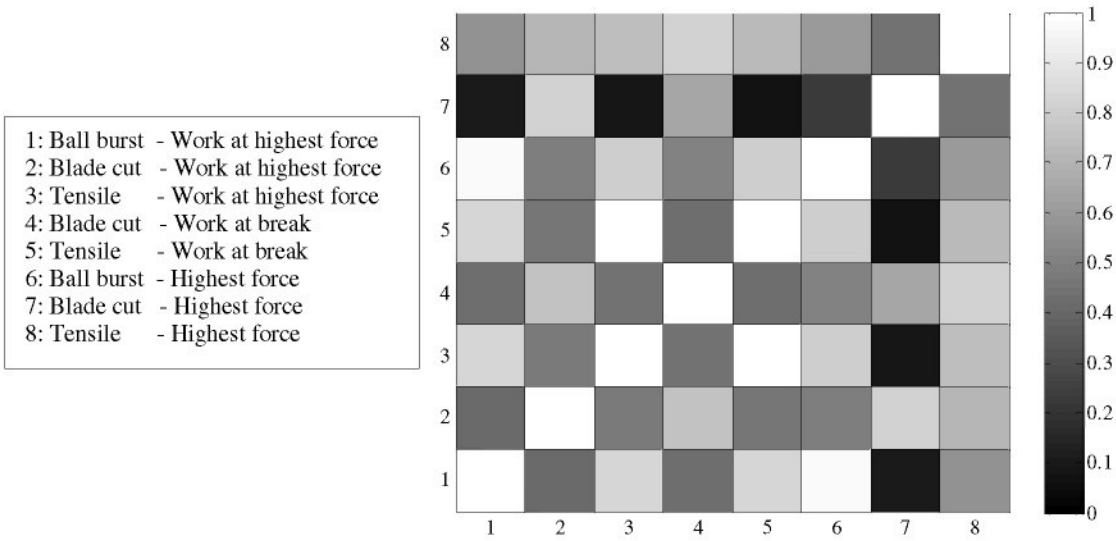


Figure 27: Paired correlation.

In Fig. 26 it is possible to see the correlation with corresponding values of 0.75 up to 1.00 on the grey scale. This figure represents paired correlation and therefore it is concluded that the following variables have good correlation:

Table 11: Parameters showing good to average paired correlation.

Parameter 1	&	Parameter 2	Value of (r)
Ball burst - Work at highest force	&	Tensile - Work at highest force	0.8419
Ball burst - Work at highest force	&	Tensile - Work at break	0.8414
Ball burst - Work at highest force	&	Ball burst - Highest force	0.9807
Blade cut - Work at highest force	&	Blade cut - Work at break	0.7555
Blade cut - Work at highest force	&	Blade cut - Highest force	0.8208
Tensile - Work at highest force	&	Tensile - Work at break	0.9924
Tensile - Work at highest force	&	Ball burst - Highest force	0.8034
Blade cut - Work at break	&	Tensile - Highest force	0.8155
Tensile - Work at break	&	Ball burst - Highest force	0.8000

From Tab. 11, it is possible to conclude that there is only one correlation of great importance to this particular study. The correlation between the blade cut test with parameter: work at break and the tensile strength test with parameter highest force.

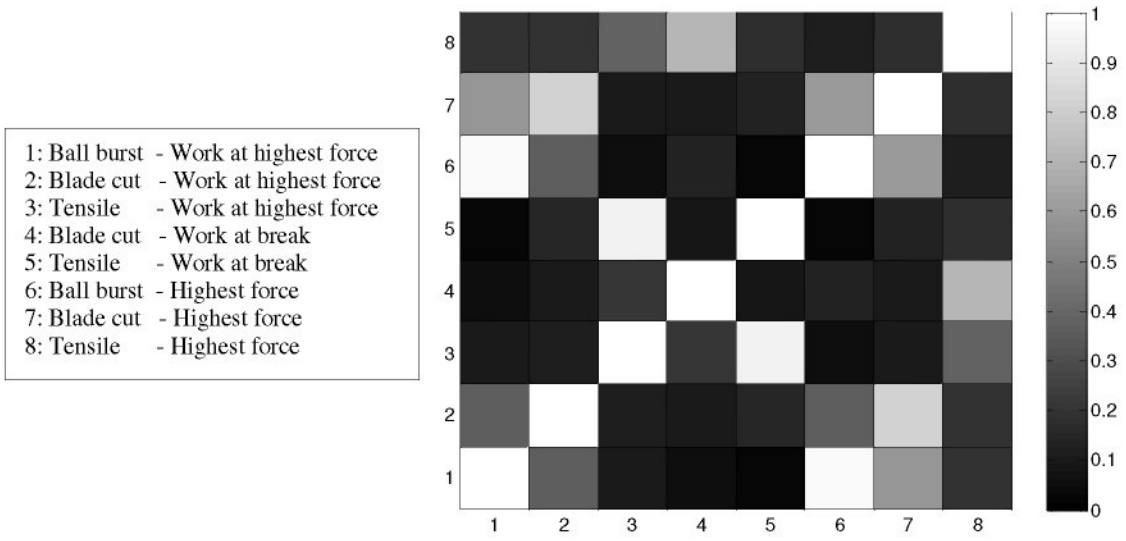


Figure 27: Partial correlation

In Fig. 27 it is possible to see the correlation with corresponding values of 0.75 up to 1.00 on the grey scale. This figure represents partial correlation and therefore it is concluded that the following variables have good correlation:

Table 12: Parameters showing good to average partial correlation.

Parameter 1	&	Parameter 2	Value of (r)
Ball burst - Work at highest force	&	Ball burst - Highest force	0.9742
Blade cut - Work at highest force	&	Blade cut - Highest force	0.8129
Tensile - Work at highest force	&	Tensile - Work at break	0.9467
Blade cut - Work at break	&	Tensile - Highest force	0.7070

From Tab 12, it is possible to conclude that there is only one correlation of great importance to this particular study. The correlation between the blade cut test with parameter: work at break and the tensile strength test with parameter highest force. This is similar to the paired correlation results and therefore the regression line is given by:

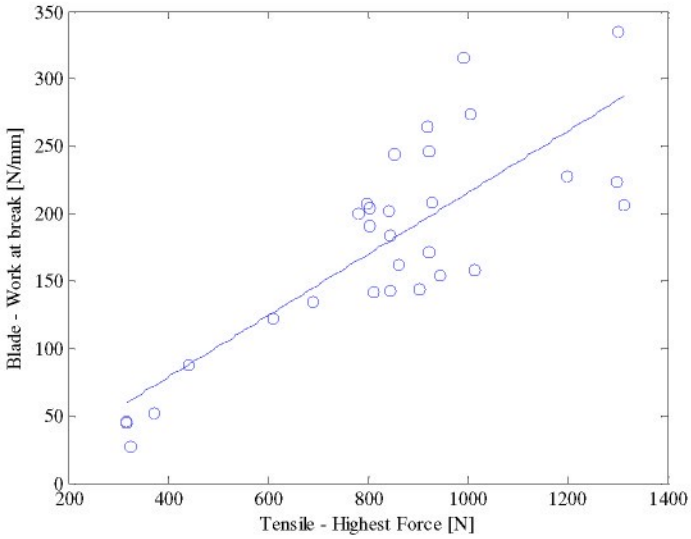


Figure 28: Regression graph between the blade cut test with parameter: work at break and the tensile strength test with parameter highest force.

From the regression in Fig. 28, it is seen that there exist a fairly good correlation between the blades cut tests with parameter: work at break and the tensile strength test with parameter highest force. Therefore this correlation is the only one that can be successfully used to demonstrate the correlation between the three different testing methods for fabric strength. Other regressions can be found in appendix 7.

Conclusion

The cut resistance of fabrics remains a very important attribute to special application fabrics. In the future it might even be recommended that all fabrics are able to resist some form of cutting as safety in everyday life become a greater concern with each passing day. The current methods and standards of cut resistance however still remains problematic, as two pieces of material from different parts of the world can generally not be compared with the cut resistance value they have been given, as there is no correlation among the standards.

In conclusion it was found that there are correlations between the various parameters tested, however it appears that only one correlation is of benefit to the study. That is the correlation between the blades cut tests with parameter: work at break and the tensile strength test with parameter highest force. In actuality some degree of correlation can be found between any two parameters. The correlation mentioned earlier however does fall about the 0.75 limit and is therefore considered to be a good correlation. The study would have benefited more from correlations between similar tests with less variation in function, for example: instead of using a spherical fixture in the ball bursting test, another fixture more similar to a blade, a diamond shaped fixture could be used. This would have made the principle of the tests more alike and therefore it would have been possible to find better correlations between the tests.

References

[1] Ansell. Understanding cut protection. Ansell Ltd. Cut protection team, 2007.

[2] Dietzel, Y. Development of Aramid multilayer fabrics for cut resistant textiles for the equipment protection. 7th Dresden Textile Conference, 16 – 17 June 2004, Dresden.

[3] Doughtry, P. Comparing cut resistant tests. SATRA Technology Centre, 2006.

[4] Flambard, X. Ferreira, M. Mechanical and thermal behaviours of first choice, second choice and recycled P-aramid fibres. Journal of Textiles and Apparel. Vol 4, issue 1, 2004.

[5] Harrabi, L. Dolez, P. Optimization in the selection of protective gloves for resistance to mechanical risks. Ecole de technologie superieure, Canada, 2006, pages 2 – 4.

[6] Hearle, J.W.S. Grosberg, P. Backer, S. Structural Mechanics of Fibers, Yarns and Fabrics, John Wiley & Sons, New York, 1969.

[7] Henssen, G. The Index Enigma. [Online]. Published 2009-04. [Retrieved 2009-12-10]. Web page: http://gloves.dyneema.com/documents/OHS-Artikel.pdf

[8] Hosford, W. Overview of Tensile Testing, Tensile Testing, P. Han, Ed., ASM International, 1992, pages 1–24.

[9] Kothari, V. Cut resistance of textile fibres – A theoretical and experimental approach. Indian Journal of Fibre and Textile Research, 2007, pages 306 – 311.

[10] Kremenakova, D. Modeling of cotton yarn geometry and strength. Report of Textile Research Center, Faculty of Textile Engineering, Technical University of Liberec, 2004.

[11] Kremenakova, D. Mertova, I. Kolcavova, S. Computer aided textile design 'LibTex. Indian Journal of Fiber & Textile Research. Vol. 33, December.

[12] Lara, J. Turcot, D. Comparison of two methods to evaluate the resistance of protective gloves to cutting by sharp blades. Performance of protective clothing. Vol. 5, 1996, pages 32 – 33.

[13] Lara, J. Masse, S. Evaluating the cutting resistance of protective clothing material. Quebec, Canada, 1999.

[14] Militky, J. Ibrahim, S. Misra, R. Novelties in mechanical technologies. Technical University of Liberec, 2009.

[15] Mumford, P. Test Methodology and Data Analysis, Tensile Testing, P. Han, Ed., ASM International, 1992, pages 49–60.

[16] Neckar, B. Yarn creation, structure and properties. SNTL Praha, Czech Republic, 1990.

[17] Novikov, N.G. Structure and design of fabric. Moskva, 1973.

[18] Pan, N. Analysis of woven fabric strengths: prediction of fabric strength under uniaxial and biaxial extensions. Composites Science and Technology. Vol 56, 1996, pages 312 – 317.

[19] Physical testing of materials done by laboratory assistants in the Department of Textile Technology at the Technical University of Liberec, 2007.

[20] Pierce, F.T. Journal of the Textile Institute. Vol. 28, 1937.

[21] Rameshkumar, C. Novel test methods for cut resistance of yarns and fabrics. 85th Textile Institute World Conference, 1 – 3 March 2007, Colombo, Sri Lanka.

[22] Shin, H. Test for measuring cut resistance of yarns. Journal of Materials Science. Vol 38, 2003, pages 3603 – 3610.

[23] Teijin – Human Chemistry, Human Solutions. [Online]. [Retrieved 2010-04-27]. Web page: http:/www.directindustry.com/prod/treijin-aramid/aramid-fiber-for-heat-and-cut-resistant-clothing-18087-99059.html.

[24] Tejani, N. Cut protection performance test for measuring cut resistance of materials used in protective clothing. Performance of Protective Clothing. Vol 6, 1197, pages 84 – 86.

[26] Thi, B. Mechanics and mechanism of cut resistance of protective materials. [Online]. Published 2009-07-28. [Retrieved 2009-11-15]. Web page: http://www.sciencedirect.com/science?_ob=ArticleURL&-udi=B6V55-4WW2SCP-1

[27] Tkalcovstvi. [Online]. Published 2008-11-23. [Retrieved 2010-04-26]. Web page: http://www.arttex-stavy.cz/main-t2.html

[28] Wang, X. Liu, X. Hurren, C. Physical and mechanical testing of textiles. The Textile Institute. Woodhead Publishing in Textiles. Vol 76, 2008, page 92.

List of figures

List of tables

List of Appendices

Appendix 1

List of fabrics tested

Table 1: Differences in yarn parameters.

Warp material code	Weft material code	Polyester ratio	Fineness [tex]	Calculated fineness [tex]	Yarn strength [N]
1	**16**	0	45	45	12.319
2	**17**	0	45	45	12.319
3	**18**	0	45	45	12.319
4	**19**	1	45	45.1	7.745
5	**20**	1	45	45.1	7.745
6	**21**	1	45	45.1	7.745
7	**22**	0.5	45	44.8	8.796
8	**23**	0.5	45	44.8	8.796
9	**24**	0.5	45	44.8	8.796
10	**25**	0.35	45	44.96	7.11
11	**26**	0.35	45	44.96	7.11
12	**27**	0.35	45	44.96	7.11
13	**28**	0.65	45	44.9	7.164
14	**29**	0.65	45	44.9	7.164
15	**30**	0.65	45	44.9	7.164

Table 2: Differences in fabric parameters.

Warp material code	Weft material code	Machine setts		Thickness	Areal mass
		warp[1/10cm]	weft[1/10cm]	[mm]	[g/m^2]
1	**16**	180	72	0.78	146.5
2	**17**	180	180	0.725	183.15
3	**18**	180	180	0.9	204.9
4	**19**	180	72	0.565	131.15
5	**20**	180	160	0.545	185.6
6	**21**	180	180	0.735	189.35
7	**22**	180	72	0.705	143.9
8	**23**	180	134	0.66	182.75
9	**24**	180	180	0.84	185.25
10	**25**	180	72	0.655	137.85
11	**26**	180	134	0.66	175.4
12	**27**	180	180	0.815	200.85
13	**28**	180	72	0.63	139.4
14	**29**	180	165	0.605	197
15	**30**	180	180	0.78	189.4

Appendix 2

Blade cut resistance test results

N/mm – Work at highest force

mm – Elongation at break

N – Highest force

Blue denotes – Upper and lower limits

Red denotes – Mean

Material code - 1

N/mm	mm	N
21.326	7.198	4.7
32.951	9.914	6.2
20.045	7.438	5.4
31.593	11.445	4.8
34.184	11.493	5.7
29.873	8.558	6.3
28.451	9.493	6
19.784	8.067	5.4
29.503	10.6	6.1
28.557	9.875	5.9
33.5232	**11.0762**	**6.2316**
26.4595	**9.3335**	**5.75**
19.3958	**7.5908**	**5.2684**

Material code - 2

N/mm	mm	N
50.469	20.6	5.636
43.252	18.6	5.529
10.946	7.4	2.946
16.168	9.9	3.523
41.47	17.9	5.58
29.427	14.3	4.79
7.211	5.8	2.368
10.136	17.7	5.319
29.873	8.558	5.3
28.451	9.493	4.544
42.2254	**18.2528**	**5.49835**
26.694	**13**	**4.263**
11.1626	**7.7472**	**3.02765**

Material code - 3

N/mm	mm	N
8.258	2.627	6
14.479	3.681	8.1
30.742	9.864	6
18.866	6.916	5.4
18.259	6.975	5.5
28.028	9.97	5.5
20.665	7.235	5.3
32.159	9.823	5.6
25.968	9.803	4.9
14.88	6.523	4.5
30.2378	**9.67233**	**5.9814**
22.6105	**6.7725**	**5.7**
14.9832	**3.87267**	**5.4186**

Material code - 16

N/mm	mm	N
9.742	5.805	3.1
10.69	5.594	3.3
23.993	10.336	3.7
22.319	6.873	5.8
11.270	5.181	3.6
13.414	6.02	4.1
11.560	5.416	3.7
20.913	7.885	5.2
15.877	9.123	3.6
10.669	6.771	3.1
25.3309	**7.20426**	**4.3072**
16.5045	**6.2335**	**3.7**
7.67809	**5.26274**	**3.0928**

Material code - 17

N/mm	mm	N
6.837	4.282	2.7
11.944	6.705	4
12.188	8.214	2.5
5.907	6.596	2.4
8.311	11.683	1.6
6.169	4.126	2.5
14.291	3.155	9.5
8.414	4.603	3.1
9.792	5.785	3.1
10.79	5.594	3.3
12.0014	**8.08727**	**3.9504**
9.1785	**6.17**	**3.2**
6.35559	**4.25273**	**2.4496**

Material code - 18

N/mm	mm	N
8.001	4.442	3
38.212	5.728	13.3
11.574	3.364	6.7
20.527	4.097	10.7
8.753	4.239	3.7
18.004	4.152	9
9.881	6.224	3.4
9.801	4.706	3.6
11.944	6.705	4
12.188	6.214	6.5
20.162	**5.67744**	**10.4737**
14.64	**4.9125**	**7.05**
9.11799	**4.14756**	**3.6263**

Material code - 4

N/mm	mm	N
33.689	10.971	5.4
15.938	7.014	4.7
16.493	6.498	4.5
19.717	6.558	5.2
25.368	9.803	4.9
14.4	6.596	4.5
17.945	4.254	9
23.332	7.848	4.7
16.349	6.118	5.5
19.784	6.558	4.2
25.0757	**9.70055**	**5.3721**
20.653	**8.1505**	**4.95**
16.2303	**6.60046**	**4.5279**

Material code - 19

N/mm	mm	N
6.421	3.761	2.5
7.765	2.522	6
13.127	6.493	3.4
9.301	4.756	3.5
6.802	4.075	2.8
6.053	4.144	2.5
6.757	4.228	2.8
8.482	4.914	3.3
9.010	4.611	3.5
6.845	4.075	3.8
9.21172	**4.87826**	**3.469**
7.861	**4.3375**	**3**
6.51028	**3.79674**	**2.531**

Material code - 5

N/mm	mm	N
20.312	4.302	10.2
21.853	9.119	4.3
21.479	8.132	4
39.147	5.574	16
42.606	5.942	17.3
23.606	7.245	5.8
19.583	4.046	10.7
21.503	9.988	4.3
21.902	8.365	4
19.147	5.551	15
40.0888	**8.3235**	**16.585**
29.7295	**6.217**	**10.15**
19.3703	**4.1105**	**3.715**

Material code - 20

N/mm	mm	N
2.548	1.261	3.1
4.921	2.925	2.7
3.596	2.397	2.2
5.938	3.042	2.8
6.156	3.444	3
6.816	7.694	2.4
4.926	3.604	2.4
4.129	2.415	2.7
3.776	2.722	2.3
5.956	3.066	2.9
6.284	**3.66435**	**3.03**
4.876	**3.0005**	**2.7**
3.468	**2.33665**	**2.37**

Material code - 6

N/mm	mm	N
26.198	11.693	10.2
51.358	13.061	16.6
41.916	14.727	7.6
35.408	8.707	8.4
78.187	14.386	19.9
62.919	18.58	8.3
77.091	19.473	10.2
51.008	13.077	16.6
41.176	14.469	8.6
55.408	8.744	9.4
79.1752	**18.9244**	**17.015**
56.2495	**15.1365**	**12.45**
33.3239	**11.3487**	**7.885**

Material code - 21

N/mm	mm	N
22.704	7.304	7.1
13.855	4.622	5.7
22.363	6.516	6.4
17.313	5.724	5.5
20.894	6.88	6.5
15.728	3.995	7.3
21.2	7.092	6.2
20.128	6.249	5.9
22.883	6.516	6.5
16.313	5.725	5.6
22.1573	**7.01543**	**7.0566**
19.0455	**5.857**	**6.4**
15.9337	**4.69857**	**5.7434**

Material code - 7

N/mm	mm	N
46.552	10.966	21.5
54.738	11.178	23.5
51.284	10.71	22.9
40.24	10.285	19.3
31.919	13.829	7.2
49.819	10.392	25.5
26.525	12.629	6.6
33.245	14.515	7.5
54.036	12.797	18.5
45.948	13.84	9.8
52.2523	**12.7409**	**24.315**
41.6015	**11.5105**	**15.35**
30.9508	**10.2802**	**6.385**

Material code - 8

N/mm	mm	N
15.693	4.427	7.7
49.719	12.581	16.6
34.583	6.201	14.2
26.186	10.862	10.3
45.948	13.84	9.8
34.311	7.51	7.8
16.593	3.782	8.2
34.583	6.201	14.2
26.556	10.762	11.3
55.948	13.224	9.8
47.4158	**12.9887**	**14.52**
31.2705	**8.504**	**11**
15.1253	**4.0193**	**7.48**

Material code - 9

N/mm	mm	N
33.245	14.515	7.5
54.036	12.797	18.5
58.396	19.628	6.5
56.395	12.908	19.2
54.745	13.22	19.2
53.067	12.131	8
33.126	9.649	6.8
46.823	17.15	6.5
30.263	10.805	13.1
40.961	13.263	8.7
55.6774	**16.9944**	**18.8063**
44.82	**14.6405**	**12.85**
33.9627	**12.2866**	**6.8937**

Material code - 22

N/mm	mm	N
19.707	6.461	5.7
27.527	4.167	17
35.923	4.749	17.8
15.789	5.933	5
28.811	4.583	15.1
27.849	4.687	13.9
34.583	6.201	14.2
26.186	10.862	10.3
17.818	7.245	4.6
26.525	12.629	6.6
31.1689	**6.28265**	**19.9267**
24.259	**5.258**	**11.35**
17.3491	**4.23335**	**2.7733**

Material code - 23

N/mm	mm	N
18.013	6.358	5.6
58.41	6.697	19.5
29.269	7.148	7.8
18.012	3.891	9.9
20.992	7.143	5.2
21.888	6.567	5.9
41.394	5.631	16
33.126	9.649	6.8
26.673	4.891	12.1
29.269	7.148	7.8
42.5631	**7.2186**	**16.52**
29.7035	**6.387**	**10.8**
16.844	**5.5554**	**5.08**

Material code - 24

N/mm	mm	N
14.384	5.194	5.1
17.818	7.245	4.6
18.924	6.46	5.6
26.673	4.891	12.1
13.104	5.086	4.8
16.205	6.663	4.9
17.403	6.875	4.2
24.451	4.004	14.2
23.425	6.04	8.1
23.82	10.299	7.4
24.1389	**6.8135**	**11.8675**
19.4175	**5.883**	**8.35**
14.6961	**4.9525**	**4.8325**

Material code - 10

N/mm	mm	N
35.43	11.066	16.2
25.052	10.749	8.1
23.68	9.963	11.3
54.871	16.208	7.8
30.263	10.805	13.1
40.961	13.263	8.7
41.856	13.683	8.3
36.251	10.779	5.4
30.563	10.665	13.1
42.861	13.269	8.7
42.6962	**13.8297**	**13.35**
33.454	**12.216**	**10.6**
24.2118	**10.6023**	**7.85**

Material code - 11

N/mm	mm	N
26.068	10.943	10.4
22.739	10.63	8.9
44.342	15.249	9.1
49.214	15.47	9.4
55.391	17.151	8.1
60.837	13.005	18.4
53.129	6.104	23
28.734	10.08	16.4
37.255	11.649	8.1
32.421	11.035	6.2
62.9857	**16.6425**	**10.7885**
40.7295	**13.2065**	**9.65**
18.4733	**9.77051**	**8.5115**

Material code - 12

N/mm	mm	N
15.364	6.659	4.7
17.44	6.766	5
28.734	10.08	16.4
29.363	15.327	5.4
21.756	13.546	5.7
24.301	11.515	9.5
40.432	12.153	17
30.759	10.269	16.1
26.557	11.504	10.5
22.687	10.974	9.8
30.3461	**13.3358**	**16.0466**
24.0995	**10.156**	**10.7**
17.8529	**6.97618**	**5.3534**

Material code - 25

N/mm	mm	N
36.251	10.779	5.4
49.015	6.111	18.9
23.485	7.04	6.4
25.044	7.781	4.7
26.372	4.785	13
46.608	5.955	17.4
22.898	4.521	10.4
41.277	9.603	6.8
25.425	6.095	8.3
33.82	10.007	7.7
47.7642	**7.9308**	**18**
35.0465	**6.283**	**11.4**
22.3289	**4.6352**	**4.8**

Material code - 26

N/mm	mm	N
31.098	9.459	6.1
42.524	11.937	7.5
37.255	11.559	8.1
31.277	9.981	6.8
23.425	6.04	8.1
33.82	10.299	7.4
32.276	10.296	6.9
32.052	10.189	6.4
28.811	8.973	6.3
31.889	9.981	6.8
34.3317	**10.4569**	**7.7068**
32.459	**9.879**	**6.95**
30.5863	**9.30108**	**6.1932**

Material code - 27

N/mm	mm	N
44.507	6.208	19.4
25.13	4.731	12.8
45.706	5.845	19.8
13.204	3.835	6.9
29.404	11.555	4.4
53.129	6.104	23
20.566	8.552	5.2
32.289	12.193	4.8
36.855	13.765	5.1
29.881	11.362	6.5
44.9267	**11.3435**	**19.335**
33.136	**8.143**	**12.3**
21.3453	**4.94254**	**5.265**

Material code - 13

N/mm	mm	N
28.595	8.771	6.4
29.622	8.975	6.3
35.993	10.395	6.6
59.303	7.374	19.8
49.829	7.055	17.9
44.174	8.848	21
52.156	6.154	22.9
33.462	9.403	7
27.445	5.152	12.4
39.183	10.869	6.6
51.4574	**9.33021**	**20.5474**
40.889	**8.229**	**13.7**
30.3206	**7.12779**	**6.8526**

Material code - 14

N/mm	mm	N
17.252	6.298	5.8
40.401	11.347	6
43.758	6.573	16.9
40.623	6.263	15.9
18.501	4.521	9.3
38.014	11.4	5.5
32.772	10.611	6.1
32.671	5.623	13.6
21.872	7.821	5.5
27.235	5.152	12.5
41.7291	**11.6012**	**16.405**
29.562	**8.805**	**10.85**
17.3949	**6.0088**	**5.295**

Material code - 15

N/mm	mm	N
21.618	7.55	6.4
25.363	5.051	11.3
37.89	11.191	6.3
33.969	5.833	14.2
22.678	7.767	6.1
28.334	5.359	13.2
20.425	4.315	10.1
25.876	9.824	11.4
29.688	7.649	10.8
23.351	5.422	6.5
34.5866	**7.9028**	**13.545**
27.7935	**6.409**	**9.75**
21.0005	**4.9152**	**5.955**

Material code - 28

N/mm	mm	N
57.69	7.054	20.6
22.351	6.975	6.7
32.421	11.035	6.2
20.207	8.128	5.8
69.291	7.642	20.3
37.198	11.186	6
76.137	7.621	24.9
41.401	11.347	6.8
43.228	6.573	17.9
38.623	6.263	15.9
71.638	**11.2341**	**21.33**
45.821	**9.0445**	**13.3**
20.004	**6.85495**	**5.27**

Material code - 29

N/mm	mm	N
23.784	8.24	6.3
32.671	5.623	13.6
17.936	4.366	9.2
20.89	8.025	5.9
27.235	5.152	12.5
39.993	10.769	6.8
13.724	4.201	6.7
22.428	7.887	6.1
21.618	7.246	6.9
28.664	5.119	10.2
33.4078	**8.4337**	**12.81**
25.3035	**6.303**	**9.4**
17.1993	**4.1723**	**5.99**

Material code - 30

N/mm	mm	N
19.059	7.924	5.7
21.872	7.821	5.5
27.505	9.343	6.2
19.354	7.764	6
19.89	4.363	9.9
14.189	3.946	7.7
12.893	3.681	7.1
16.849	6.598	6.2
20.351	5.494	5.7
14.567	6.872	6.1
22.2562	**8.1229**	**7.8**
18.0305	**5.935**	**6.7**
13.8049	**3.7471**	**5.6**

Appendix 3

Ball bursting test results

N/mm – Work at highest force

mm – Elongation at break

N – Highest force

Blue denotes – Upper and lower limits

Red denotes – Mean

Material code - 1

N/m	mm	N
3.446	15.521	724.7
3.997	15.984	794.1
4.099	16.122	799.4
3.91	15.972	778.9
4.218	16.201	825.6
4.068	16.209	792.7
3.979	16.194	793.4
4.033	16.169	792.8
3.998	16.145	796.2
4.135	16.375	811
4.10176	**16.206**	**799.554**
4.039	**16.0925**	**796.05**
3.97624	**15.979**	**792.546**

Material code - 2

N/m	mm	N
0.592	7.186	270.4
0.77	7.771	330.1
0.811	7.888	349.2
0.637	7.42	283.9
0.742	7.743	318.5
0.743	7.684	331.1
0.641	7.501	285.8
0.835	8.108	351.7
0.724	7.387	325.2
0.635	7.381	280.2
0.77306	**7.77983**	**332.186**
0.7035	**7.579**	**307.5**
0.63394	**7.37817**	**282.814**

Material code - 3

N/m	mm	N
1.947	11.717	512.8
2.055	12.044	516.1
1.73	11.272	486.6
1.768	11.487	477.4
2.015	11.853	505
2.222	12.174	545.5
1.965	11.751	507.6
2.129	12.15	520.9
2.014	11.881	507.8
1.639	11.02	469.5
2.0616	**12.0568**	**516.779**
1.9115	**11.7655**	**501.35**
1.7614	**11.4742**	**485.922**

Material code - 16

N/m	mm	N
4.153	15.856	799.3
3.8	15.47	760.7
3.989	15.594	793.4
3.868	15.392	773.8
4.076	15.806	807.2
4.47	16.08	848.3
3.833	15.49	775.1
4.037	15.703	784.1
3.787	15.351	834.7
4.031	16.065	760.7
4.08159	**15.8649**	**807.968**
3.9545	**15.663**	**790.5**
3.82741	**15.4611**	**773.032**

Material code - 17

N/m	mm	N
0.797	7.792	339.3
0.692	7.498	304.6
0.818	7.871	350.7
0.839	7.875	362
0.682	7.532	302.3
0.762	7.859	327
0.67	7.587	301.2
0.711	7.701	312.3
0.785	7.811	346.5
0.761	7.908	323.6
0.79942	**7.87753**	**347.464**
0.7445	**7.729**	**325.55**
0.68959	**7.58047**	**303.636**

Material code - 18

N/m	mm	N
2.364	12.434	569.4
2.173	12.117	540
2.555	12.861	577.5
2.078	12.076	533.1
2.204	12.117	544.8
2.25	12.439	549.4
2.057	11.397	521.2
2.138	12.021	540
2.49	12.643	570.6
2.26	12.233	556.2
2.3692	**12.4473**	**570.076**
2.251	**12.2575**	**554.7**
2.1328	**12.0677**	**539.324**

Material code - 4

N/m	mm	N
1.302	9.697	403.6
1.131	9.437	365.9
0.997	9.075	359.1
1.285	9.696	410.9
0.991	9.076	361
1.306	9.93	408.2
1.104	9.44	378.8
1.147	9.399	392.7
1.022	9.18	361.1
1.083	9.333	369.8
1.29105	**9.70787**	**404.578**
1.1535	**9.438**	**382.35**
1.01595	**9.16813**	**360.123**

Material code - 19

N/m	mm	N
0.891	8.712	334.3
0.994	9.042	360.7
0.904	8.612	349.8
1.106	9.411	381
0.946	8.919	344.9
1.157	9.542	395
0.945	8.892	347.3
1.174	9.34	387.7
1.281	9.702	416.6
1.088	9.337	381.9
1.16188	**9.42294**	**388.629**
1.051	**9.1515**	**367.5**
0.94012	**8.88006**	**346.371**

Material code - 5

N/m	mm	N
1.775	10.394	624.1
1.99	10.665	683.7
1.895	10.654	646.5
1.977	10.713	670.3
1.922	10.73	662.3
1.916	10.605	660.1
1.889	10.658	643.3
1.36	10.714	669.7
1.874	10.609	650.9
1.76	10.393	625.7
1.92538	**10.7155**	**670.307**
1.8485	**10.659**	**656.5**
1.77162	**10.6025**	**642.693**

Material code - 20

N/m	mm	N
1.066	8.92	405.4
0.901	8.712	350.7
0.871	8.48	323.4
0.916	8.734	351.8
0.975	8.866	374
0.772	8.315	317.3
0.991	8.554	396.4
0.877	8.458	351.2
0.848	8.431	340.4
0.93	8.779	359.9
0.97739	**8.78638**	**374.773**
0.923	**8.6185**	**357.2**
0.86861	**8.45062**	**339.627**

Material code - 6

N/m	mm	N
7.236	18.551	1167
6.96	17.989	1186
7.259	18.162	1216
7.104	17.693	1241
7.369	18.267	1231
6.97	18.051	1187
7.125	18.033	1200
7.01	18.058	1207
7.215	17.902	1219
7.294	18.008	1167
7.26473	**18.166**	**1219.76**
7.1345	**18.0755**	**1202.5**
7.00427	**17.985**	**1185.24**

Material code - 21

N/m	mm	N
6943	17.975	1175
6.786	17.767	1167
7.399	18.269	1235
6.676	17.436	1161
6.684	17.625	1152
7.281	18.185	1209
6.587	17.775	1142
7.345	18.323	1211
6.989	18.026	1185
6.483	17.636	1147
7.36039	**18.1976**	**1210.31**
7.0105	**17.9105**	**1180.5**
6.66061	**17.6234**	**1150.69**

Material code - 7

N/m	mm	N
1.461	8.975	595.7
1.563	8.986	643.3
1.488	9.003	607.5
1.466	8.884	603.3
1.576	9.137	640
1.53	9.11	614.6
1.608	9.297	644.3
1.473	8.9	614
1.531	9.138	625.2
1.539	9.192	618.3
1.56507	**9.14175**	**640.748**
1.518	**9.0565**	**623.75**
1.47093	**8.97125**	**606.753**

Material code - 8

N/m	mm	N
3.542	13.426	790.8
3.435	13.448	767.5
3.203	13.166	746.3
3.07	13.195	719.8
3.516	13.49	767.1
3.783	13.866	814.9
3.591	13.417	781
3.234	13.079	751.4
3.857	13.811	815
3.29	13.29	763.4
3.59921	**13.4968**	**791.706**
3.4125	**13.3425**	**771.1**
3.22579	**13.1882**	**750.494**

Material code - 9

N/m	mm	N
1.571	10.289	534.7
2.009	11.199	601.7
1.63	10.553	510.2
1.842	10.942	567.5
1.821	10.788	560.5
1.911	11.023	582.2
1.968	10.893	598.5
1.929	10.865	597.3
1.555	10.554	520.1
1.568	10.391	526.1
1.93723	**10.9509**	**598.938**
1.75	**10.7475**	**561.7**
1.56277	**10.5441**	**524.462**

Material code - 22

N/m	mm	N
1.496	9.132	610
1.524	9.098	623
1.412	8.903	587.2
1.648	9.349	653.1
1.172	8.226	516.8
1.648	9.194	667
1.483	9.008	599
1.6	9.295	615
1.545	9.113	627.5
1.624	9.295	647.4
1.64769	**7.49816**	**404.779**
1.5535	**9.1515**	**623.2**
1.47976	**9.0014**	**597.887**

Material code - 23

N/m	mm	N
3.286	13.439	762.4
3.34	13.782	771.5
4.114	14.349	851.4
3.365	13.475	773.6
3.292	13.37	761.7
3.325	13.517	746.3
3.442	13.66	768.7
3.491	13.789	774.4
3.788	14.076	809.3
3.158	13.179	752.3
3.49558	**13.7971**	**774.692**
3.3915	**13.614**	**768.05**
3.28742	**13.431**	**761.408**

Material code - 24

N/m	mm	N
1.866	10.864	583.1
1.663	10.604	556
1.898	11.018	591.9
1.916	11	580.3
1.828	10.977	556.9
1.769	10.887	548.5
1.617	10.678	519.3
1.895	11.023	552.6
1.916	11.127	557.4
1.586	10.464	526.4
1.90341	**11.0258**	**581.031**
1.7805	**10.848**	**564.4**
1.6576	**10.6702**	**547.769**

Material code - 10

N/m	mm	N
1.906	10.398	664.2
1.699	10.207	606
1.922	10.428	679.6
1.949	10.555	673.1
1.911	10.399	675.2
1.733	9.776	647.2
1.815	10.209	653
1.885	10.394	660.6
1.902	10.298	674
1.756	10.088	630.3
1.91457	**10.4034**	**674.616**
1.8335	**10.303**	**660.6**
1.75244	**10.2026**	**646.584**

Material code - 25

N/m	mm	N
0.916	8.621	355.8
0.904	8.661	348.9
0.87	8.531	336.4
0.921	8.778	353.3
0.781	8.293	310.3
0.784	8.301	314.7
0.823	8.193	339.9
0.824	8.43	327.7
0.924	8.687	352.2
0.844	8.505	338.4
0.91814	**8.66928**	**352.764**
0.8695	**8.481**	**339.95**
0.82086	**8.29272**	**327.137**

Material code - 11

N/m	mm	N
9.214	17.894	1488
9.141	17.76	1499
9.2	17.859	1509
9.489	18.187	1546
8.901	17.563	1483
9.582	18.179	1539
9.866	18.391	1558
9.277	18.084	1518
9.479	18.002	1537
9.623	18.152	1552
9.59079	**18.1864**	**1547.08**
9.391	**18.019**	**1522.5**
9.19121	**17.8516**	**1497.92**

Material code - 26

N/m	mm	N
8.27	17.701	14.25
8.653	17.861	1449
8.661	17.718	1446
9.234	18.19	1503
9.413	18.024	1533
9.042	17.81	1490
9.422	18.021	1541
9.408	18.122	1520
9.446	18.094	1548
9.598	18.242	1523
9.4395	**18.1292**	**1534.93**
9.0415	**17.966**	**1491**
8.6435	**17.8028**	**1447.07**

Material code - 12

N/m	mm	N
0.967	7.569	396
1.12	7.954	473.8
1.025	7.743	447.8
1.147	7.91	464.1
1.026	7.649	454
1.116	7.743	476.6
1.148	7.88	477.5
1.077	7.778	452.5
1.077	7.808	465.3
1.025	7.747	416.8
1.12219	**7.88315**	**474.398**
1.0725	**7.8115**	**460.8**
1.02282	**7.73985**	**447.202**

Material code - 27

N/m	mm	N
0.992	7.758	422
0.945	7.504	433.1
1.087	7.776	468.1
0.994	7.617	425.2
0.937	7.612	388.8
0.932	7.702	413.3
1.081	7.708	451.8
0.945	7.783	405.6
0.891	7.496	375
0.936	7.12	441.3
0.99533	**7.76384**	**442.121**
0.965	**7.631**	**423.45**
0.93467	**7.49816**	**404.779**

Material code - 13

N/m	mm	N
3.706	12.951	853
3.9	13.081	897.9
4.203	13.608	925
4.38	13.294	959
4.17	13.682	880.9
4.053	13.301	889.4
4.15	13.289	921
4.04	12.985	922.1
4.355	13.239	952.5
4.152	12.983	920.8
4.20675	**13.3083**	**925.819**
4.1215	**13.143**	**907.2**
4.03625	**12.9777**	**888.581**

Material code - 14

N/m	mm	N
1.95	10.328	622.3
1.723	9.874	577
1.704	10.065	580.1
1.749	10.165	586
1.787	10.159	592.1
1.84	9.976	590.8
1.927	10.065	632.6
1.833	10.036	611.8
2.074	10.691	653.7
1.752	10.184	576.5
1.93109	**10.1874**	**623.271**
1.838	**10.11**	**601.2**
1.74491	**10.0326**	**579.129**

Material code - 15

N/m	mm	N
1.183	8.725	458.8
1.407	9.108	524.1
1.404	9.036	531.3
1.286	9.054	492.9
1.364	8.902	522.9
1.247	8.697	492.3
1.286	8.797	502.7
1.384	7.854	526.7
1.381	8.982	522.6
1.302	8.839	496.2
1.38625	**9.04315**	**524.818**
1.335	**8.8805**	**508.5**
1.28375	**8.71785**	**492.182**

Material code - 28

N/m	mm	N
4.251	13.601	900.8
3.652	12.967	861.6
4.177	12.996	921.5
3.768	13.275	865.1
4.56	13.834	959
3.992	13.328	883.1
4.044	13.147	899.8
4.787	14.064	975.4
4.317	13.706	909.2
4.418	13.684	908.7
4.4278	**13.7189**	**922.383**
4.205	**13.4265**	**902.3**
3.9822	**13.1341**	**882.217**

Material code - 29

N/m	mm	N
1.756	10.163	586
1.814	10.132	596.2
1.736	10.154	567.4
1.631	9.741	558.7
1.691	9.824	565.1
2.034	10.836	634.7
1.872	10.273	620.6
1.749	9.955	579.3
1.866	10.189	591.1
1.89	10.269	602.7
1.87513	**10.2762**	**603.512**
1.804	**10.112**	**585.05**
1.73287	**9.94778**	**566.588**

Material code - 30

N/m	mm	N
1.572	9.451	570.7
1.244	8.683	463.5
1.282	8.924	486.9
1.32	8.924	499.4
1.219	8.783	463.2
1.293	8.849	485.6
1.192	8.648	462.2
1.523	9.435	521.9
1.426	9.192	518
1.283	8.807	457.3
1.43019	**9.20141**	**519.26**
1.335	**8.9875**	**490.6**
1.23981	**8.77359**	**461.94**

Appendix 4

Tensile strength test results

N/mm – Work at highest force

mm – Elongation at break

% - Elongation at highest strength

N – Highest force

N/mm – Work at break

Blue denotes – Upper and lower limits

Red denotes – Mean

Material code - 1

N / mm	mm	%	N	N/mm
53127.2	82.084	41.042	1352.1	74757.61
62899.6	89.012	44.506	1346.3	78525.32
57276.04	85.28	42.64	1386.8	71542.39
53742.28	83.03	41.515	1305.6	69713.1
59436.16	87.914	43.957	1317.2	72015.83
51741.78	81.529	40.764	1277.8	69816.33
55657.11	84.709	42.354	1297.5	68635.4
57657.04	87.579	43.79	1201.6	72214.83
49635.29	80.062	40.031	1283	67755.88
48232.06	76.681	38.34	1258.1	55462.71
57793.09	**87.71815**	**43.8596**	**1347.876**	**72297.15**
54699.41	**84.554**	**42.277**	**1312.05**	**70425.11**
51605.73	**81.38985**	**40.6944**	**1276.225**	**68553.08**

Material code - 2

N / mm	mm	%	N	N/mm
8252.957	19.827	9.913	924	10082.15
8895.053	20.586	10.293	981.4	9752.145
8851.062	20.004	10.002	993.5	9525.016
8027.432	19.998	9.999	894.7	10379.89
5900.678	17.457	8.729	820.3	9486.835
8636.443	20.228	10.114	1002.3	12791.38
7688.935	19.936	9.968	901.2	10072.61
7996.95	19.622	9.811	983.7	10655.47
8659.505	19.948	9.974	1001.4	9810.561
7637.636	19.028	9.514	841.2	8473.723
8681.828	**20.01279**	**10.00639**	**995.7724**	**10399.55**
8174.22	**19.813**	**9.9065**	**944.1**	**9952.451**
7666.612	**19.61321**	**9.806607**	**892.4276**	**9505.354**

Material code - 3

N / mm	mm	%	N	N/mm
12506.63	34.724	17.362	888.4	26251.37
18817.4	42.809	21.404	964.5	30123.7
15066.79	39.227	19.614	934.7	26716.23
18497.46	42.841	21.42	947.1	26287.63
18225.82	43.505	21.753	892.9	29267.72
17328.69	42.112	21.056	963.1	25864.55
14477.21	40.6	20.3	824.9	24490.07
18628.43	43.596	21.798	955.5	27111.59
17383.88	42.346	21.173	949.6	27239.93
17418.36	42.188	21.094	929.3	25515.6
18576.36	**42.89254**	**21.44576**	**956.9398**	**27271.56**
16782.12	**41.7205**	**20.86**	**924.2**	**26552.24**
14987.89	**40.54846**	**20.27424**	**891.4602**	**25832.91**

Material code - 16

N / mm	mm	%	N	N/mm
14217.16	59.424	29.712	436.45	18804.38
13353.46	54.912	27.456	460.88	19288.39
14490.35	56.804	28.402	485.98	20170.13
14683.99	58.668	29.334	476.29	20269.99
12784.08	53.743	26.872	432.94	16810.55
10416.76	49.768	24.884	404.15	16942.8
11929.42	53.685	26.843	421.28	17856.34
12137.35	54.917	27.458	421.42	18786.52
11732.64	51.361	25.681	435.75	17900.4
13967.39	58.443	29.222	441.34	18930.6
14269.78	**58.55243**	**29.27672**	**461.7876**	**19321.32**
13073.29	**56.064**	**28.0325**	**441.15**	**18572.37**
11876.8	**53.57557**	**26.78828**	**420.5124**	**17823.41**

Material code - 17

N / mm	mm	%	N	N/mm
2225.209	20.169	10.085	290.63	4439.578
2819.763	20.49	10.245	333.45	4965.865
2467.028	18.844	9.422	305.12	4356.27
2810.321	20.536	10.268	339.27	3153.356
2879.377	19.198	9.599	344.62	3320.07
2045.607	20.204	10.102	252.73	4715.923
2490.178	17.698	8.849	322.65	3139.314
3079.347	21.252	10.626	354.43	3378.693
3246.059	22.951	11.476	350.96	5375.917
2216.017	-62.131	-31.066	278.71	4188.3
2894.423	**20.57492**	**10.28746**	**345.8618**	**4978.343**
2552.293	**19.69**	**9.845**	**317.625**	**4017.997**
2210.163	**18.80508**	**9.402542**	**289.3882**	**3057.65**

Material code - 18

N / mm	mm	%	N	N/mm
5991.896	34.129	17.065	352.32	12061.23
7511.961	38.189	19.094	379.27	11705.44
7107.778	37.446	18.723	376	11403.32
7405.328	38.582	19.291	379.16	12416.27
7361.793	37.808	18.904	361.05	11124.21
6351.193	36.625	18.313	366.62	11205.08
7117.093	35.235	17.618	371.01	11285.94
7618.955	39.647	19.823	373.13	10439.65
7697.605	37.197	18.598	396.65	13222.62
8564.037	40.327	20.163	371.19	11455.79
7630.712	**38.62701**	**19.31349**	**379.4484**	**12080.93**
7363.367	**37.6035**	**18.802**	**372.89**	**11633.16**
7096.021	**36.57999**	**18.29051**	**366.3316**	**11185.39**

Material code - 4

N / mm	mm	%	N	N/mm
10527.04	28.89	14.445	851.5	11467.34
9806.184	27.451	13.726	853.5	10813.2
9574.993	28.936	14.468	848.1	10167.68
9792.766	27.888	13.944	878.4	10218.85
9276.046	29.259	14.63	795.4	9491.03
10534.26	30.051	15.026	867.9	11803.87
9159.678	28.719	14.359	821.4	10535.86
10798.04	31.756	15.878	874.1	11267.72
11130.31	32.426	16.213	890.2	11659.9
12300.2	33.33	16.665	897.4	13024.87
10826.17	**31.82585**	**15.91294**	**879.0969**	**11693.04**
10186.52	**30.2375**	**15.1185**	**863.25**	**10939.37**
9546.863	**28.64915**	**14.32406**	**847.4031**	**10185.7**

Material code - 5

N / mm	mm	%	N	N/mm
8857.01	26.973	13.486	837.4	9883.316
10775.45	31.108	15.554	889.1	11161.88
10203.12	29.742	14.871	893.5	12270.9
10542.97	29.589	14.795	914.2	12164.29
8175.757	27.206	13.603	737.5	9594.365
11565.54	30.198	15.099	977.8	12245.22
10484.81	28.886	14.443	919.7	10588.09
11605.69	30.076	15.038	961.9	12461.4
10205.47	28.421	14.21	893.3	10589.61
10261.24	29.078	14.539	890.6	11114.17
10788.62	**30.11407**	**15.05704**	**920.4038**	**12283.33**
10489.29	**29.2485**	**14.624**	**904.4**	**11416.66**
10189.96	**28.38294**	**14.19096**	**888.3962**	**10549.98**

Material code - 6

N / mm	mm	%	N	N/mm
61813.22	96.785	48.393	1285.3	69986.5
63471.97	101.413	50.707	1317.5	75795.65
71985.08	108.305	54.153	1346.2	87595
66021.27	99.289	49.645	1360	83720.39
63285.95	101.336	50.668	1322.9	85123.35
57606.94	98.481	49.241	1215	71565.34
61552.39	95.508	47.754	1301.8	70861.79
59804.51	95.025	47.513	1276.4	72845.94
62821.01	99.709	49.854	1246	79213.03
73764.14	107.275	53.638	1276.1	77011.75
66124.06	**101.5194**	**50.76022**	**1323.976**	**83999.95**
63786.83	**99.099**	**49.55**	**1299.5**	**77642.86**
61449.6	**96.67856**	**48.33978**	**1275.024**	**71285.77**

Material code - 19

N / mm	mm	%	N	N/mm
4346.296	29.895	14.948	341.35	5114.623
3633.111	28.373	14.186	308.14	5760.668
4051.871	28.423	14.212	327.19	7195.059
3777.958	28.705	14.352	313.44	6577.107
4118.424	29.836	14.918	329.67	5074.882
3725.839	27.788	13.894	319.01	5372.314
4123.46	29.278	14.639	327.01	5630.754
3506.109	27.929	13.965	286.85	4806.303
3944.087	29.197	14.599	313.83	6068.613
3868.868	28.816	14.408	308.12	4721.578
4127.453	**29.29882**	**14.64942**	**327.6282**	**6091.469**
3922.132	**28.8255**	**14.4125**	**317.665**	**5571.748**
3716.81	**28.35219**	**14.17558**	**307.7019**	**5052.026**

Material code - 20

N / mm	mm	%	N	N/mm
3521.301	29.044	14.522	311.16	4196.289
3753.461	27.838	13.919	342.31	5556.303
4013.534	27.64	13.82	335.8	4593.452
3413.828	25.748	12.874	326.8	4917.253
3664.88	27.574	13.787	334.68	5108.765
3878.634	26.725	13.362	355.92	4268.235
3554.517	27.27	13.635	315.81	6103.369
3519.341	27.002	13.501	329.36	5453.602
3667.02	29.717	14.858	329.89	3947.103
3538.782	27.813	13.906	309.13	4009.08
3758.801	**27.85723**	**13.92861**	**336.2598**	**5482.52**
3637.381	**27.42**	**13.71**	**325.805**	**4824.946**
3515.961	**26.98277**	**13.49139**	**315.3502**	**4167.371**

Material code - 21

N / mm	mm	%	N	N/mm
38300.41	72.827	36.414	991	43782.32
36206.61	68.965	34.482	1008.5	43426.18
43366.77	75.627	37.813	1085.4	52902.36
43711.83	75.835	37.917	1038.9	47367.7
39496.32	71.862	35.931	1039.5	42213.22
44064.5	77.849	38.924	1038.4	46996.86
40992.43	75.514	37.757	991.6	44207.34
32985.2	69.125	34.563	907	39387.1
38349.23	70.438	35.219	1039.4	41366.53
41235.13	72.774	36.387	1034.7	44186.22
43483.3	**75.74635**	**37.87266**	**1040.499**	**47106.88**
40833.59	**73.0325**	**36.516**	**1015.5**	**44605.04**
38183.88	**70.31865**	**35.15934**	**990.5006**	**42103.19**

Material code - 7

N / mm	mm	%	N	N/mm
9300.234	25.638	12.819	1010.4	10369.13
9034.464	25.43	12.715	977.9	9507.914
8203.469	23.786	11.893	987.6	8573.628
8485.311	23.642	11.821	996.5	9153.893
9974.667	26.466	13.233	1062.8	10095.05
8187.811	23.427	11.714	960.3	8386.627
9850.745	25.658	12.829	1034.3	10325.44
10022.65	26.417	13.208	1028.2	10932.72
8880.797	26.046	13.023	981.2	9621.235
10248.19	27.077	13.538	1015.8	10304.81
10008.92	**26.47751**	**13.23825**	**1029.281**	**10352.39**
9229.989	**25.1015**	**12.5505**	**1004.7**	**9739.668**
8451.056	**23.72549**	**11.86276**	**980.119**	**9126.947**

Material code - 8

N / mm	mm	%	N	N/mm
18844.55	46.934	23.467	962.9	27732.98
20838.3	49.299	24.649	1004.5	27406.11
19972.23	48.228	24.114	980.6	25680.29
22377.93	52.737	26.368	1024.6	26624.61
21455.17	52.601	26.301	958.9	26420.05
24696.64	54.832	27.416	988	31341.57
22762.98	52.01	26.005	1013	33695.83
26590	55.219	27.61	1022	29439.19
25134.28	55.612	27.806	969.6	30024.86
20965.76	49.163	24.581	1012.4	27796.07
24785.38	**54.96239**	**27.48121**	**1013.998**	**30103.07**
22767.47	**51.9975**	**25.9985**	**991.3**	**28324.74**
20749.56	**49.03261**	**24.5158**	**968.6018**	**26546.41**

Material code - 9

N / mm	mm	%	N	N/mm
11417.17	38.588	19.294	837.2	12264.9
12424.71	39.335	19.667	866	12884.72
11277.13	40.488	20.244	820.3	11577.43
10050.09	36.662	18.331	774.7	10591.31
12476.97	41.259	20.629	848.2	13517.61
11310.59	40.534	20.267	842.9	11537.23
12424.68	38.863	19.431	871	12661.19
13169.75	42.334	21.167	876.9	13496.21
14235.42	41.845	20.923	900	14382.35
11991.27	38.371	19.185	858.6	13050.74
12503.8	**41.32043**	**20.65971**	**871.7774**	**13540.34**
11893.78	**39.9235**	**19.9615**	**854.1**	**12536.82**
11283.77	**38.52657**	**19.2633**	**836.4226**	**11533.3**

Material code - 22

N / mm	mm	%	N	N/mm
7669.193	25.306	12.653	802.2	8039.403
8340.74	26.124	13.062	814.4	8863.194
8698.925	25.821	12.91	846.2	9266.283
8513.174	25.574	12.787	839.4	9088.62
7881.469	26.455	13.227	779.9	8710.781
8335.411	27.268	13.634	798.9	8498.317
8184.66	27.481	13.741	783.7	8509.938
7900.411	27.707	13.854	775	8319.375
8261.133	25.848	12.924	797.2	8981.678
8272.693	25.499	12.75	855.2	8535.031
8350.868	**27.30696**	**13.65348**	**840.6811**	**8992.795**
8120.576	**26.421**	**13.2105**	**811.55**	**8739.998**
7890.283	**25.53504**	**12.76752**	**782.4189**	**8487.2**

Material code - 23

N / mm	mm	%	N	N/mm
18044.72	47.016	23.508	695	21517.17
15360.97	44.225	22.113	715.2	20490.67
19578.74	50.438	25.219	714.4	23710.29
16718.64	45.617	22.809	708.5	23175.47
19423.79	50.806	25.403	685.1	23713.2
18922.34	49.904	24.952	688.2	22531.13
18752.66	53.627	26.813	636.9	21291.86
15430.05	45.803	22.902	667.1	21569
16782.7	47.776	23.888	674.1	20901.33
16484.78	44.98	22.49	699.4	22937.05
18978.4	**50.54888**	**25.27443**	**709.2912**	**23218.79**
17703.56	**48.0275**	**24.014**	**691.3**	**22233.67**
16428.72	**45.50612**	**22.75357**	**673.3088**	**21248.54**

Material code - 24

N / mm	mm	%	N	N/mm
7873.172	28.659	14.33	650.1	9365.833
7474.902	31.235	15.618	587.6	9544.27
8635.894	31.842	15.921	633.8	11568.78
8481.045	32.104	16.052	640.6	10084.53
8397.97	30.366	15.183	634.6	9197.975
8143.171	33.004	16.502	586.5	8825.732
8822.134	33.493	16.747	606.2	10233.44
8431.449	33.353	16.677	598.6	10375.63
8670.163	34.014	17.007	585.4	10876.5
9035.785	33.529	16.764	610.7	10768.11
8682.284	**33.54493**	**16.77297**	**635.681**	**10800.36**
8406.667	**32.364**	**16.1825**	**611.1**	**10066.97**
8131.05	**31.18307**	**15.59203**	**586.519**	**9333.581**

Material code - 10

N / mm	mm	%	N	N/mm
11984.26	35.867	17.934	914.6	12533.65
13630.97	37.4	18.7	987.5	13736.87
12461.8	36.297	18.149	930.9	12663.88
11902.96	35.577	17.788	901.7	12294.38
11279.04	35.533	17.767	866.7	11279.04
11602.69	37.164	18.582	886.5	11650.46
13687.84	38.822	19.411	959.4	13789.12
13580.35	38.172	19.086	956	13630.89
13313.3	37.578	18.789	936.8	13563.96
10077.92	33.547	16.774	826.4	10122.74
13625.83	**37.62402**	**18.81202**	**957.5985**	**13676.44**
12591.52	**36.5775**	**18.2885**	**921.25**	**12640.68**
11557.2	**35.53098**	**17.76498**	**884.9015**	**11604.91**

Material code - 11

N / mm	mm	%	N	N/mm
40504.86	66.563	33.282	1279.5	56419.91
46140.9	71.004	35.502	1329.1	59351.55
50599.11	75.503	37.751	1349	55716.58
49205.48	75.489	37.744	1243.3	56805.32
44711.53	69.925	34.963	1286.8	56270.57
32674.79	60.65	30.325	1148.4	51795.78
41340.13	65.941	32.971	1276.4	49913.35
49843.46	74.043	37.021	1323.6	57177.73
44536.82	68.991	34.495	1276.6	55786.36
45940.03	69.843	34.922	1350.2	54799.77
49386.38	**74.21504**	**37.107**	**1330.312**	**56851.45**
45272.8	**70.303**	**35.1515**	**1302.75**	**55802.55**
41159.23	**66.39096**	**33.196**	**1275.188**	**54753.64**

Material code - 12

N / mm	mm	%	N	N/mm
6250.4	17.078	8.539	856.2	8246.31
5893.16	15.358	7.679	897	8879.918
6350.695	15.081	7.541	912.9	9916.09
7971.407	17.108	8.554	1020.8	9728.681
7242.892	18.242	9.121	889.9	11144.55
6805.897	15.987	7.994	957.9	9070.65
6657.147	15.51	7.755	933.3	8708.475
5766.793	13.813	6.906	915.5	12764.39
6719.158	15.617	7.808	980	9305.033
6821.14	15.727	7.864	960.6	8570.772
6834.267	**17.11756**	**8.55878**	**962.0628**	**9943.865**
6535.77	**16.218**	**8.109**	**928.8**	**9312.283**
6237.273	**15.31844**	**7.65922**	**895.5372**	**8680.7**

Material code - 25

N / mm	mm	%	N	N/mm
12812.17	38.387	19.194	875.6	13234.31
11589.05	37.584	18.792	824.3	11806.51
11003.62	36.778	18.389	830.2	11183.05
12470.28	37.906	18.953	887.3	12855.54
11837.77	38.568	19.284	819.1	11881.89
12299.6	39.111	19.556	843.4	12571.3
11771.88	37.443	18.722	820.1	12255.3
11502.33	38.706	19.353	843.9	11550.36
12479.15	37.97	18.985	864.5	12850.28
12396.99	38.736	19.368	834.6	12575.87
12490.55	**38.73181**	**19.3659**	**865.4246**	**12874.29**
12029.66	**38.145**	**19.0725**	**844.4**	**12328.4**
11568.78	**37.55819**	**18.7791**	**823.3754**	**11782.5**

Material code - 26

N / mm	mm	%	N	N/mm
23879.62	56.946	28.473	902.3	28601.66
38002.54	67.698	33.849	1167	52653.96
44291.91	70.861	35.431	1250.6	55110.95
61968.4	88.948	44.474	1481.8	71546.2
40309.28	68.226	34.113	1193.4	50913.04
40375.77	73.52	36.76	1148.2	52621.44
46998.78	73.716	36.858	1288.9	54491.88
36857.8	64.918	32.459	1197.2	47856.17
38775.66	69.097	34.549	1121.4	46705.25
37429.76	65.497	32.749	1154.1	48657.03
44449.74	**73.70453**	**36.85225**	**1252.955**	**54644.5**
40860.84	**69.5085**	**34.7545**	**1199.4**	**51174.02**
37271.93	**65.31247**	**32.65675**	**1145.845**	**47703.54**

Material code - 27

N / mm	mm	%	N	N/mm
8724.545	31.078	15.539	894.4	10284.39
9685.491	34.563	17.281	908.1	10687.81
8176.219	32.804	16.402	852.7	10139.81
6464.84	27.58	13.79	743	10459.12
9651.065	30.711	15.356	935.8	10616.74
8638.089	28.588	14.294	877.7	10259.4
7352.726	26.617	13.309	794.3	8143.341
8533.019	27.595	13.797	846.9	9808.913
7664.969	29.162	14.581	790.4	12219.65
9020.475	31.628	15.814	897.7	11513.52
9051.652	**31.72076**	**15.86039**	**900.0782**	**10700.41**
8342.722	**29.6115**	**14.8055**	**846**	**10413.81**
7633.792	**27.50224**	**13.75061**	**791.9218**	**10127.21**

Material code - 13

N / mm	mm	%	N	N/mm
16709.93	41.356	20.678	899.1	23349.47
16413.88	38.405	19.202	950.4	24426.06
15290.95	38.407	19.204	930.4	23509.15
16935.93	38.857	19.428	916	24494.53
16918.68	39.012	19.506	913.2	23660.64
17366.14	39.546	19.773	932.7	24314.15
14390.86	37.35	18.675	917.2	25067.75
16729.64	36.591	18.295	977.8	25493.67
13975.51	34.01	17.005	922.9	21943.64
15183.1	35.082	17.541	907.3	25208.38
16958.6	**39.06768**	**19.53385**	**933.1485**	**25103.6**
16050.89	**37.8015**	**18.9005**	**922.95**	**24288.45**
15143.18	**36.53532**	**18.26715**	**912.7515**	**23473.3**

Material code - 14

N / mm	mm	%	N	N/mm
8139.877	27.253	13.627	781.8	11241.35
9625.215	33.836	16.918	808.8	11089.92
8887.811	27.18	13.59	813.3	11134.18
8640.373	29.776	14.888	783.6	12016.33
9224.937	29.777	14.889	836	10770.24
8056.221	29.016	14.508	789.9	10713.99
8473.678	26.391	13.196	796	10988.05
9043.112	28.213	14.106	822.2	10349.54
7797	25.489	12.745	738.8	10926.05
8837.378	29.341	14.67	805.6	10566.35
9063.886	**29.83571**	**14.91785**	**813.9831**	**11143.84**
8591.495	**28.478**	**14.239**	**798.45**	**10924.08**
8119.103	**27.12029**	**13.56015**	**782.9169**	**10704.32**

Material code - 15

N / mm	mm	%	N	N/mm
8930.325	24.853	12.427	884.5	10427.01
8615.29	24.75	12.375	881.9	10342.23
6091.346	21.033	10.517	693.8	10458.93
8798.94	26.881	13.441	874.9	10176.26
7720.422	23.23	11.615	813.5	9502.268
7933.577	22.559	11.28	857.5	9458.007
7086.371	21.441	10.72	826.5	9598.526
6619.768	21.619	10.809	780.2	9005.16
7695.767	23.71	11.855	831.3	9852.862
8210.668	22.244	11.122	856.7	9549.523
8650.455	**24.82201**	**12.41102**	**876.3122**	**10361.55**
7850.831	**23.1845**	**11.592**	**844.2**	**9922.247**
7051.206	**21.54699**	**10.77298**	**812.0878**	**9482.949**

Material code - 28

N / mm	mm	%	N	N/mm
17192.86	53.158	26.579	731.8	27358.47
15657.47	46.193	23.097	764.5	23800.7
15768.35	46.55	23.275	675.5	20813.03
16383.14	49.03	24.515	795	26982.47
17071.11	46.547	23.274	818.9	25694.51
17813.28	45.643	22.822	822.3	26519.71
18008.85	54.126	27.063	775.3	26292.81
15615.9	45.595	22.798	798.1	25871.15
19393.21	50.43	25.215	789	24713.72
18580.3	49.612	24.806	790.1	24538.68
18060.38	**50.52745**	**25.26371**	**798.8728**	**26565.27**
16888.6	**48.3115**	**24.156**	**781.3**	**25529.19**
15716.82	**46.09555**	**23.04829**	**763.7272**	**24493.12**

Material code - 29

N / mm	mm	%	N	N/mm
7113.624	34.788	17.394	603.4	7739.71
12233.41	45.196	22.598	780.1	14159.11
11462.64	39.017	19.508	822.3	16021.28
11317.62	41.518	20.759	800.1	14296.38
12598.74	39.716	19.858	863.7	16340.34
9745.11	35.984	17.992	769.1	14368.26
12190.23	40.971	20.486	793.8	15169.89
11809.83	42.08	21.04	829.9	14241.81
12040.51	39.545	19.772	856.6	14558.84
11506.45	39.648	19.824	816	15062.86
12210.3	**41.57552**	**20.78777**	**831.0454**	**15191.23**
11753.92	**40.2675**	**20.1335**	**805**	**14705.85**
11297.54	**38.95948**	**19.47923**	**778.9546**	**14220.47**

Material code - 30

N / mm	mm	%	N	N/mm
8344.877	33.538	16.769	759.7	10346.25
11432.33	36.627	18.313	879.5	11887.47
9810.867	36.598	18.299	820.3	10908.38
9768.625	38.237	19.118	787.9	10843.62
10115.86	36.313	18.156	820	11130.26
9899.586	38.636	19.318	776	11165
9899.912	37.038	18.519	802.6	11087.27
9573.08	35.557	17.778	802	11359.25
8917.929	34.806	17.403	789.6	11046.58
9706.424	34.821	17.41	829.7	10913.74
9907.429	**37.08899**	**18.54451**	**821.0452**	**11170.9**
9736.496	**35.9295**	**17.9645**	**804.1**	**11036.69**
9565.563	**34.77001**	**17.38449**	**787.1548**	**10902.48**

Appendix 5

MATLAB program for calculating area under stress-strain curve

```
% cut data
clc;
clear all;
pobr=1;
format compact;
warning off all;
warning('off','MATLAB:dispatcher:InexactMatch');
clear,clc;
load 01a.txt
   x1=X01a(:,2);y1=X01a(:,1);
plot(x1,y1,'-');nn=length(x1);int=0;
for ii=1:nn-1
    int=int+(x1(ii+1)-x1(ii))*(y1(ii+1)+y1(ii))/2;
end
fprintf('Total area =   %g.\n', int);
```

Appendix 6

MATLAB program for correlation between different parameters

```
clc;
clear all;
load datg.txt;
danka=[datg(:,1) datg(:,4) datg(:,8) datg(:,7) datg(:,12) datg(:,3)
datg(:,6) datg(:,11) ];
[rr p]=corrcoef(danka);
[r s]=size(danka);
for i=1:s-1
for j=i+1:s
z=danka(:,i);z1=danka(:,j);
d=danka;d(:,j) = [ ];d(:,i) = [ ];
%dataC1=[z z1 d];
[a1 b1]=partialcorr(z,z1,d);
r1(i,j)=a1;r1(j,i)=a1;
p1(i,j)=b1;p1(j,i)=b1;
end
end
for i=1:s
    r1(i,i)=1;
end
disp('paired correlation')
[i,j] = find(p<0.05);  % Finds signicant correlations
[i,j] % Display positions (rows, columns)
p % p matrix
rr % corel matrix
disp('partial correlation')
[ii,ji] = find(p1<0.05);  % Find significant.
[ii,ji]  % Display positions (rows, columns))
p1 % p matrix
r % partial corel matrix
figure (1)
cmap=colormap(gray);
%r(end+1,end+1)=1;% add a column
[xa ya] = meshgrid(1:s+1,1:s+1);
set(gca,'XTick',1.5:s+.5);set(gca,'YTick',1.5:s+.5);
%set(gca,'XTickLabel',description1)
%set(gca,'YTickLabel',description1)
rr(end+1,end+1)=1;
aa=surface(xa,ya,abs(rr));
xlim([1 s+1]); ylim([1 s+1]);
colorbar
hold on
figure (2);%(i);
cmap=colormap(gray);
r1(end+1,end+1)=1;% add a column
set(gca,'XTick',1.5:s+.5);set(gca,'YTick',1.5:s+.5);
%set(gca,'XTickLabel',description1)
% set(gca,'YTickLabel',description1,'manual')
aa1=surface(xa,ya,abs(r1));
xlim([1 s+1]); ylim([1 s+1]);
colorbar
hold on
%end
```

```
% regressoin Ball tensile (Work at highest force)
figure (3)
xx =datg(:,8); yy1= datg(:,1);yy2 = datg(:,4);
plot(xx,yy1,'ob');hold on
dm=min(xx);dh=max(xx);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(xx,yy1,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(1,1)=Px(1);v(1,2)=Px(2);rr=corrcoef(xx,yy1);v(1,3)=rr(1,2);
% regressoin knife tensile (Work at highest force)
figure (4)
plot(xx,yy2,'ob');hold on
dm=min(xx);dh=max(xx);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(xx,yy2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(2,1)=Px(1);v(2,2)=Px(2);rr=corrcoef(xx,yy2);v(2,3)=rr(1,2);
% regressoin ball knife (Work at highest force)
figure (5)
plot(yy1,yy2,'ob');hold on
dm=min(yy1);dh=max(yy1);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(yy1,yy2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(3,1)=Px(1);v(3,2)=Px(2);rr=corrcoef(yy1,yy2);v(3,3)=rr(1,2);
% regressoin Ball tensile (Elongation at break)
figure (6)
xxx =datg(:,9); yyy1= datg(:,2);yyy2 = datg(:,5);
plot(xxx,yyy1,'ob');hold on
dm=min(xxx);dh=max(xxx);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(xxx,yyy1,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(1,1)=Px(1);v(1,2)=Px(2);rr=corrcoef(xxx,yyy1);v(1,3)=rr(1,2);
% regressoin knife tensile (Elongation at break)
figure (7)
plot(xxx,yyy2,'ob');hold on
dm=min(xxx);dh=max(xxx);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(xxx,yyy2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(2,1)=Px(1);v(2,2)=Px(2);rr=corrcoef(xxx,yyy2);v(2,3)=rr(1,2);
% regressoin ball knife (Elongation at break)
figure (8)
plot(yyy1,yyy2,'ob');hold on
dm=min(yyy1);dh=max(yyy1);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(yyy1,yyy2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(3,1)=Px(1);v(3,2)=Px(2);rr=corrcoef(yyy1,yyy2);v(3,3)=rr(1,2);
% regressoin Ball tensile (Highest force)
figure (9)
vv =datg(:,11); bb1= datg(:,3);bb2 = datg(:,6);
plot(vv,bb1,'ob');hold on
dm=min(vv);dh=max(vv);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(vv,bb1,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(1,1)=Px(1);v(1,2)=Px(2);rr=corrcoef(vv,bb1);v(1,3)=rr(1,2);
```

```
% regressoin knife tensile (Highest force)
figure (10)
plot(vv,bb2,'ob');hold on
dm=min(vv);dh=max(vv);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(vv,bb2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(2,1)=Px(1);v(2,2)=Px(2);rr=corrcoef(vv,bb2);v(2,3)=rr(1,2);
% regressoin ball knife (Highest force)
figure (11)
plot(bb1,bb2,'ob');hold on
dm=min(bb1);dh=max(bb1);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(bb1,bb2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(3,1)=Px(1);v(3,2)=Px(2);rr=corrcoef(bb1,bb2);v(3,3)=rr(1,2);
% regressoin (Work at break knife & Yarn strength)
figure (12)
cc =datg(:,13); zz1= datg(:,7);zz2 = datg(:,12);
plot(cc,zz1,'ob');hold on
dm=min(cc);dh=max(cc);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(cc,zz1,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(1,1)=Px(1);v(1,2)=Px(2);rr=corrcoef(cc,zz1);v(1,3)=rr(1,2);
% regressoin (Work at break tensile & Yarn strength)
figure (13)
plot(cc,zz2,'ob');hold on
dm=min(cc);dh=max(cc);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(cc,zz2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(2,1)=Px(1);v(2,2)=Px(2);rr=corrcoef(cc,zz2);v(2,3)=rr(1,2);
% regressoin (Work at break tensile & Work at break knife)
figure (14)
plot(zz1,zz2,'ob');hold on
dm=min(zz1);dh=max(zz1);krok=(dh-dm)/100;
xx1=dm:krok:dh;
[Px] = polyfit(zz1,zz2,1);
yv=polyval(Px,xx1);plot(xx1,yv,'b-');
v(3,1)=Px(1);v(3,2)=Px(2);rr=corrcoef(zz1,zz2);v(3,3)=rr(1,2);
end
```

Appendix 7

All MATLAB figures

Figure 1: Grey scale colour map for paired correlation.

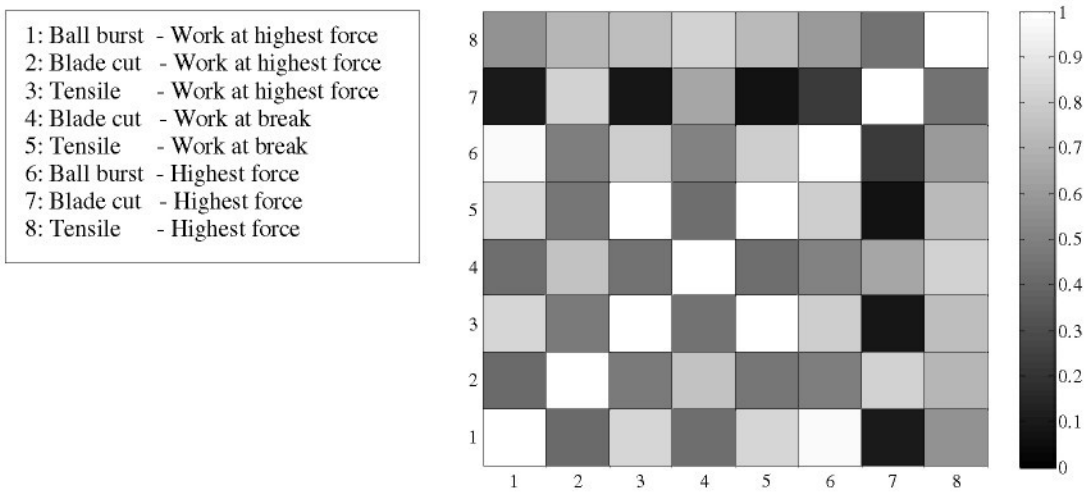


Figure 2: Grey scale colour map for partial correlation.

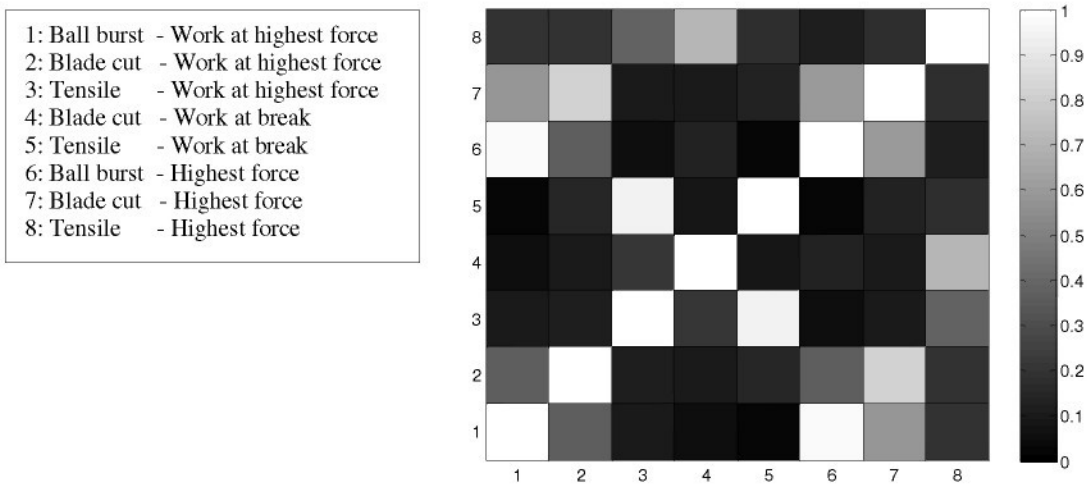


Figure 3: Regression line

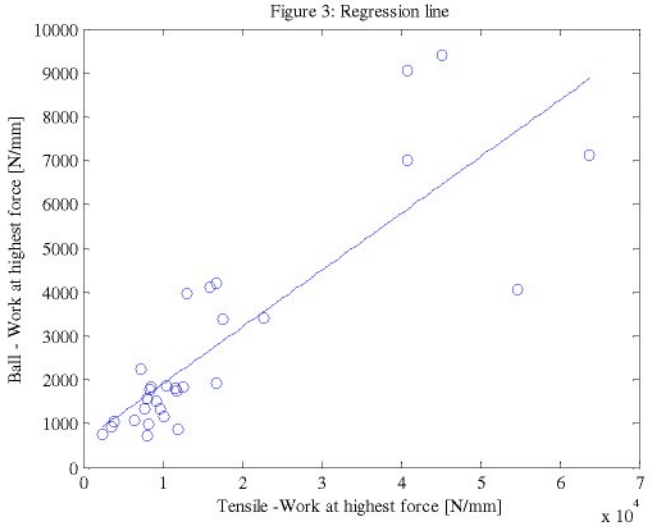


Figure 4: Regression line

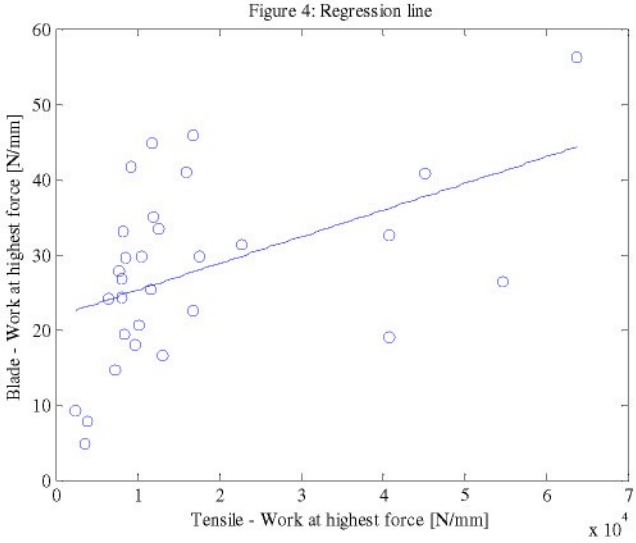


Figure 5: Regression line

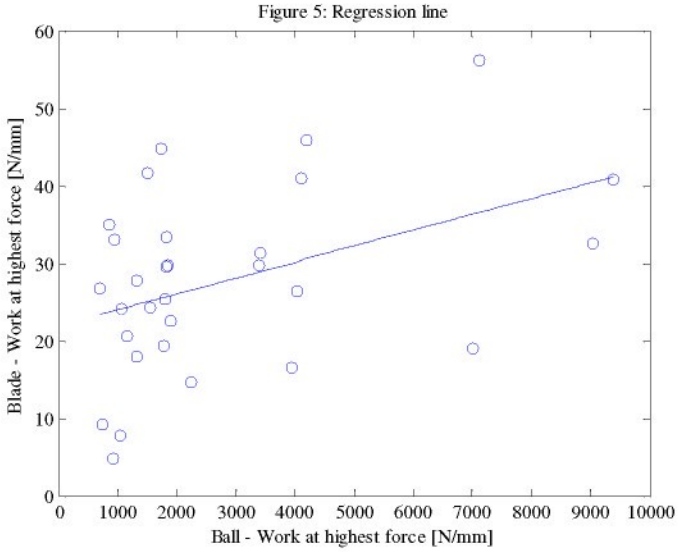


Figure 6: Regression line

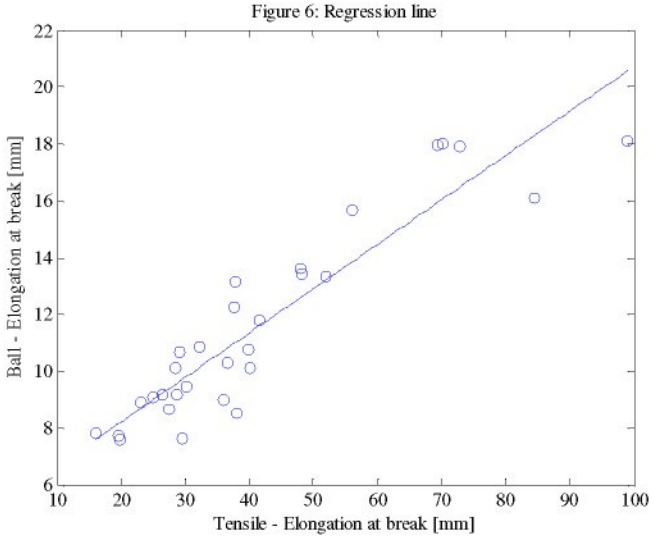


Figure 7: Regression line

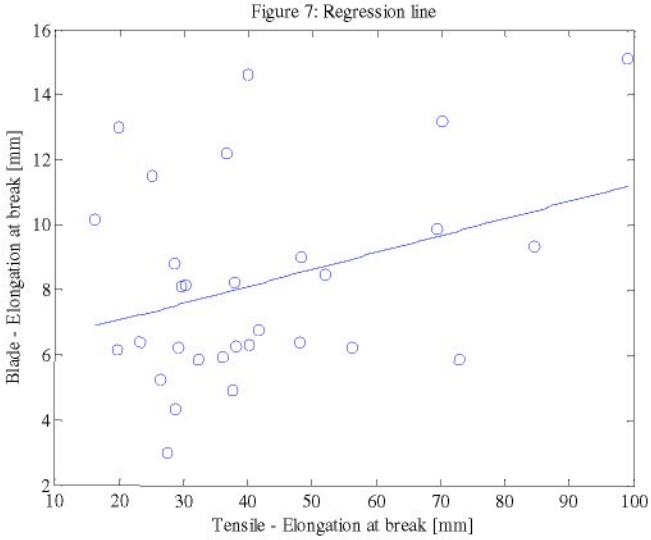


Figure 8: Regression line

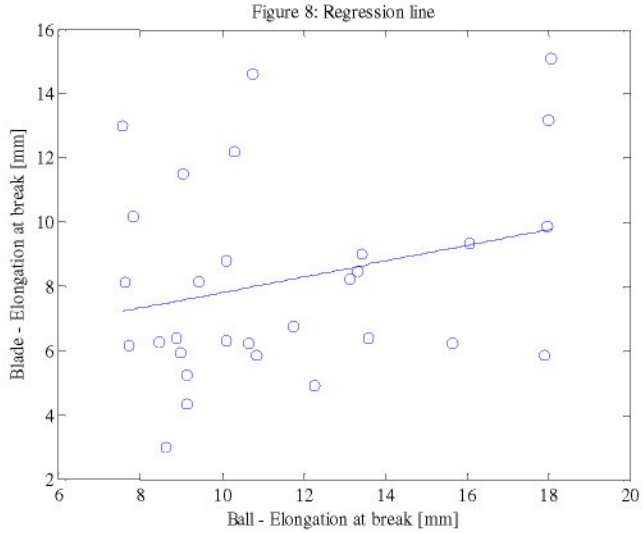


Figure 9: Regression line

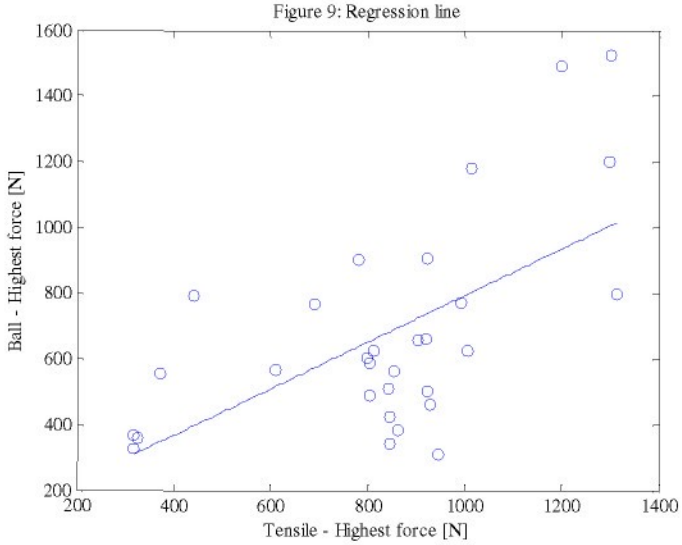


Figure 10: Regression line

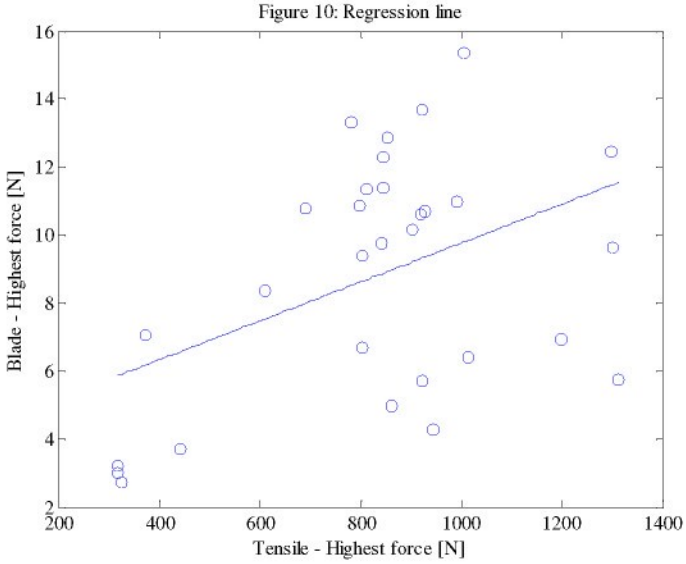


Figure 11: Regression line

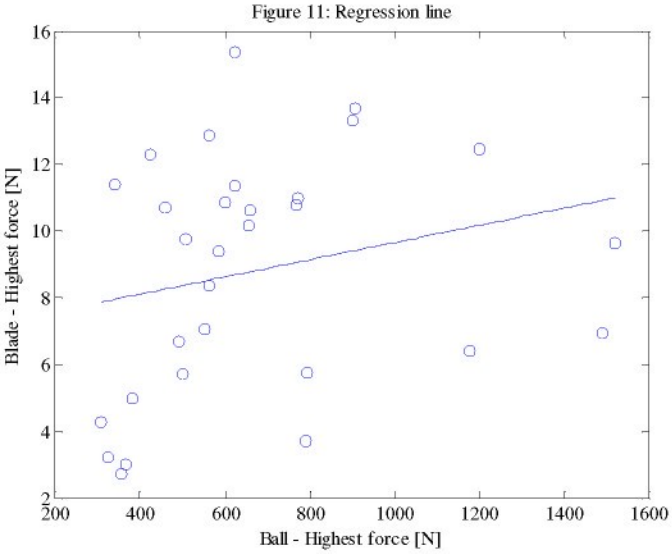


Figure 12: Regression line

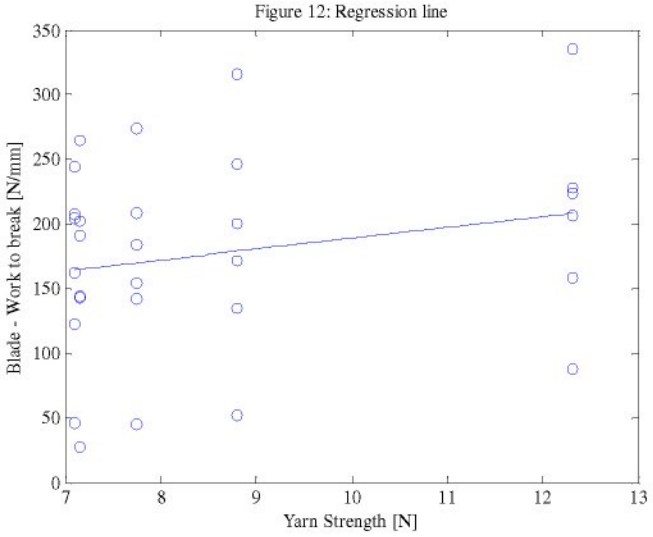


Figure 13: Regression line

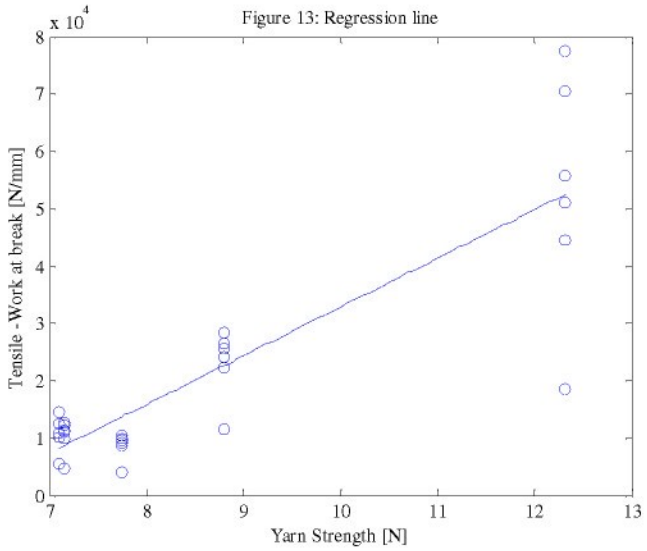


Figure 14: Regression Line

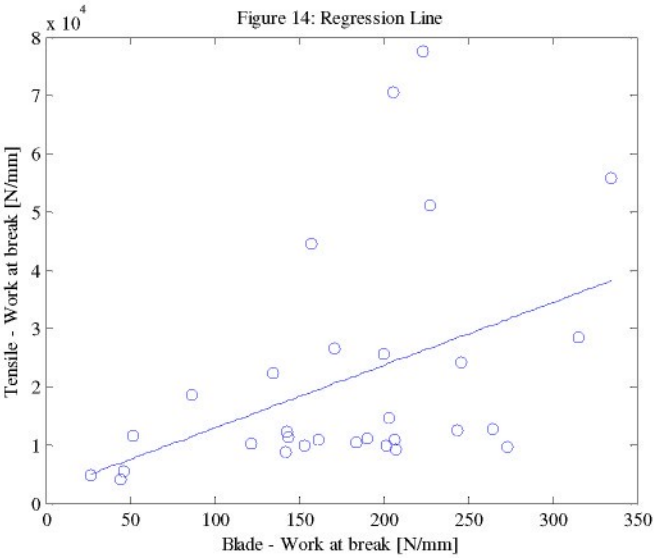
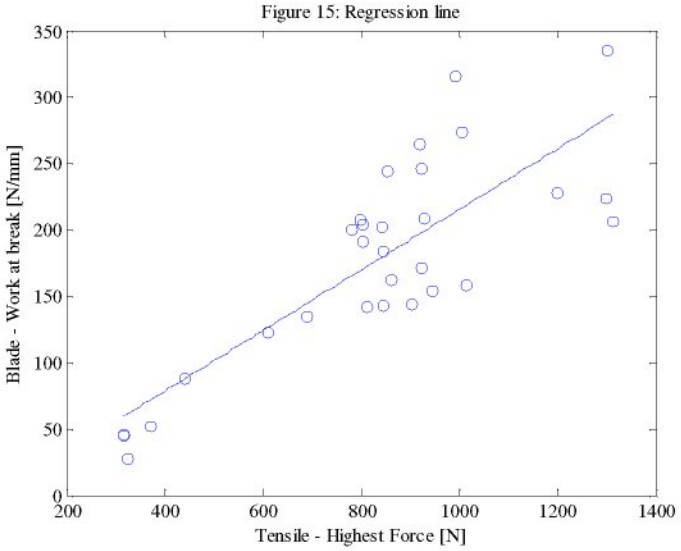


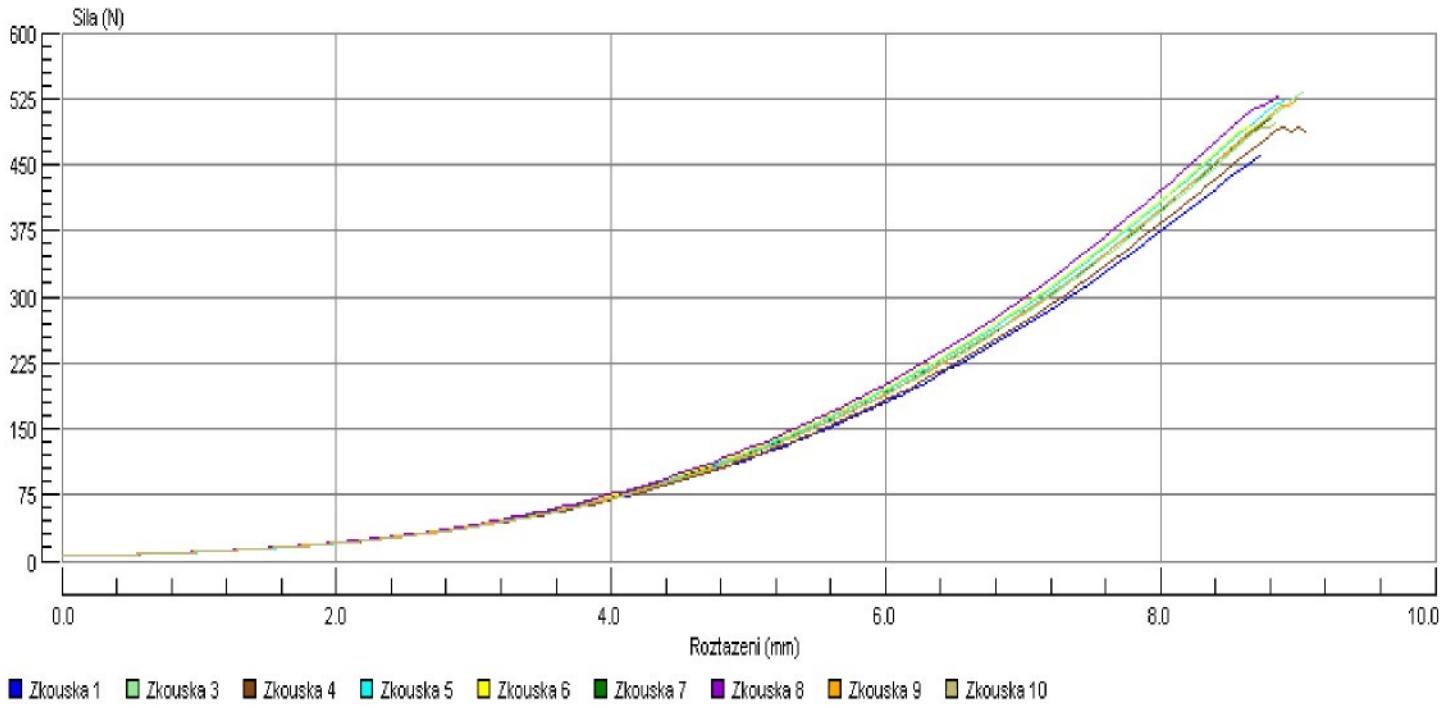
Figure 15: Regression line



Oznaceni : 4_23_008
Material : 35pop_65co_warp
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 12:11
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.183	8.725	458.800
2	1.407	9.108	524.100
3	1.404	9.036	531.300
4	1.286	9.054	492.900
5	1.364	8.902	522.900
6	1.247	8.697	492.300
7	1.286	8.797	502.700
8	1.384	8.854	526.700
9	1.381	8.982	522.600
10	1.302	8.839	496.200
Min	1.183	8.697	458.800
Stred	1.324	8.899	507.050
Max	1.407	9.108	531.300
S.O.	0.075	0.142	22.707
VK	5.677	1.592	4.478
D.H.D	1.271	8.798	490.806
H.H.D.	1.378	9.001	523.294



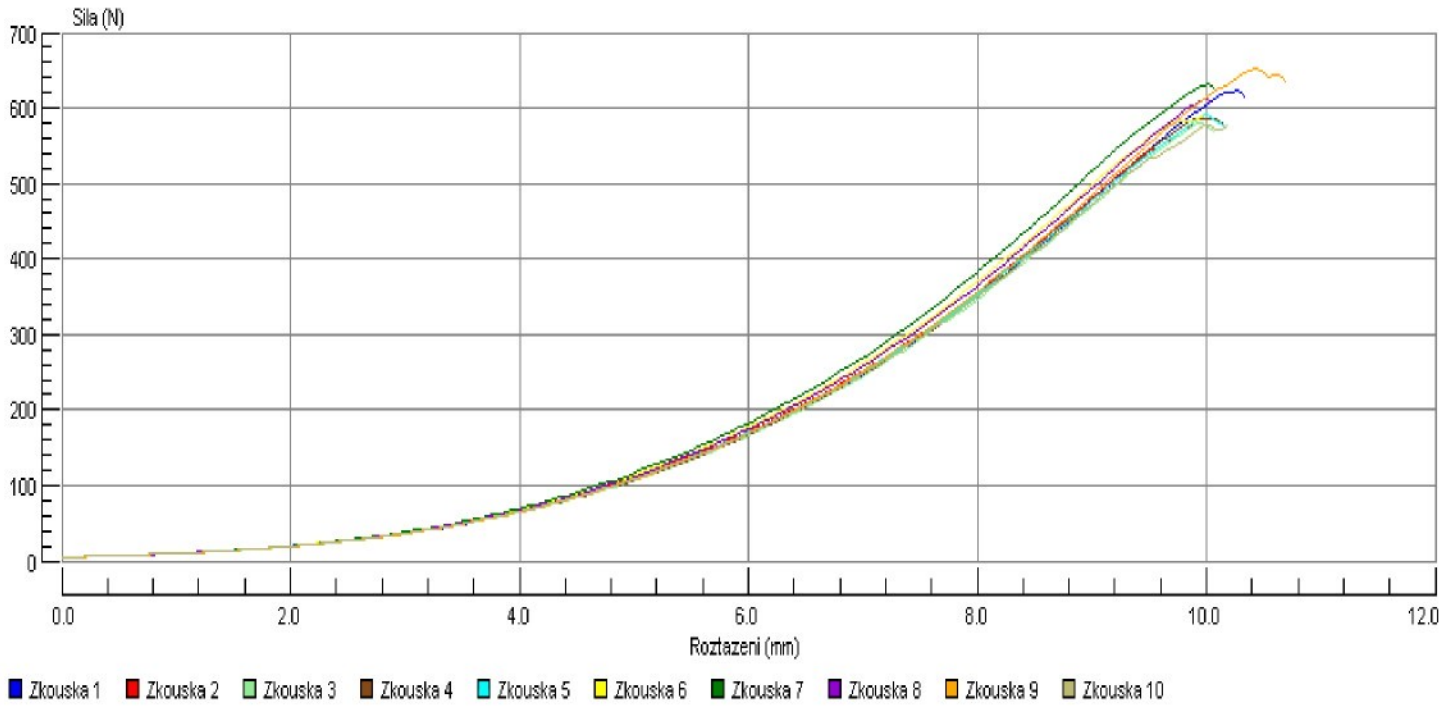
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 50pop_50co_warp
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 12:01
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.950	10.328	622.300
2	1.723	9.874	577.000
3	1.704	10.065	580.100
4	1.749	10.165	586.000
5	1.787	10.159	592.100
6	1.840	9.976	590.800
7	1.927	10.065	632.600
8	1.833	10.036	611.800
9	2.074	10.691	653.700
10	1.752	10.184	576.500
Min	1.704	9.874	576.500
Stred	1.834	10.154	602.290
Max	2.074	10.691	653.700
S.O.	0.118	0.226	26.564
VK	6.433	2.224	4.411
D.H.D	1.749	9.993	583.287
H.H.D.	1.918	10.316	621.293



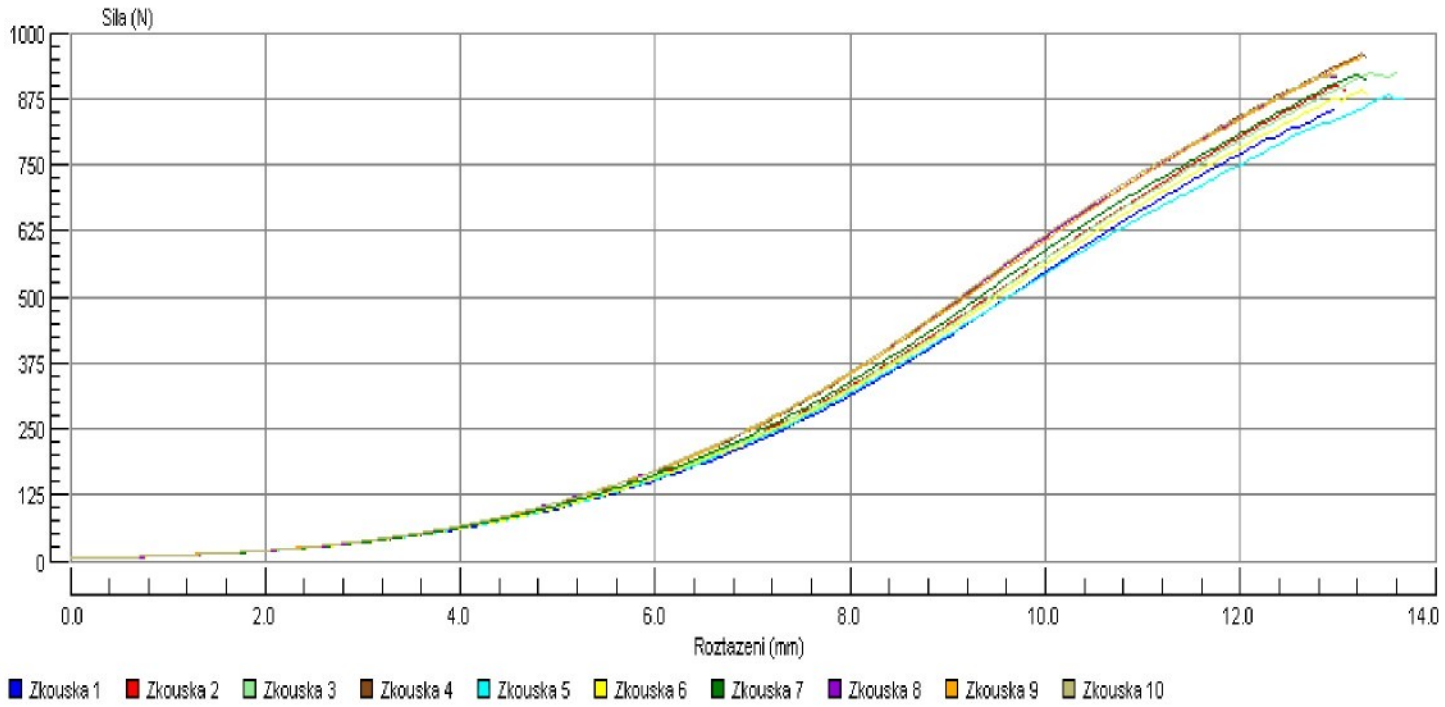
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 65pop_35co_warp
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 12:06
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	3.706	12.951	853.000
2	3.900	13.081	897.900
3	4.203	13.608	925.000
4	4.380	13.294	959.000
5	4.170	13.682	880.900
6	4.053	13.301	889.400
7	4.150	13.289	921.000
8	4.040	12.985	922.100
9	4.355	13.239	952.500
10	4.152	12.983	920.800
Min	3.706	12.951	853.000
Stred	4.111	13.241	912.160
Max	4.380	13.682	959.000
S.O.	0.201	0.254	32.380
VK	4.893	1.917	3.550
D.H.D	3.967	13.060	888.996
H.H.D.	4.255	13.423	935.324



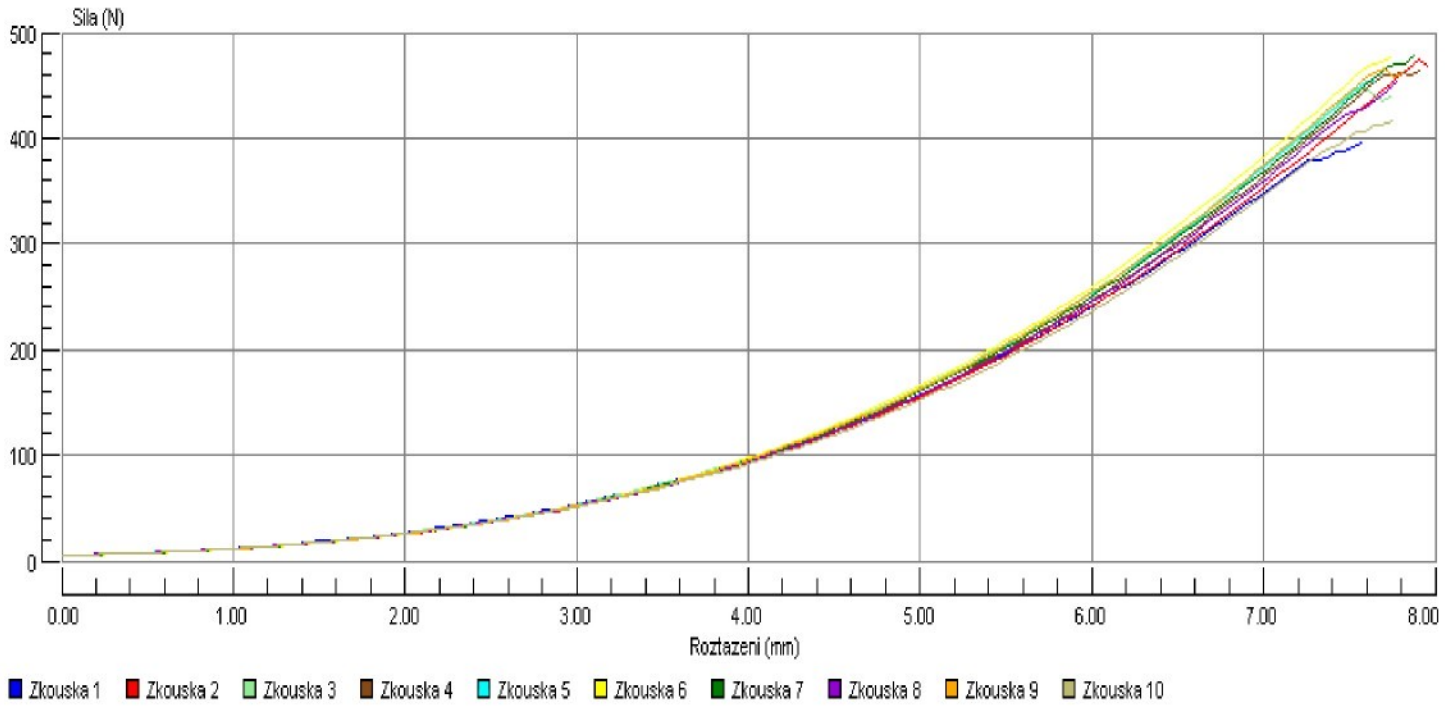
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100CO_warp
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 11:52
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	0.967	7.569	396.000
2	1.120	7.954	473.800
3	1.025	7.743	447.800
4	1.147	7.910	464.100
5	1.026	7.649	454.000
6	1.116	7.743	476.600
7	1.148	7.880	477.500
8	1.077	7.778	452.500
9	1.077	7.808	465.300
10	1.025	7.747	416.800
Min	0.967	7.569	396.000
Stred	1.073	7.778	452.440
Max	1.148	7.954	477.500
S.O.	0.061	0.117	26.768
VK	5.663	1.505	5.916
D.H.D	1.030	7.694	433.291
H.H.D.	1.116	7.862	471.589



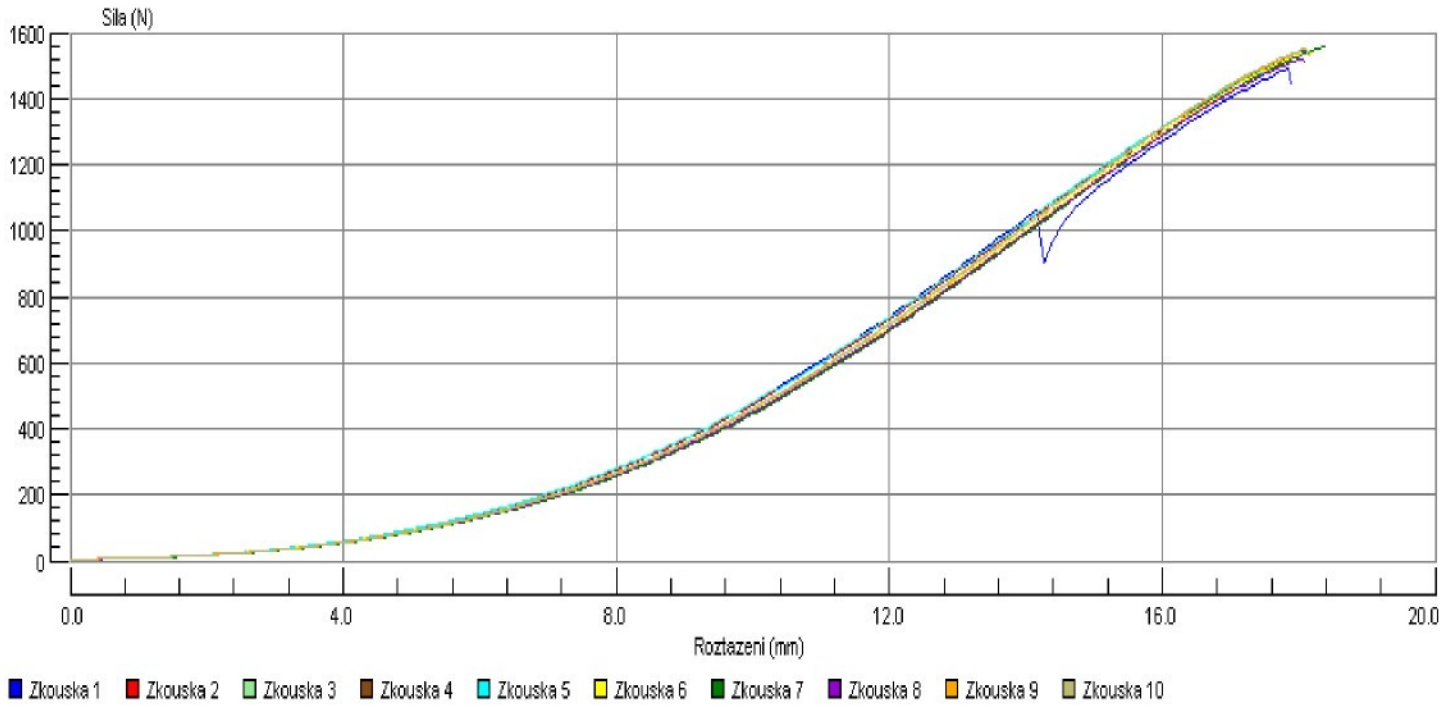
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100pop_warp
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 11:56
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	9.214	17.894	1488.000
2	9.141	17.760	1499.000
3	9.200	17.859	1509.000
4	9.489	18.187	1546.000
5	8.901	17.563	1483.000
6	9.582	18.179	1539.000
7	9.866	18.391	1558.000
8	9.277	18.084	1518.000
9	9.479	18.002	1537.000
10	9.623	18.152	1552.000
Min	8.901	17.563	1483.000
Stred	9.377	18.007	1522.900
Max	9.866	18.391	1558.000
S.O.	0.282	0.242	27.221
VK	3.006	1.346	1.787
D.H.D	9.175	17.834	1503.427
H.H.D.	9.579	18.181	1542.373



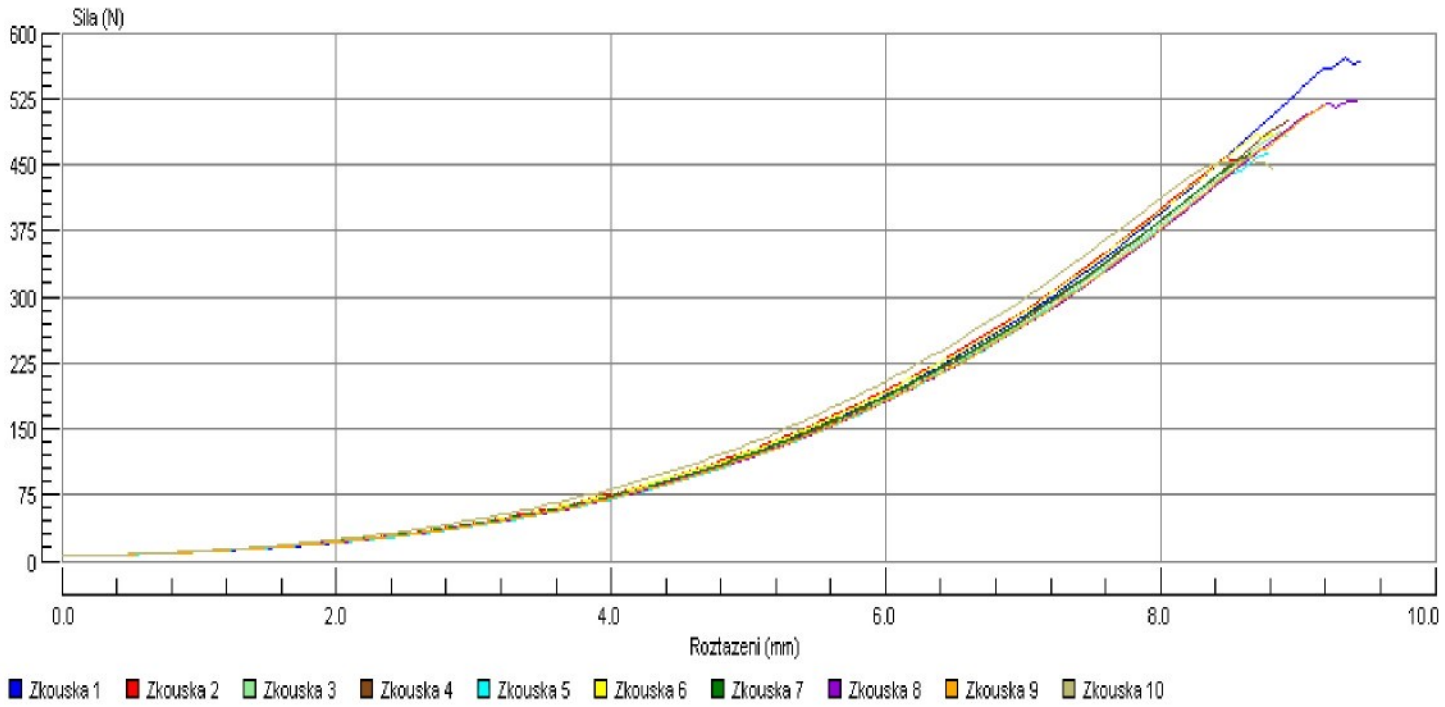
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 35pop_65co_weft
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 13:09
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.572	9.451	570.700
2	1.244	8.683	463.500
3	1.282	8.924	486.900
4	1.320	8.925	499.400
5	1.219	8.783	463.200
6	1.293	8.849	485.600
7	1.192	8.648	462.200
8	1.523	9.435	521.900
9	1.426	9.192	518.000
10	1.283	8.807	457.300
Min	1.192	8.648	457.300
Stred	1.335	8.970	492.870
Max	1.572	9.451	570.700
S.O.	0.129	0.291	35.919
VK	9.647	3.246	7.288
D.H.D	1.243	8.761	467.174
H.H.D.	1.428	9.178	518.566



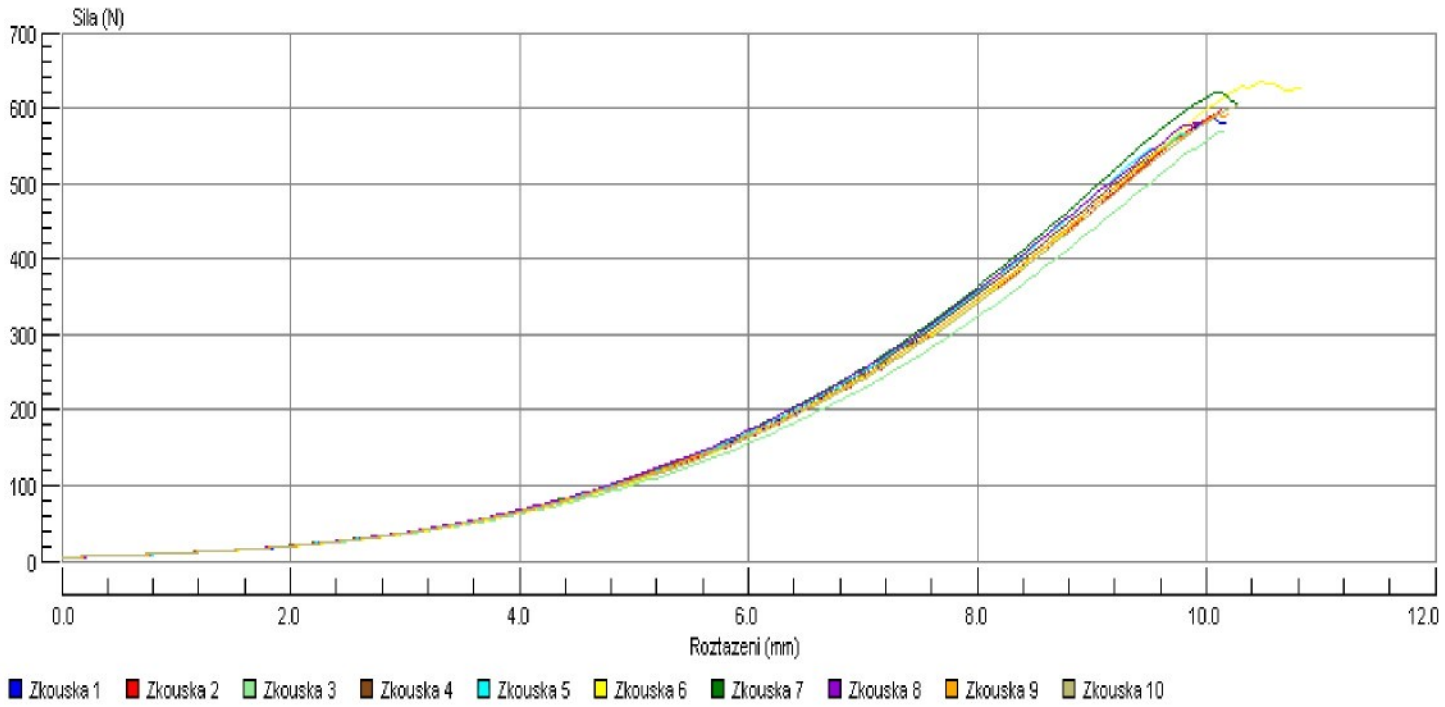
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 50POP_50CO_weft
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 12:59
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.756	10.163	586.000
2	1.814	10.132	596.200
3	1.736	10.154	567.400
4	1.631	9.741	558.700
5	1.691	9.824	565.100
6	2.034	10.836	634.700
7	1.872	10.273	620.600
8	1.749	9.955	579.300
9	1.866	10.189	591.100
10	1.890	10.269	602.700
Min	1.631	9.741	558.700
Stred	1.804	10.154	590.180
Max	2.034	10.836	634.700
S.O.	0.116	0.301	24.440
VK	6.442	2.960	4.141
D.H.D	1.721	9.939	572.696
H.H.D.	1.887	10.369	607.664



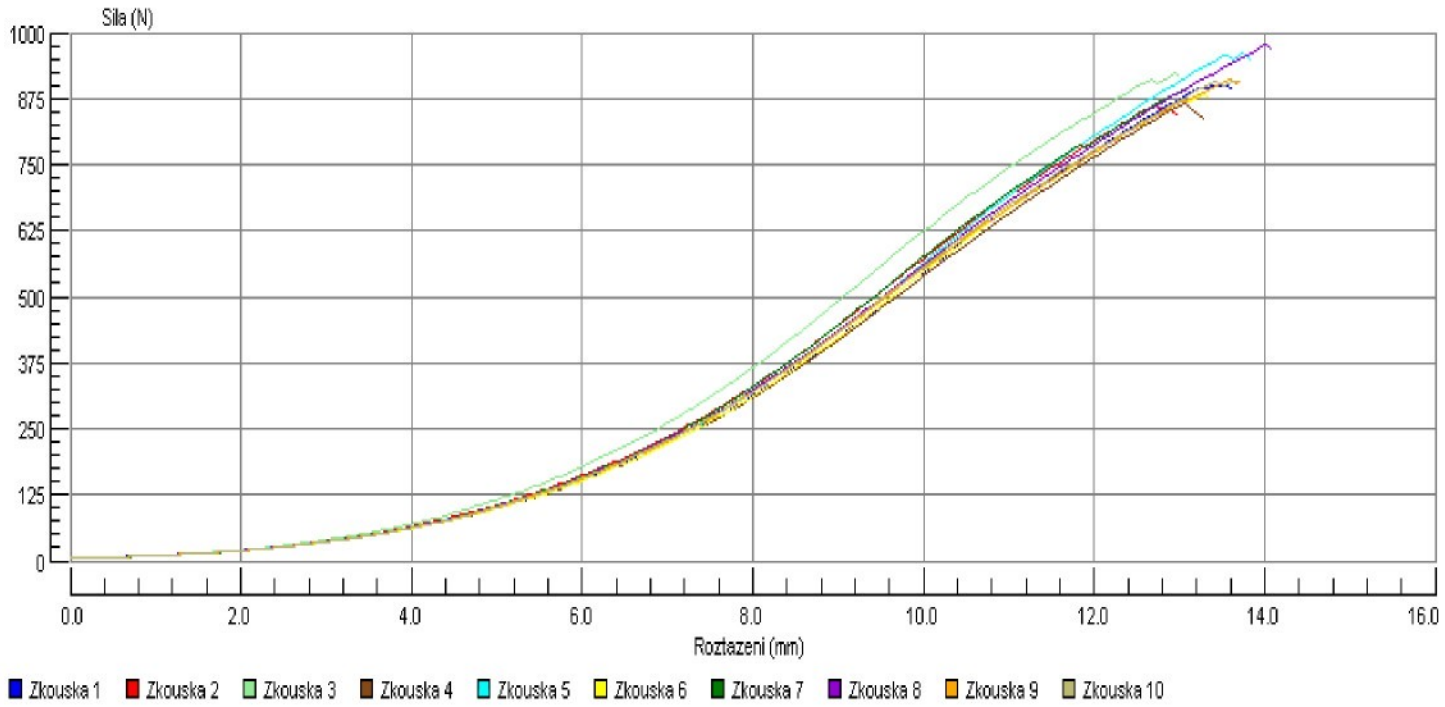
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 65pop_35co_weft
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 13:05
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	4.251	13.601	900.800
2	3.652	12.967	861.600
3	4.177	12.996	921.500
4	3.768	13.275	865.100
5	4.560	13.834	959.000
6	3.992	13.328	883.100
7	4.044	13.147	899.800
8	4.787	14.064	975.400
9	4.317	13.706	909.200
10	4.418	13.684	908.700
Min	3.652	12.967	861.600
Stred	4.197	13.460	908.420
Max	4.787	14.064	975.400
S.O.	0.348	0.372	36.604
VK	8.303	2.761	4.029
D.H.D	3.947	13.194	882.235
H.H.D.	4.446	13.726	934.605



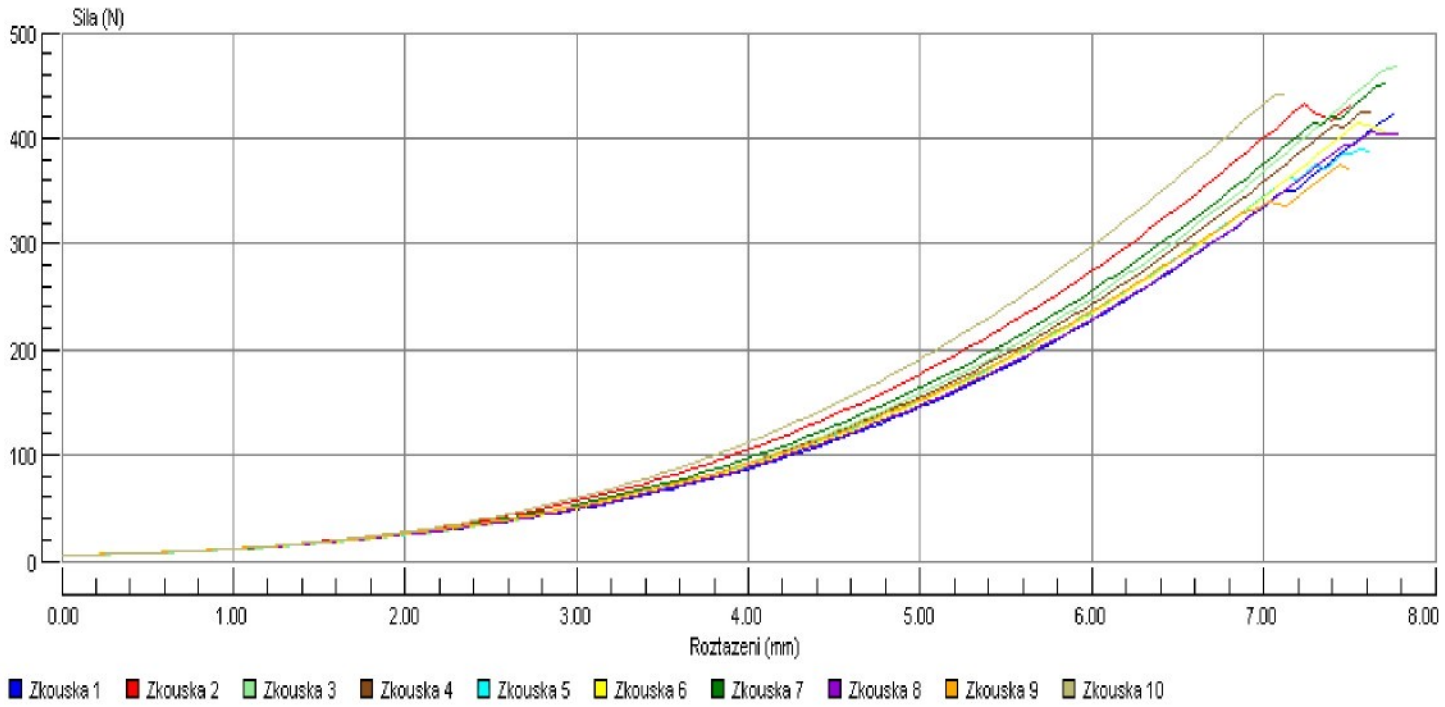
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100CO_weft
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 12:17
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	0.992	7.758	422.000
2	0.945	7.504	433.100
3	1.087	7.776	468.100
4	0.994	7.617	425.200
5	0.937	7.612	388.800
6	0.932	7.702	413.300
7	1.081	7.708	451.800
8	0.945	7.783	405.600
9	0.891	7.496	375.000
10	0.936	7.120	441.300
Min	0.891	7.120	375.000
Stred	0.974	7.608	422.420
Max	1.087	7.783	468.100
S.O.	0.065	0.201	28.232
VK	6.678	2.637	6.683
D.H.D	0.927	7.464	402.224
H.H.D.	1.021	7.751	442.616



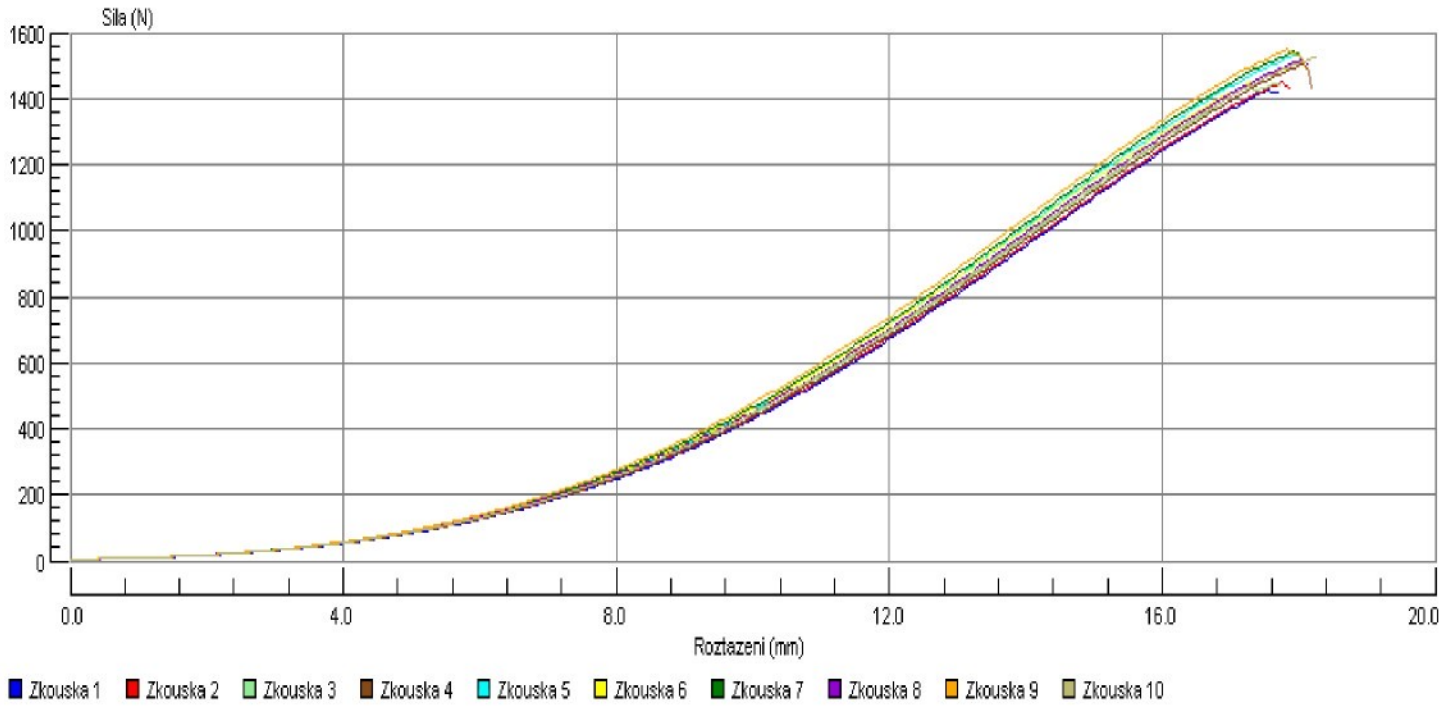
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100pop_weft
Meril : Chantal
Firma : Spolsin
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 12:22
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	8.270	17.701	1425.000
2	8.653	17.861	1449.000
3	8.661	17.718	1446.000
4	9.234	18.190	1503.000
5	9.413	18.024	1533.000
6	9.042	17.810	1490.000
7	9.422	18.021	1541.000
8	9.408	18.122	1520.000
9	9.446	18.094	1548.000
10	9.598	18.242	1523.000
Min	8.270	17.701	1425.000
Stred	9.115	17.978	1497.800
Max	9.598	18.242	1548.000
S.O.	0.443	0.194	43.723
VK	4.858	1.080	2.919
D.H.D	8.798	17.840	1466.522
H.H.D.	9.431	18.117	1529.078



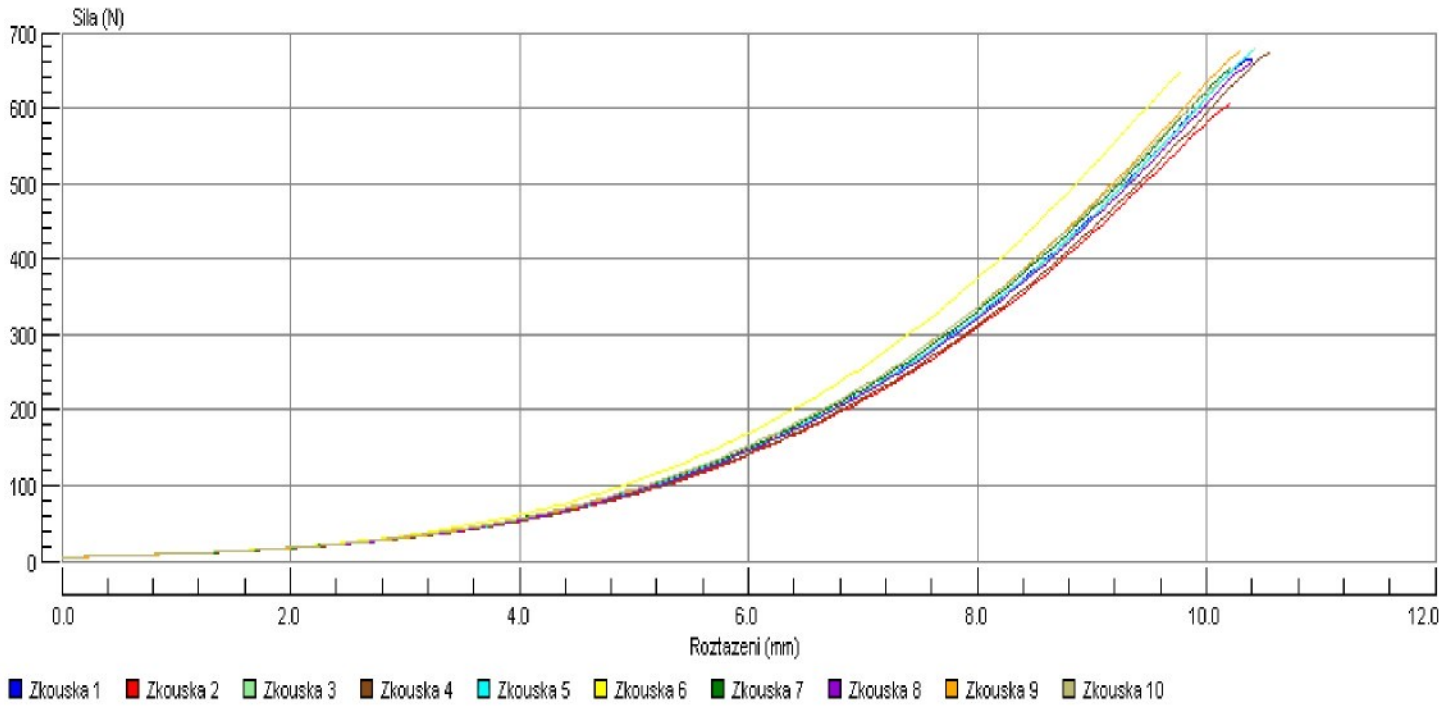
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 35POP_65CO
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 14:54
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.906	10.398	664.200
2	1.699	10.207	606.000
3	1.922	10.428	679.600
4	1.949	10.555	673.100
5	1.911	10.399	675.200
6	1.733	9.776	647.200
7	1.815	10.209	653.000
8	1.885	10.394	660.600
9	1.902	10.298	674.000
10	1.756	10.088	630.300
Min	1.699	9.776	606.000
Stred	1.848	10.275	656.320
Max	1.949	10.555	679.600
S.O.	0.090	0.221	23.277
VK	4.846	2.152	3.547
D.H.D	1.784	10.117	639.668
H.H.D.	1.912	10.433	672.972



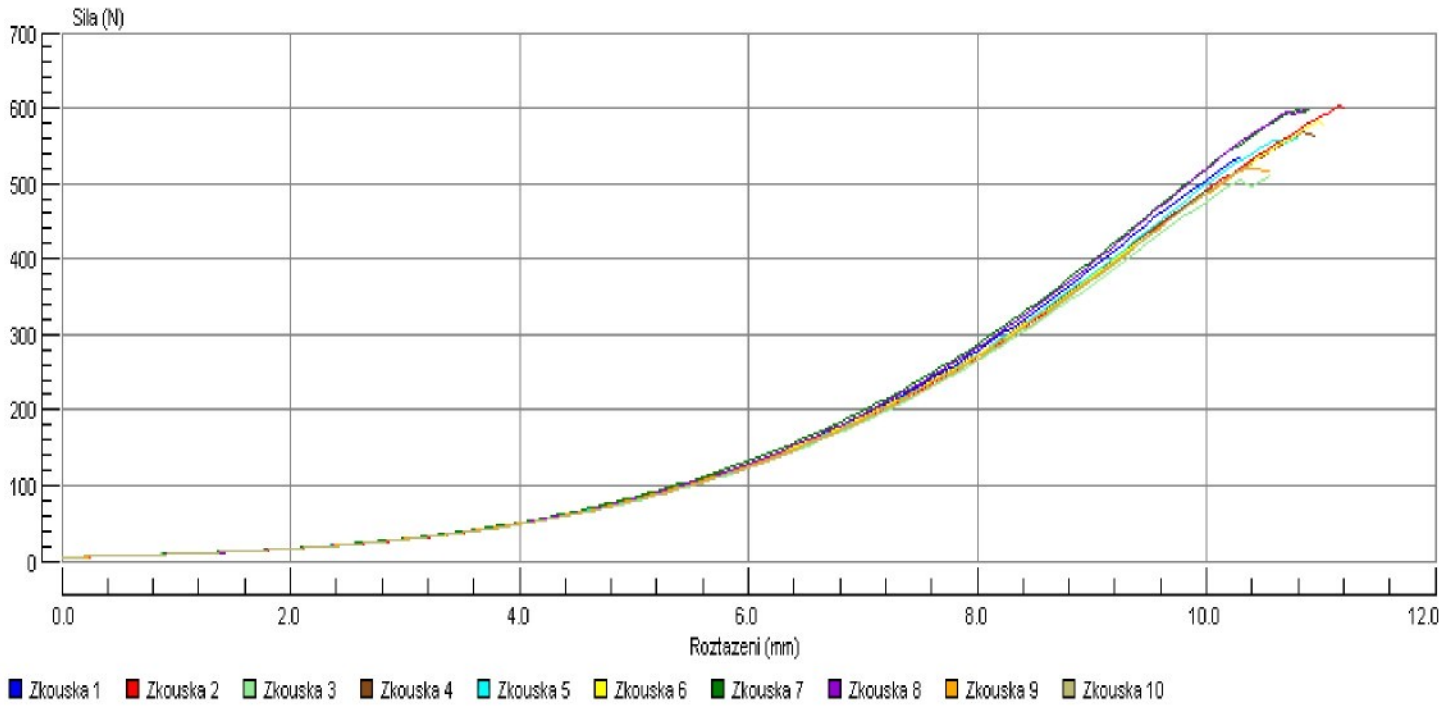
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 50POP_50CO
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 14:48
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.571	10.289	534.700
2	2.009	11.199	601.700
3	1.630	10.553	510.200
4	1.842	10.942	567.500
5	1.821	10.788	560.500
6	1.911	11.023	582.200
7	1.968	10.893	598.500
8	1.929	10.865	597.300
9	1.555	10.554	520.100
10	1.568	10.391	526.100
Min	1.555	10.289	510.200
Stred	1.780	10.750	559.880
Max	2.009	11.199	601.700
S.O.	0.181	0.292	34.997
VK	10.154	2.715	6.251
D.H.D	1.651	10.541	534.844
H.H.D.	1.910	10.958	584.916



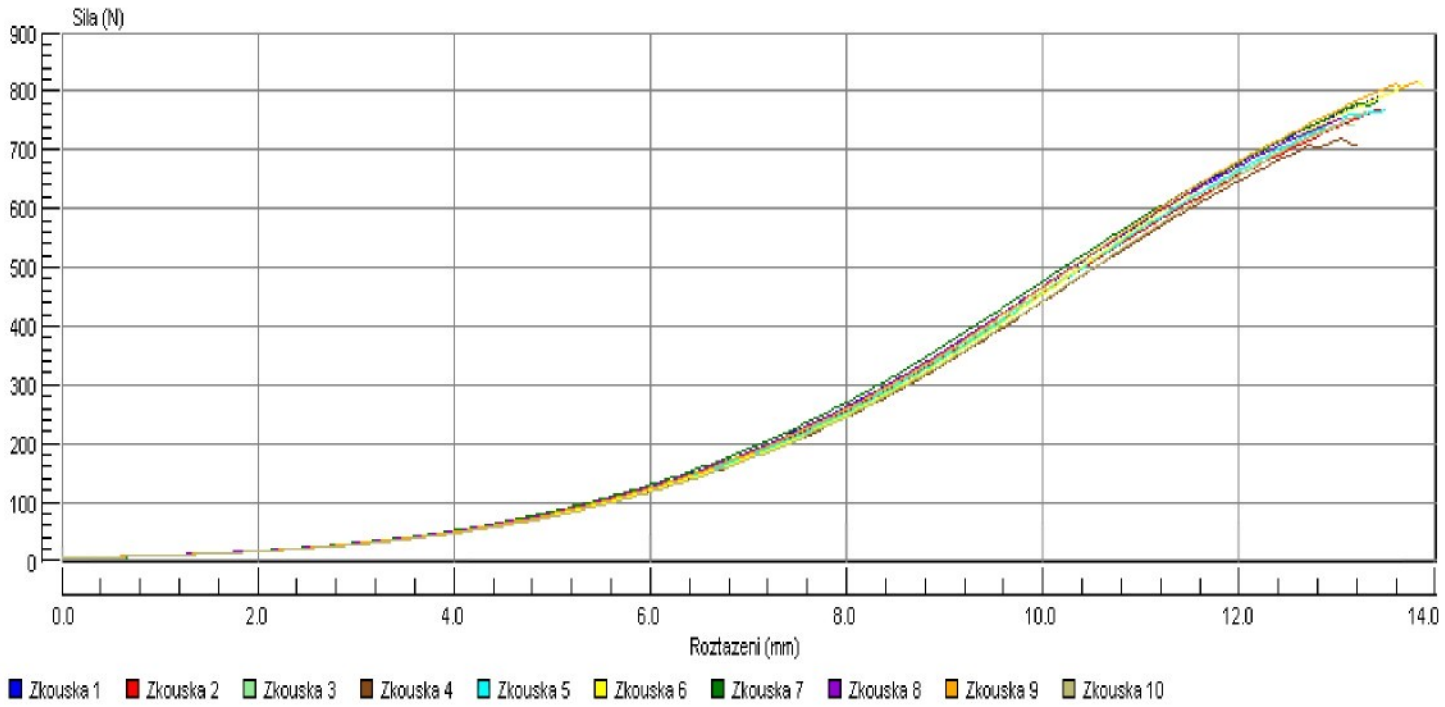
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 65POP_35CO
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 14:59
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	3.542	13.426	790.800
2	3.435	13.448	767.500
3	3.203	13.166	746.300
4	3.070	13.195	719.800
5	3.516	13.490	767.100
6	3.783	13.866	814.900
7	3.591	13.417	781.000
8	3.234	13.079	751.400
9	3.857	13.811	815.000
10	3.290	13.290	763.400
Min	3.070	13.079	719.800
Stred	3.452	13.419	771.720
Max	3.857	13.866	815.000
S.O.	0.255	0.259	29.909
VK	7.396	1.933	3.876
D.H.D	3.269	13.233	750.324
H.H.D.	3.635	13.604	793.116



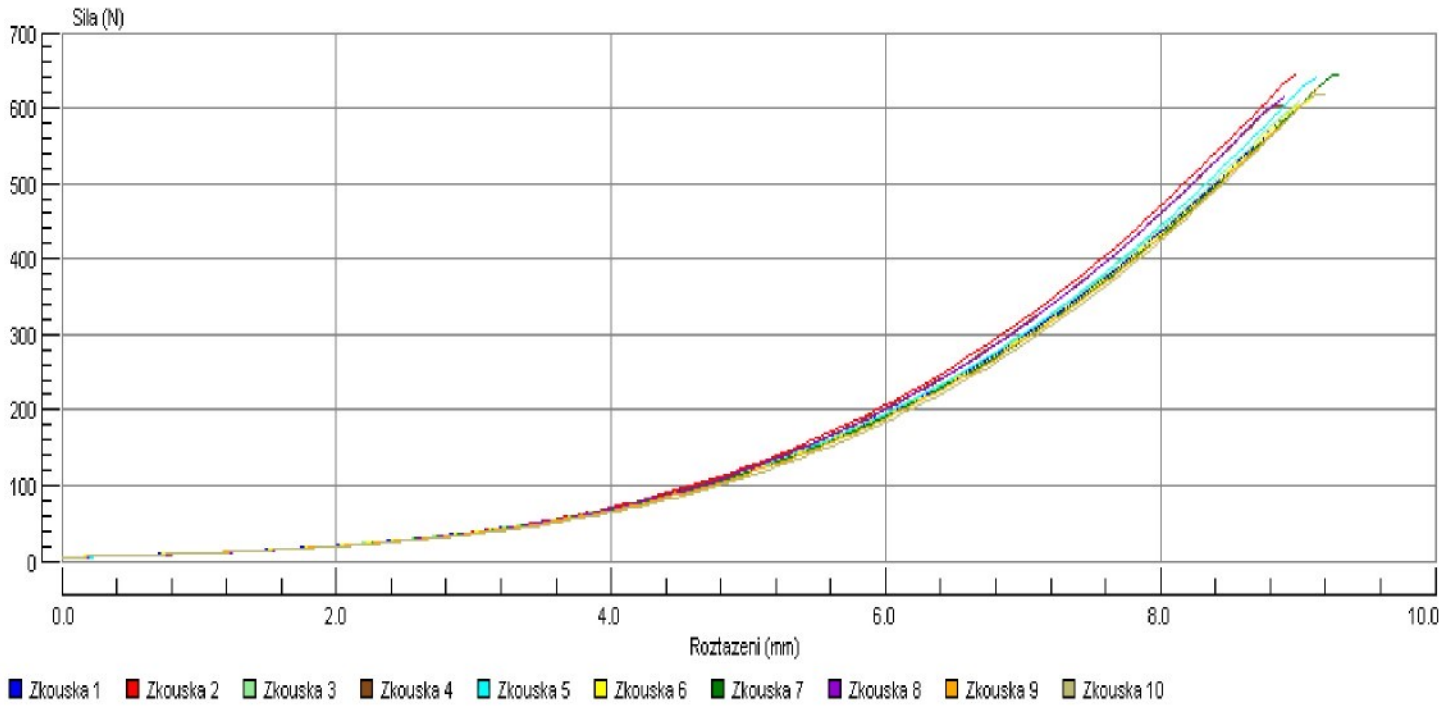
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100CO
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 15:04
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.461	8.975	595.700
2	1.563	8.986	643.300
3	1.488	9.003	607.500
4	1.466	8.884	603.300
5	1.576	9.137	640.000
6	1.530	9.110	614.600
7	1.608	9.297	644.300
8	1.473	8.900	614.000
9	1.531	9.138	625.200
10	1.539	9.192	618.300
Min	1.461	8.884	595.700
Stred	1.523	9.062	620.620
Max	1.608	9.297	644.300
S.O.	0.051	0.134	17.160
VK	3.323	1.475	2.765
D.H.D	1.487	8.967	608.344
H.H.D.	1.560	9.158	632.896



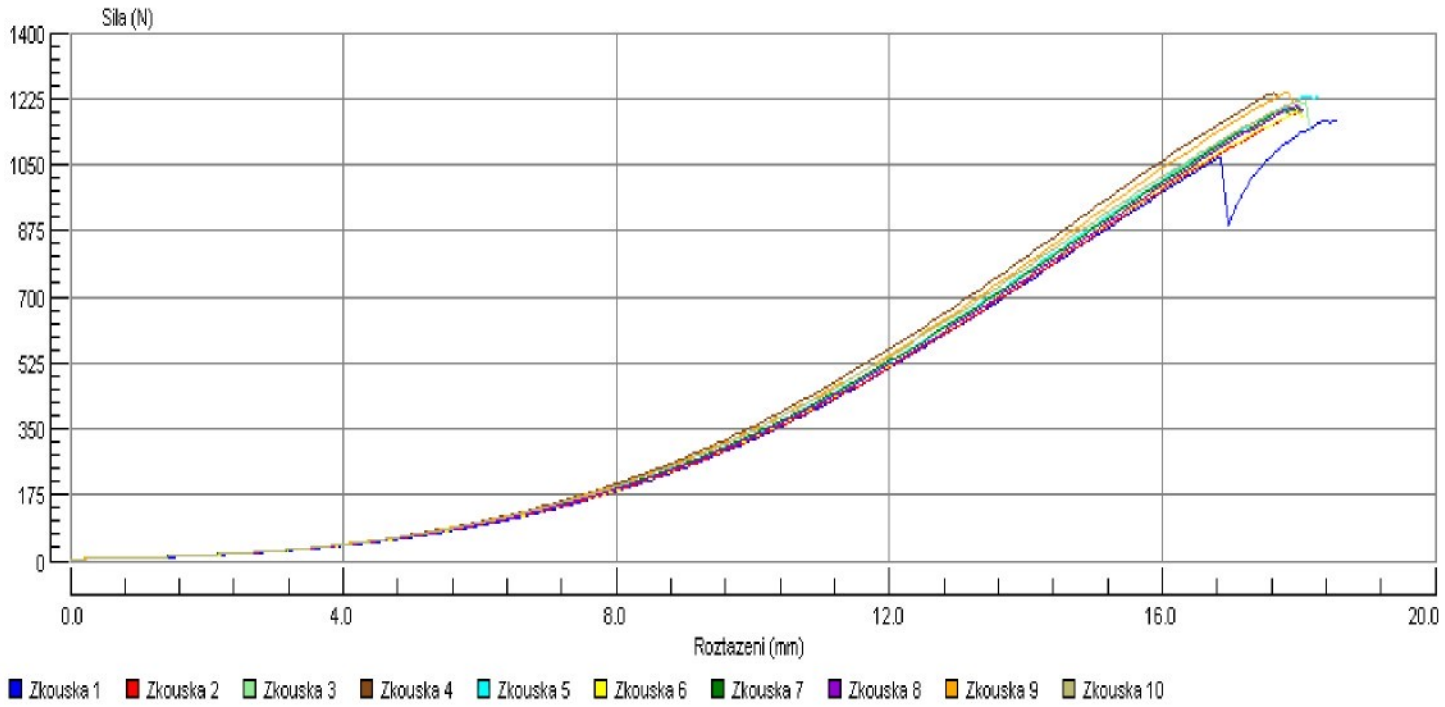
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100POP
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 14:41
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	7.263	18.551	1167.000
2	6.960	17.989	1186.000
3	7.259	18.162	1216.000
4	7.104	17.693	1241.000
5	7.369	18.267	1231.000
6	6.970	18.051	1187.000
7	7.125	18.033	1200.000
8	7.010	18.058	1207.000
9	7.215	17.902	1241.000
10	7.294	18.008	1219.000
Min	6.960	17.693	1167.000
Stred	7.157	18.071	1209.500
Max	7.369	18.551	1241.000
S.O.	0.144	0.226	24.812
VK	2.019	1.253	2.051
D.H.D	7.053	17.909	1191.751
H.H.D.	7.260	18.233	1227.249



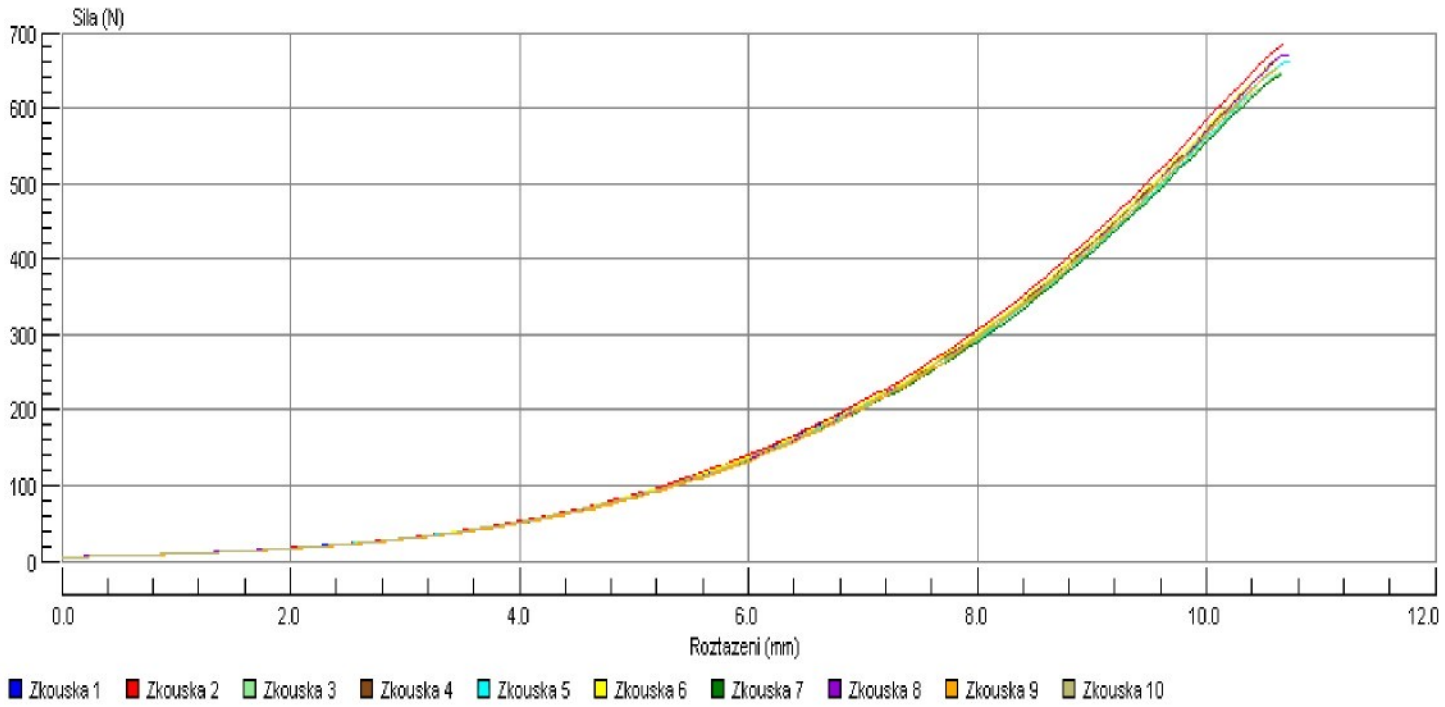
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 35pop_65co_weft
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 10:11
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.775	10.394	624.100
2	1.990	10.665	683.700
3	1.895	10.654	646.500
4	1.977	10.713	670.300
5	1.922	10.730	662.300
6	1.916	10.605	660.100
7	1.889	10.658	643.300
8	1.936	10.714	669.700
9	1.874	10.609	650.900
10	1.760	10.393	625.700
Min	1.760	10.393	624.100
Stred	1.894	10.614	653.660
Max	1.990	10.730	683.700
S.O.	0.076	0.123	19.363
VK	3.992	1.162	2.962
D.H.D	1.839	10.525	639.808
H.H.D.	1.948	10.702	667.512



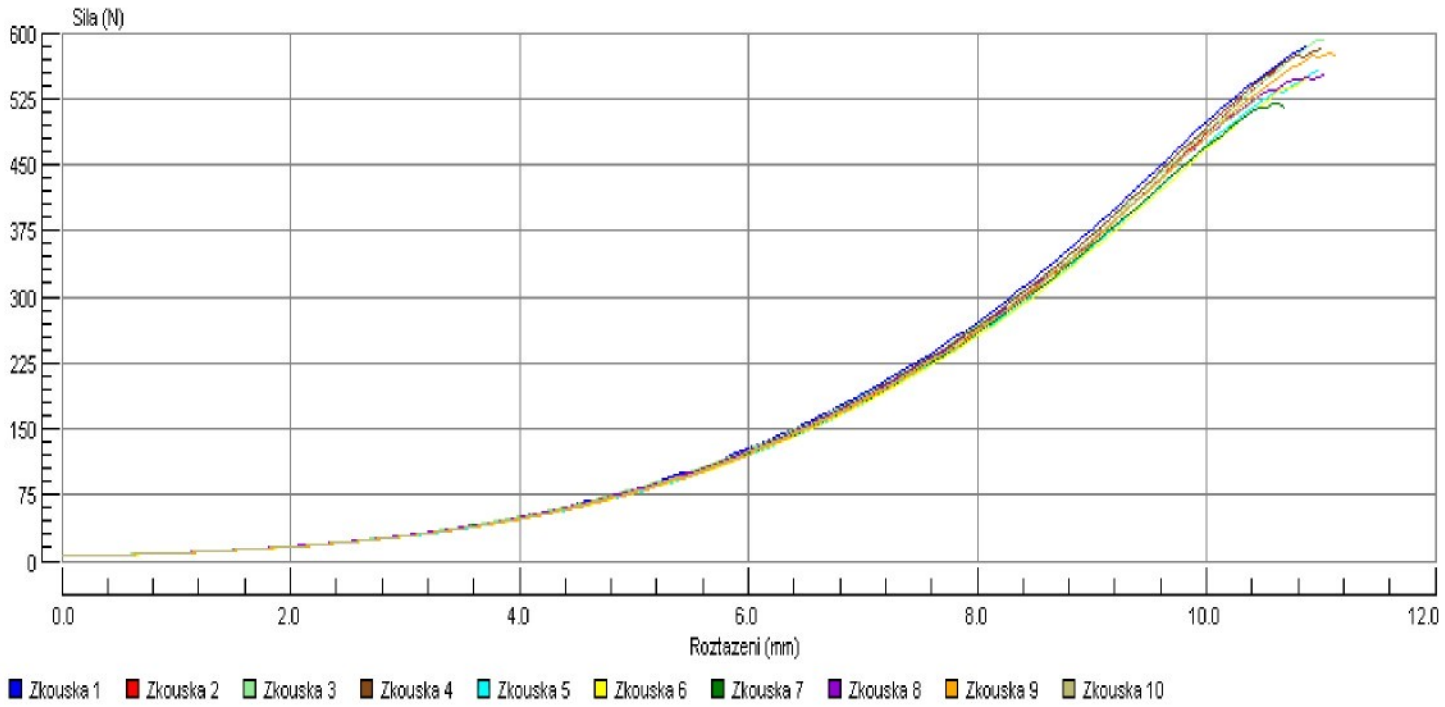
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 50POP_50CO_weft
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 10:01
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.866	10.864	583.100
2	1.663	10.604	556.000
3	1.898	11.018	591.900
4	1.916	11.000	580.300
5	1.828	10.977	556.900
6	1.769	10.887	548.500
7	1.617	10.678	519.300
8	1.895	11.023	552.600
9	1.916	11.127	577.400
10	1.586	10.464	526.400
Min	1.586	10.464	519.300
Stred	1.795	10.864	559.240
Max	1.916	11.127	591.900
S.O.	0.129	0.214	24.172
VK	7.173	1.970	4.322
D.H.D	1.703	10.711	541.948
H.H.D.	1.887	11.017	576.532



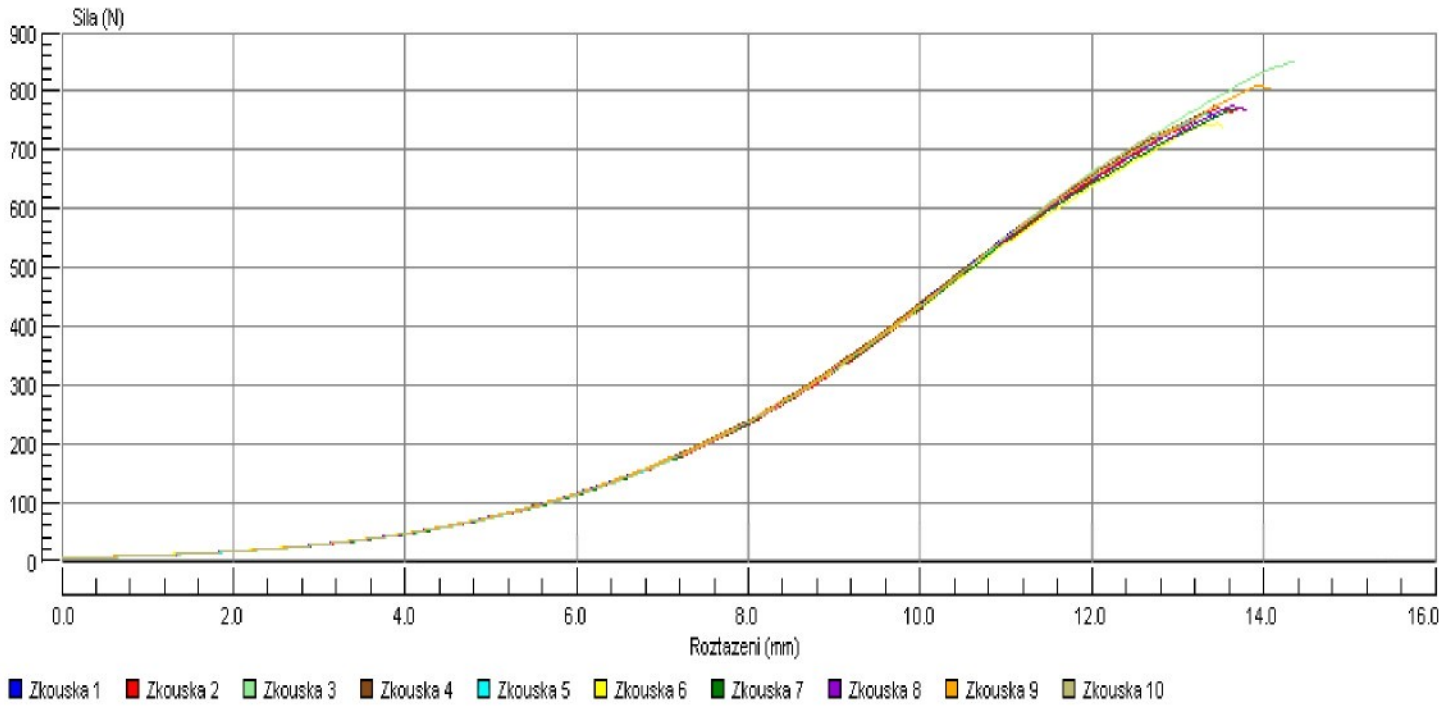
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 65pop_35co_weft
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 10:06
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	3.286	13.439	762.400
2	3.340	13.782	771.500
3	4.114	14.349	851.400
4	3.365	13.475	773.600
5	3.292	13.370	761.700
6	3.325	13.517	746.300
7	3.442	13.660	768.700
8	3.491	13.789	774.400
9	3.788	14.076	809.300
10	3.158	13.179	752.300
Min	3.158	13.179	746.300
Stred	3.460	13.664	777.160
Max	4.114	14.349	851.400
S.O.	0.284	0.349	31.084
VK	8.222	2.557	4.000
D.H.D	3.257	13.414	754.924
H.H.D.	3.664	13.914	799.396



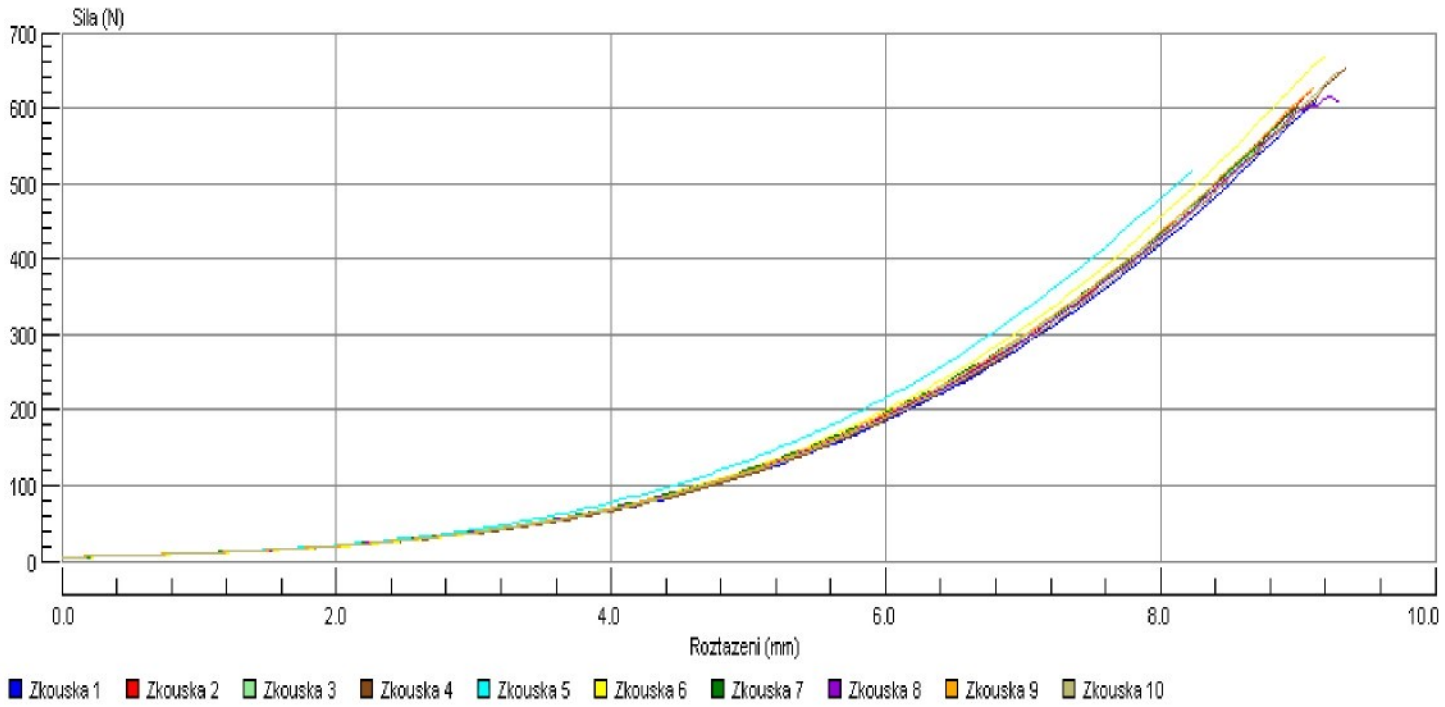
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100CO_weft
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:52
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.496	9.132	610.000
2	1.524	9.098	623.000
3	1.412	8.903	578.200
4	1.648	9.349	653.100
5	1.172	8.226	516.800
6	1.648	9.194	667.000
7	1.483	9.008	599.000
8	1.600	9.295	615.000
9	1.545	9.113	627.500
10	1.624	9.295	647.400
Min	1.172	8.226	516.800
Stred	1.515	9.061	613.700
Max	1.648	9.349	667.000
S.O.	0.143	0.324	43.060
VK	9.464	3.576	7.016
D.H.D	1.413	8.829	582.896
H.H.D.	1.618	9.293	644.504



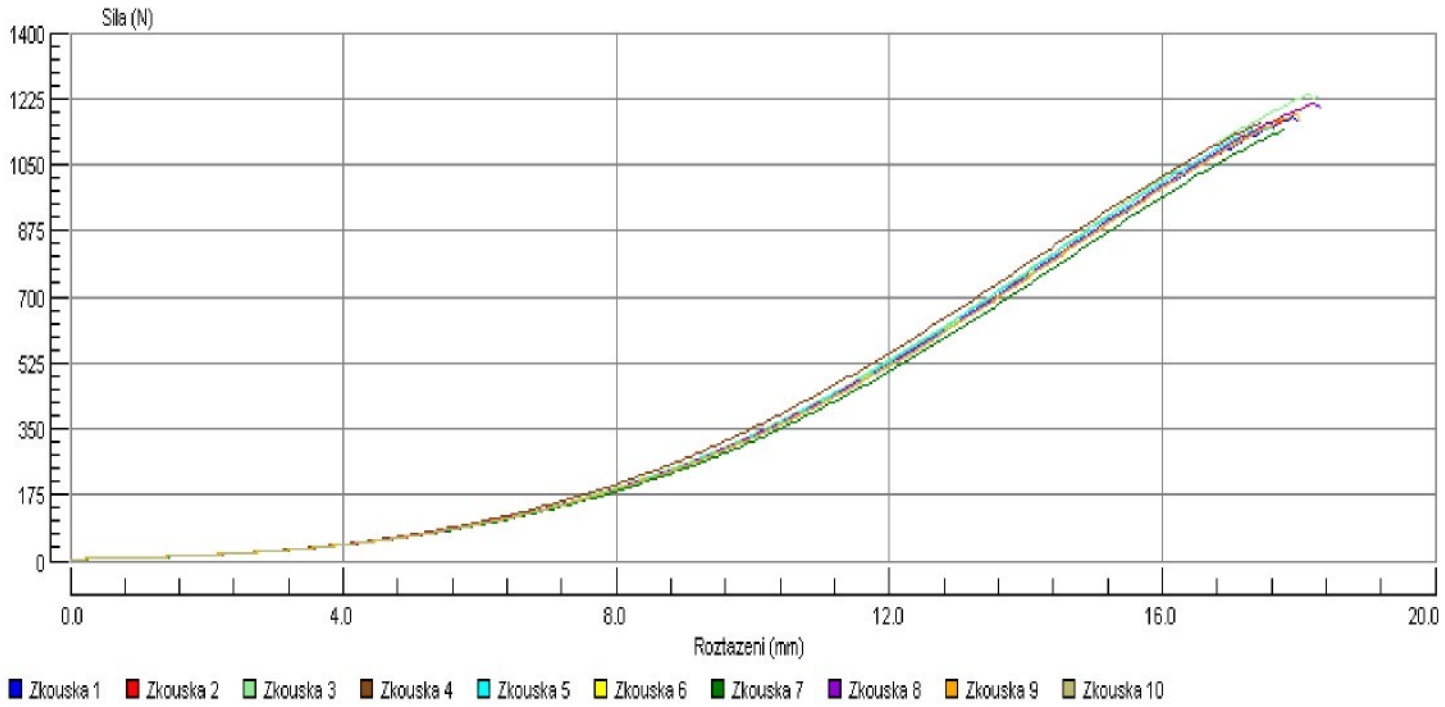
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100pop_weft
Meril : Chantal
Firma : Spolsin
Technologie : Kepr
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:56
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	6.943	17.975	1175.000
2	6.786	17.767	1167.000
3	7.399	18.269	1235.000
4	6.676	17.436	1161.000
5	6.684	17.625	1152.000
6	7.281	18.185	1209.000
7	6.587	17.775	1142.000
8	7.345	18.323	1211.000
9	6.989	18.026	1185.000
10	6.483	17.636	1147.000
Min	6.483	17.436	1142.000
Stred	6.917	17.902	1178.400
Max	7.399	18.323	1235.000
S.O.	0.330	0.300	31.088
VK	4.776	1.677	2.638
D.H.D	6.681	17.687	1156.160
H.H.D.	7.154	18.116	1200.640



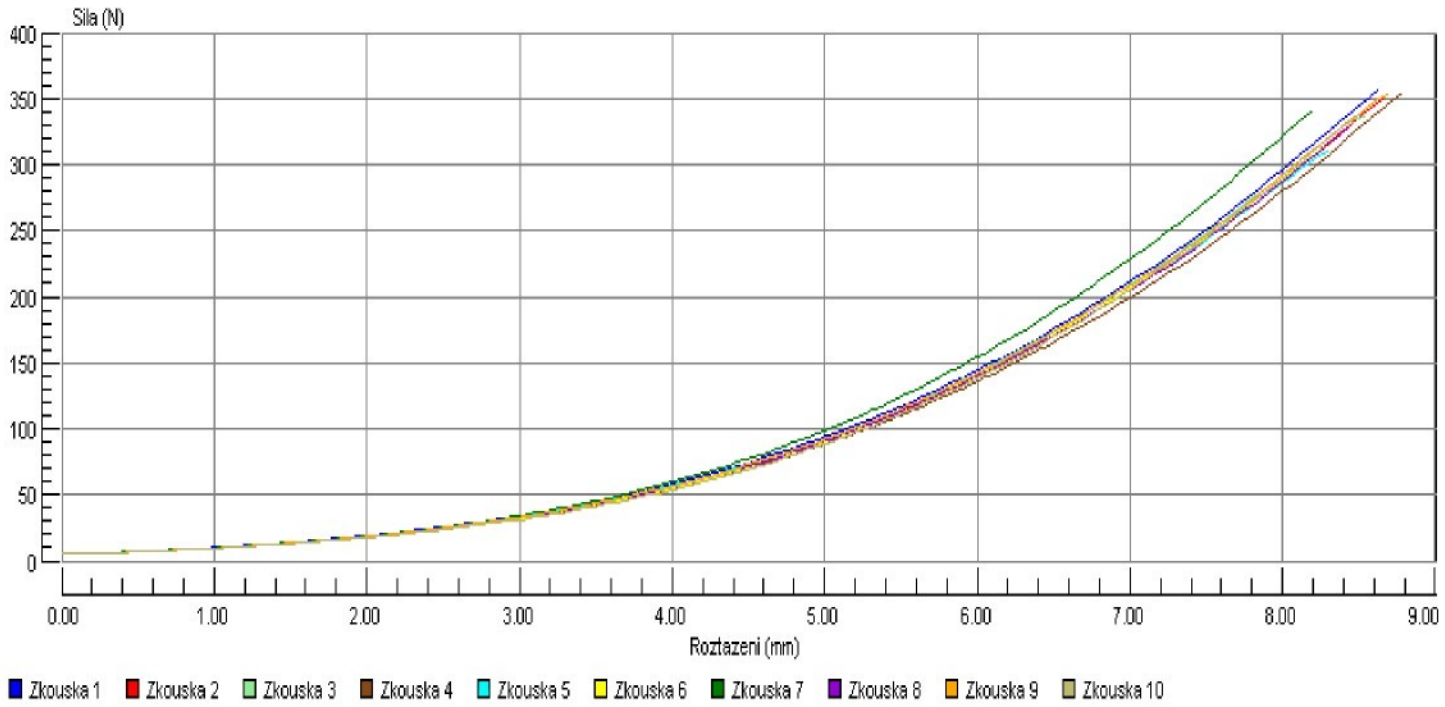
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 35pop_65co_warp
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:44
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	0.916	8.621	355.800
2	0.904	8.661	348.900
3	0.870	8.531	336.400
4	0.921	8.778	353.300
5	0.781	8.293	310.300
6	0.784	8.301	314.700
7	0.823	8.193	339.900
8	0.824	8.430	327.700
9	0.924	8.687	352.200
10	0.844	8.505	338.400
Min	0.781	8.193	310.300
Stred	0.859	8.500	337.760
Max	0.924	8.778	355.800
S.O.	0.056	0.193	15.963
VK	6.473	2.271	4.726
D.H.D	0.819	8.362	326.340
H.H.D.	0.899	8.638	349.180



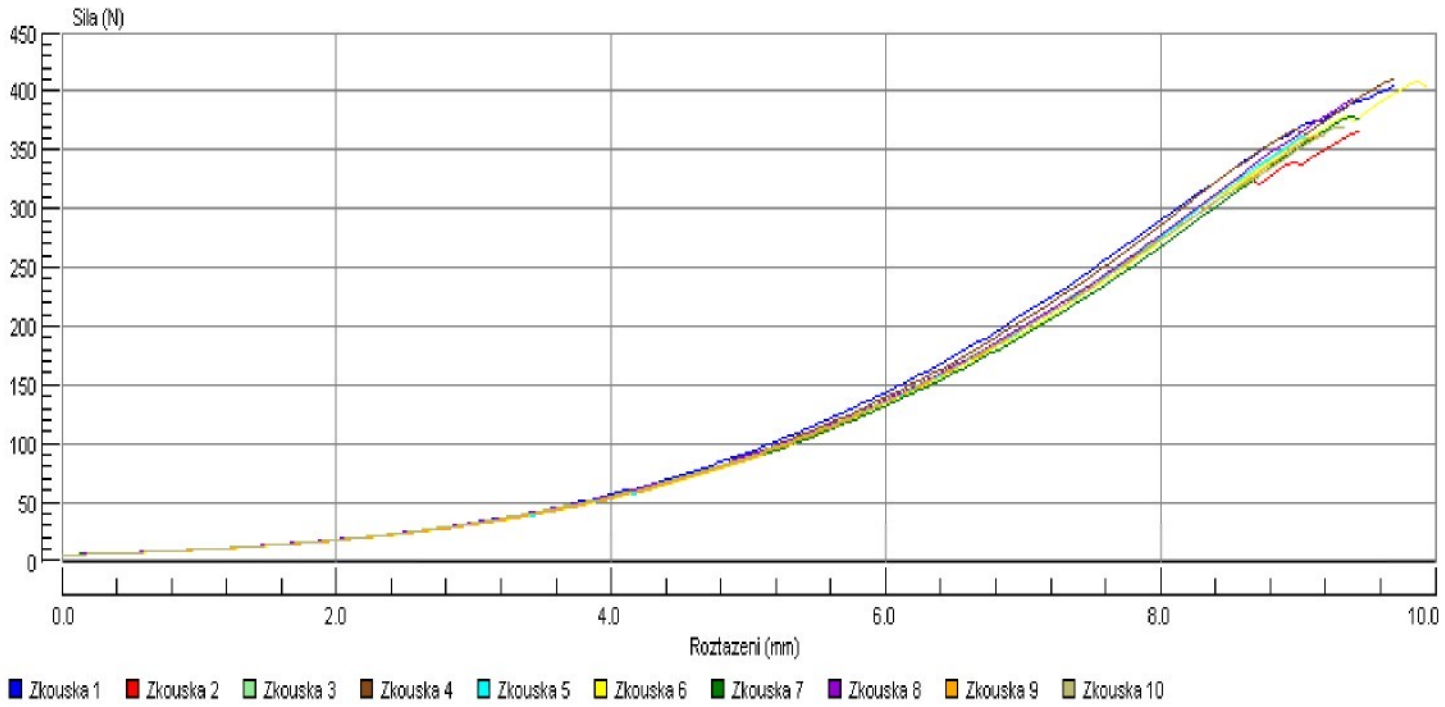
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 20pop_50co_warp
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:25
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.302	9.697	403.600
2	1.131	9.437	365.900
3	0.997	9.075	359.100
4	1.285	9.696	410.900
5	0.991	9.076	361.000
6	1.306	9.930	408.200
7	1.104	9.440	378.800
8	1.147	9.399	392.700
9	1.022	9.180	361.100
10	1.083	9.333	369.800
Min	0.991	9.075	359.100
Stred	1.137	9.426	381.110
Max	1.306	9.930	410.900
S.O.	0.123	0.282	20.857
VK	10.820	2.993	5.473
D.H.D	1.049	9.225	366.189
H.H.D.	1.225	9.628	396.031



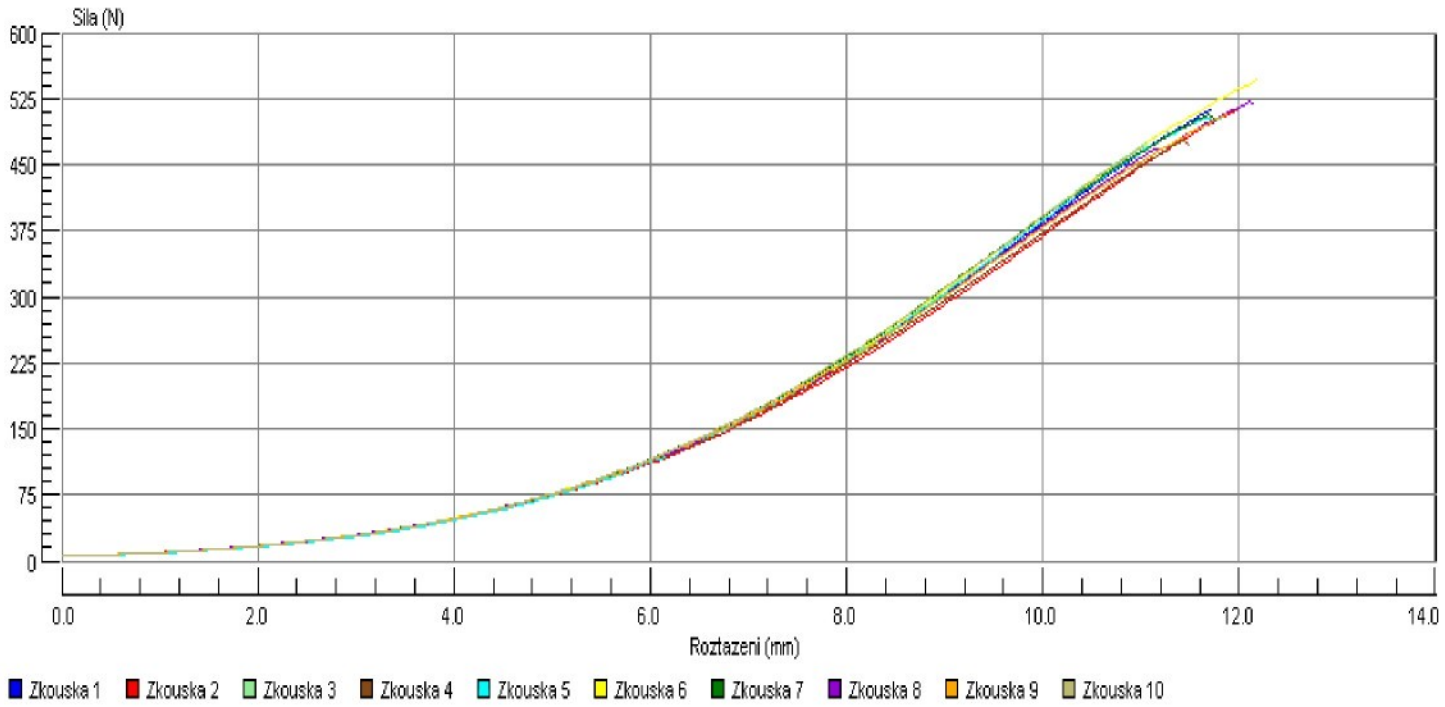
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 65pop_35co_warp
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:34
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.947	11.717	512.800
2	2.055	12.044	516.100
3	1.730	11.272	486.600
4	1.768	11.487	477.400
5	2.015	11.853	505.000
6	2.222	12.174	545.500
7	1.965	11.751	507.600
8	2.129	12.150	520.900
9	2.014	11.881	507.800
10	1.639	11.020	469.500
Min	1.639	11.020	469.500
Stred	1.948	11.735	504.920
Max	2.222	12.174	545.500
S.O.	0.184	0.378	22.242
VK	9.437	3.218	4.405
D.H.D	1.817	11.465	489.009
H.H.D.	2.080	12.005	520.831



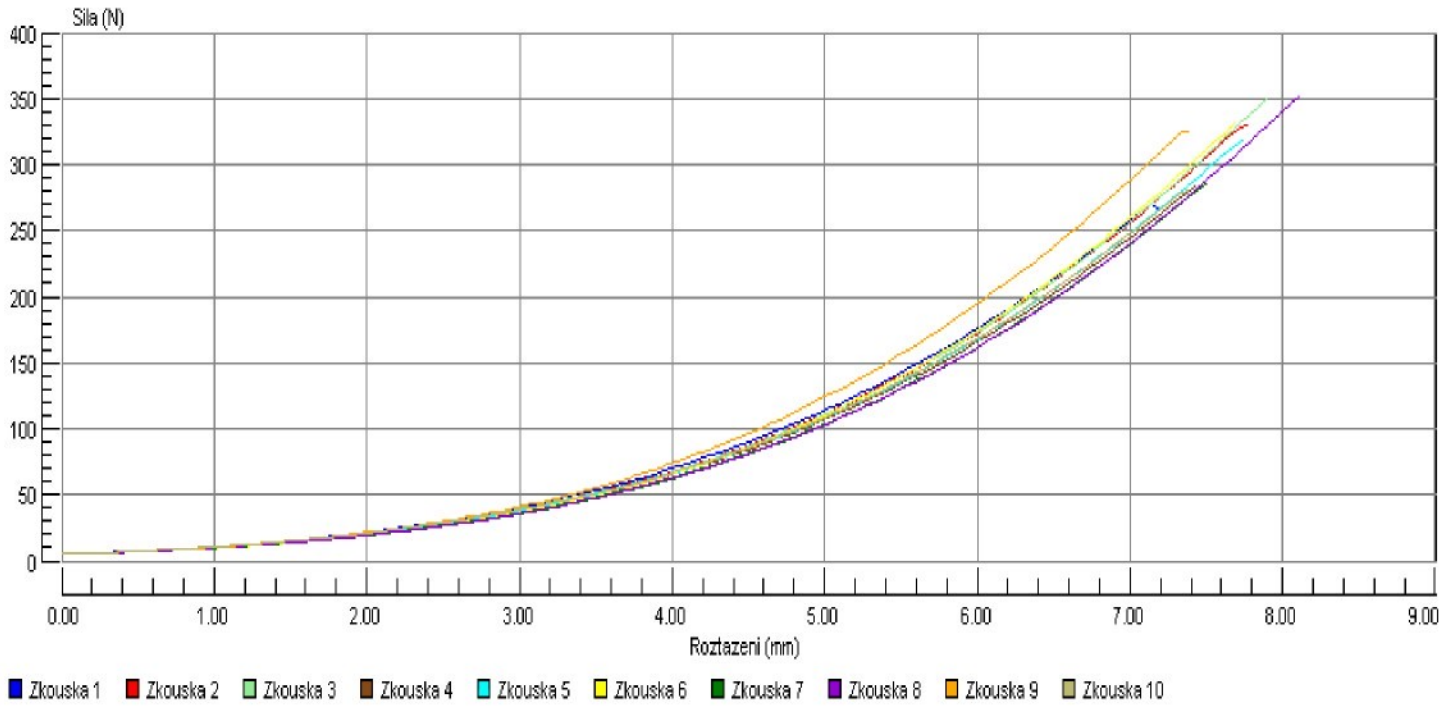
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100CO_warp
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:06
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	0.592	7.186	270.400
2	0.770	7.771	330.100
3	0.811	7.888	349.200
4	0.637	7.420	283.900
5	0.742	7.743	318.500
6	0.743	7.684	331.100
7	0.641	7.501	285.800
8	0.835	8.108	351.700
9	0.724	7.387	325.200
10	0.635	7.381	280.200
Min	0.592	7.186	270.400
Stred	0.713	7.607	312.610
Max	0.835	8.108	351.700
S.O.	0.083	0.280	29.968
VK	11.576	3.679	9.587
D.H.D	0.654	7.407	291.171
H.H.D.	0.772	7.807	334.049



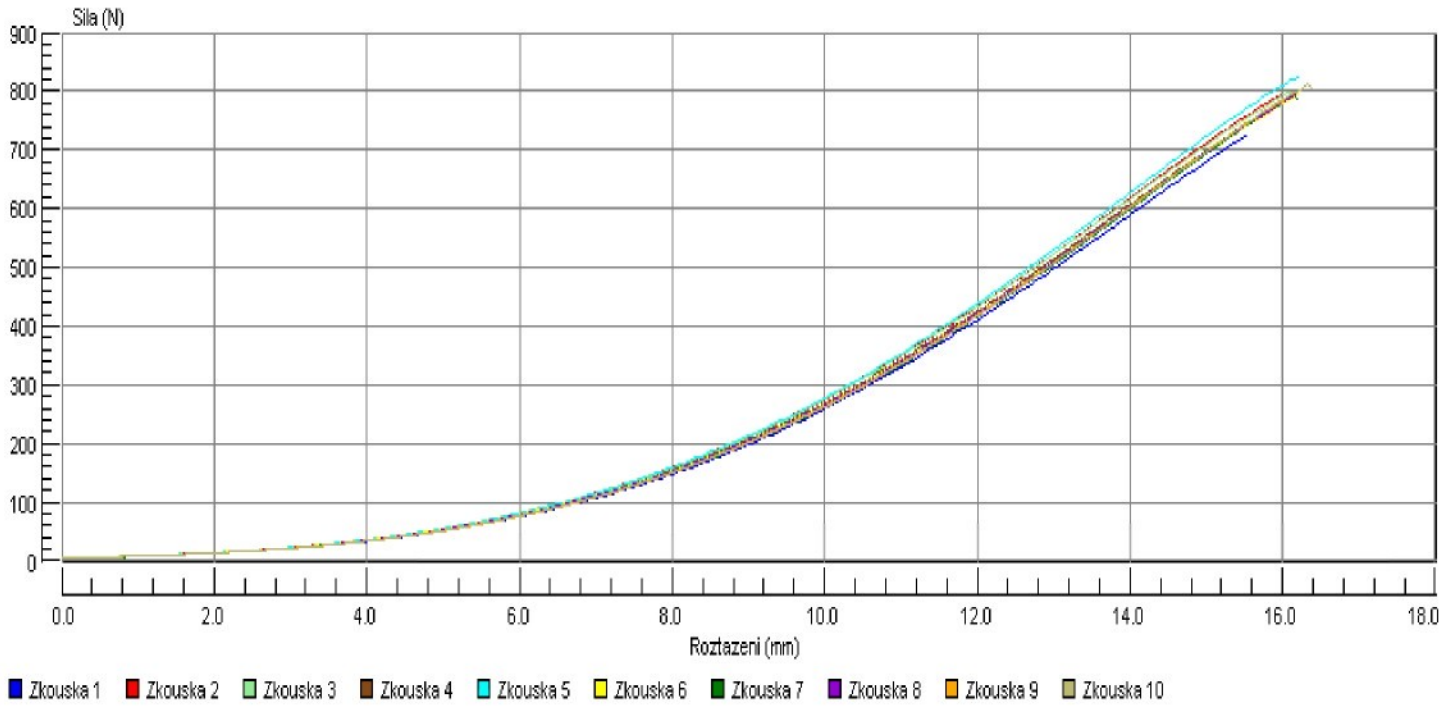
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100pop_warp
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:15
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	3.446	15.521	724.700
2	3.997	15.984	794.100
3	4.099	16.122	799.400
4	3.910	15.972	778.900
5	4.218	16.201	825.600
6	4.068	16.209	792.700
7	3.979	16.194	793.400
8	4.033	16.169	792.800
9	3.998	16.145	796.200
10	4.135	16.375	811.000
Min	3.446	15.521	724.700
Stred	3.988	16.089	790.880
Max	4.218	16.375	825.600
S.O.	0.209	0.230	26.370
VK	5.252	1.432	3.334
D.H.D	3.838	15.924	772.016
H.H.D.	4.138	16.254	809.744



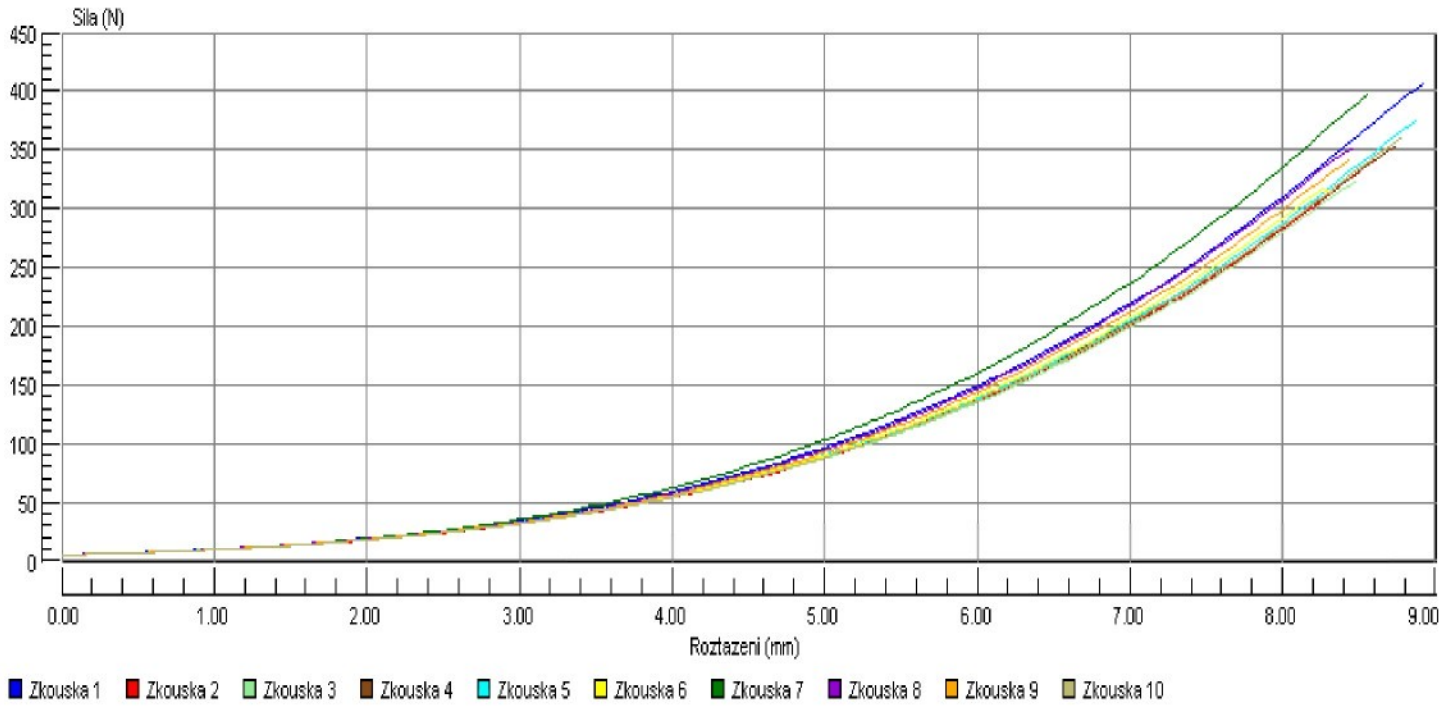
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 35pop_65co_weft
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:48
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	1.066	8.920	405.400
2	0.901	8.712	350.700
3	0.817	8.480	323.400
4	0.916	8.734	351.800
5	0.975	8.866	374.000
6	0.772	8.315	317.300
7	0.991	8.554	396.400
8	0.877	8.458	351.200
9	0.848	8.431	340.400
10	0.930	8.779	359.900
Min	0.772	8.315	317.300
Stred	0.909	8.625	357.050
Max	1.066	8.920	405.400
S.O.	0.087	0.204	28.428
VK	9.584	2.370	7.962
D.H.D	0.847	8.479	336.714
H.H.D.	0.972	8.771	377.386



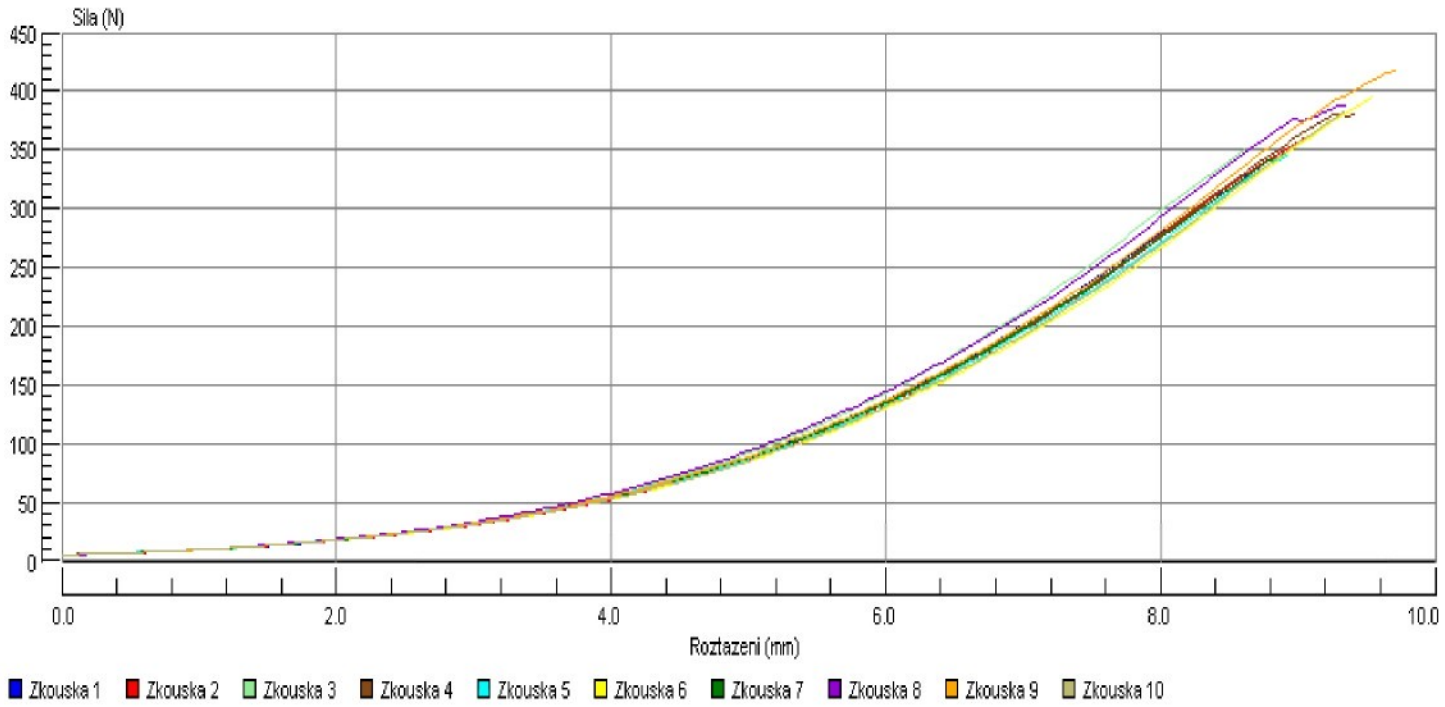
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 20pop_50co_weft
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:30
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	0.891	8.712	334.300
2	0.994	9.042	360.700
3	0.904	8.612	349.800
4	1.106	9.411	381.000
5	0.946	8.919	344.900
6	1.157	9.542	395.000
7	0.945	8.892	347.300
8	1.174	9.340	387.700
9	1.281	9.702	416.600
10	1.088	9.337	381.900
Min	0.891	8.612	334.300
Stred	1.049	9.151	369.920
Max	1.281	9.702	416.600
S.O.	0.132	0.367	26.430
VK	12.570	4.007	7.145
D.H.D	0.954	8.889	351.013
H.H.D.	1.143	9.413	388.827



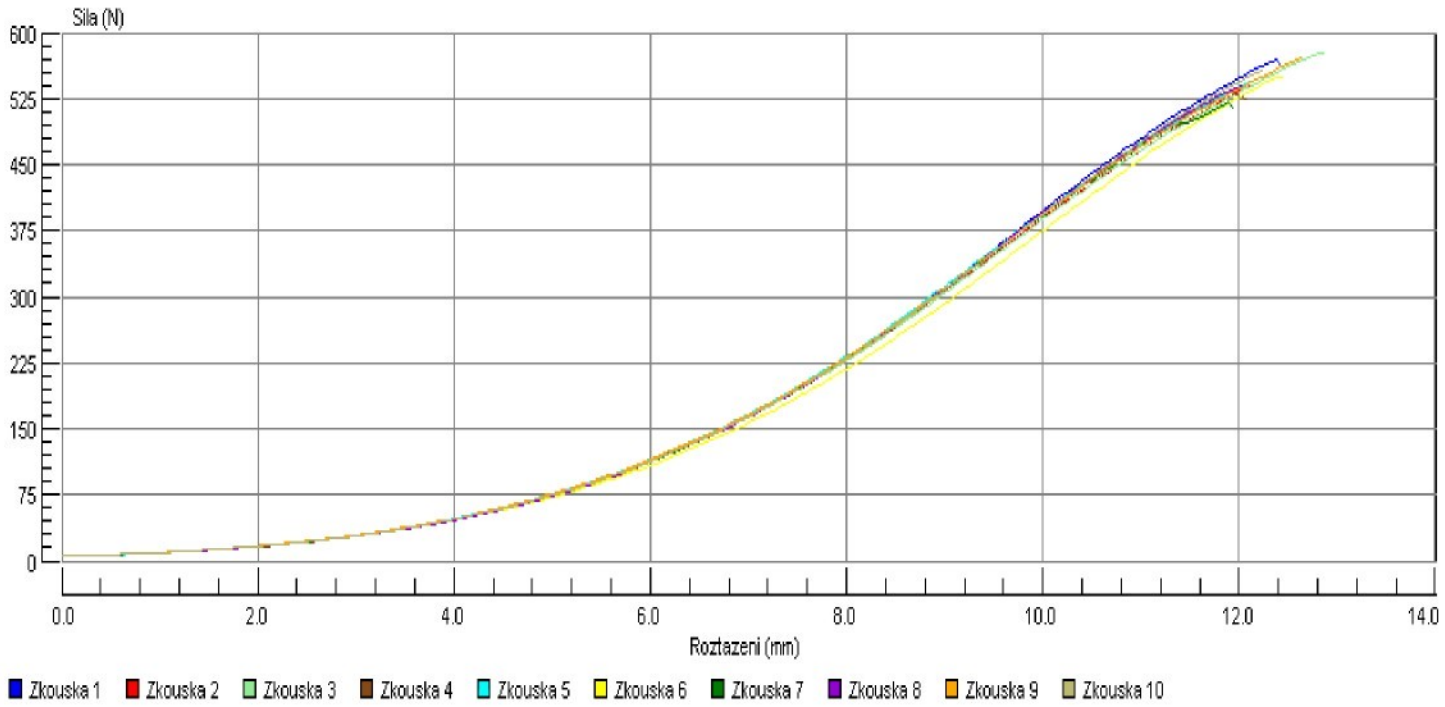
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 65pop_35co_weft
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:39
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	2.364	12.434	569.400
2	2.173	12.117	540.000
3	2.555	12.861	577.500
4	2.078	12.076	533.100
5	2.204	12.117	544.800
6	2.250	12.439	549.400
7	2.057	11.937	521.200
8	2.138	12.021	540.000
9	2.490	12.643	570.600
10	2.260	12.233	556.200
Min	2.057	11.937	521.200
Stred	2.257	12.288	550.220
Max	2.555	12.861	577.500
S.O.	0.167	0.298	18.066
VK	7.393	2.425	3.283
D.H.D	2.138	12.075	537.296
H.H.D.	2.376	12.501	563.144



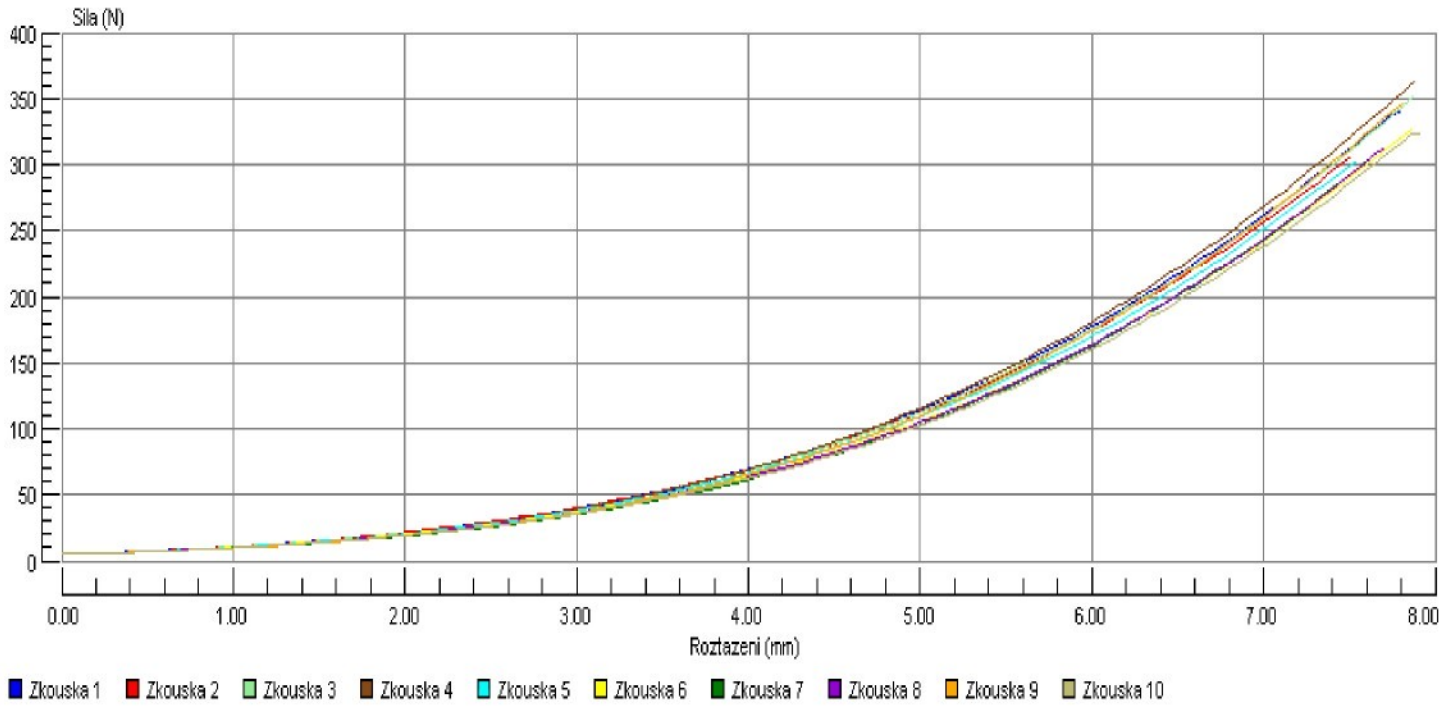
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100CO_weft
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:11
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	0.797	7.792	339.300
2	0.692	7.498	304.600
3	0.818	7.871	350.700
4	0.839	7.875	362.000
5	0.682	7.532	302.300
6	0.762	7.859	327.000
7	0.670	7.587	301.200
8	0.711	7.701	312.300
9	0.785	7.811	346.500
10	0.761	7.908	323.600
Min	0.670	7.498	301.200
Stred	0.752	7.743	326.950
Max	0.839	7.908	362.000
S.O.	0.060	0.153	21.917
VK	7.957	1.982	6.704
D.H.D	0.709	7.634	311.271
H.H.D.	0.794	7.853	342.629



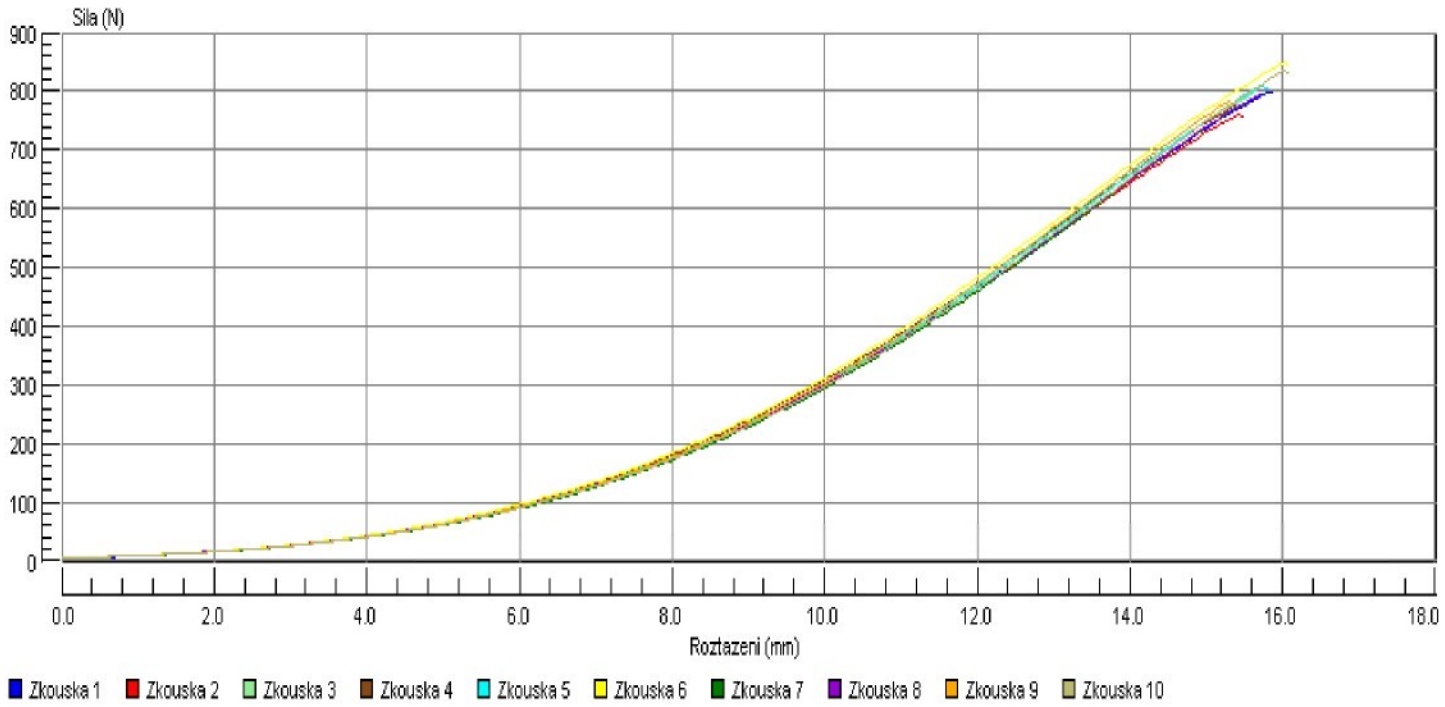
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni : 4_23_008
Material : 100pop_weft
Meril : Chantal
Firma : Spolsin
Technologie : platno
Jemnost (tex) : 45
Poznamka : 100mm_min

Nazev zkousky : Ball burst BB1PN
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 9:20
Rychlost zkousky : 100.000 mm/min
Predzatez : 5.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.m)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)
1	4.153	15.856	799.300
2	3.800	15.470	760.700
3	3.989	15.594	793.400
4	3.868	15.392	773.800
5	4.076	15.806	807.200
6	4.470	16.080	848.300
7	3.833	15.490	775.200
8	4.037	15.703	795.100
9	3.787	15.351	784.100
10	4.298	16.065	834.700
Min	3.787	15.351	760.700
Stred	4.031	15.681	797.180
Max	4.470	16.080	848.300
S.O.	0.226	0.266	27.236
VK	5.618	1.693	3.417
D.H.D	3.869	15.491	777.696
H.H.D.	4.193	15.871	816.664



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

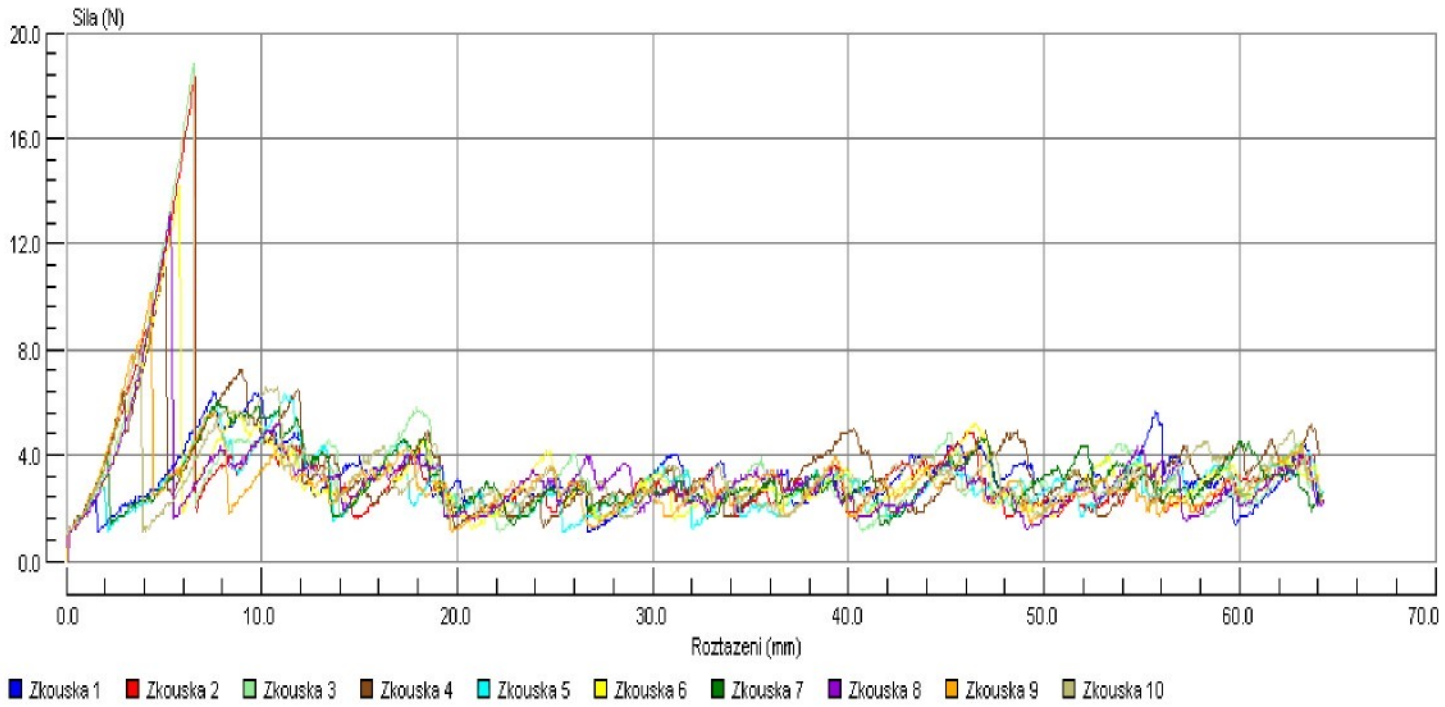
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_35pop_65co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 10:13
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	21.618	64.106	6.400	6.400	0.201	7.550
2	49.433	63.907	18.300	18.300	0.210	6.582
3	48.473	63.882	18.800	18.800	0.219	6.526
4	25.363	64.028	11.300	11.300	0.221	5.051
5	37.890	64.277	6.300	6.300	0.183	11.191
6	33.969	64.044	14.200	14.200	0.206	5.833
7	22.678	64.193	6.100	6.100	0.196	7.767
8	28.334	64.310	13.200	13.200	0.197	5.359
9	20.425	64.216	10.100	10.100	0.189	4.315
10	13.127	63.603	7.900	7.900	0.204	3.581
Min	13.127	63.603	6.100	6.100	0.183	3.581
Stred	30.131	64.057	11.260	11.260	0.202	6.375
Max	49.433	64.310	18.800	18.800	0.221	11.191
S.O.	12.116	0.216	4.788	4.788	0.012	2.153
VK	40.212	0.337	42.520	42.520	5.994	33.766
D.H.D	21.463	63.902	7.835	7.835	0.194	4.835
H.H.D.	38.798	64.211	14.685	14.685	0.211	7.915



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

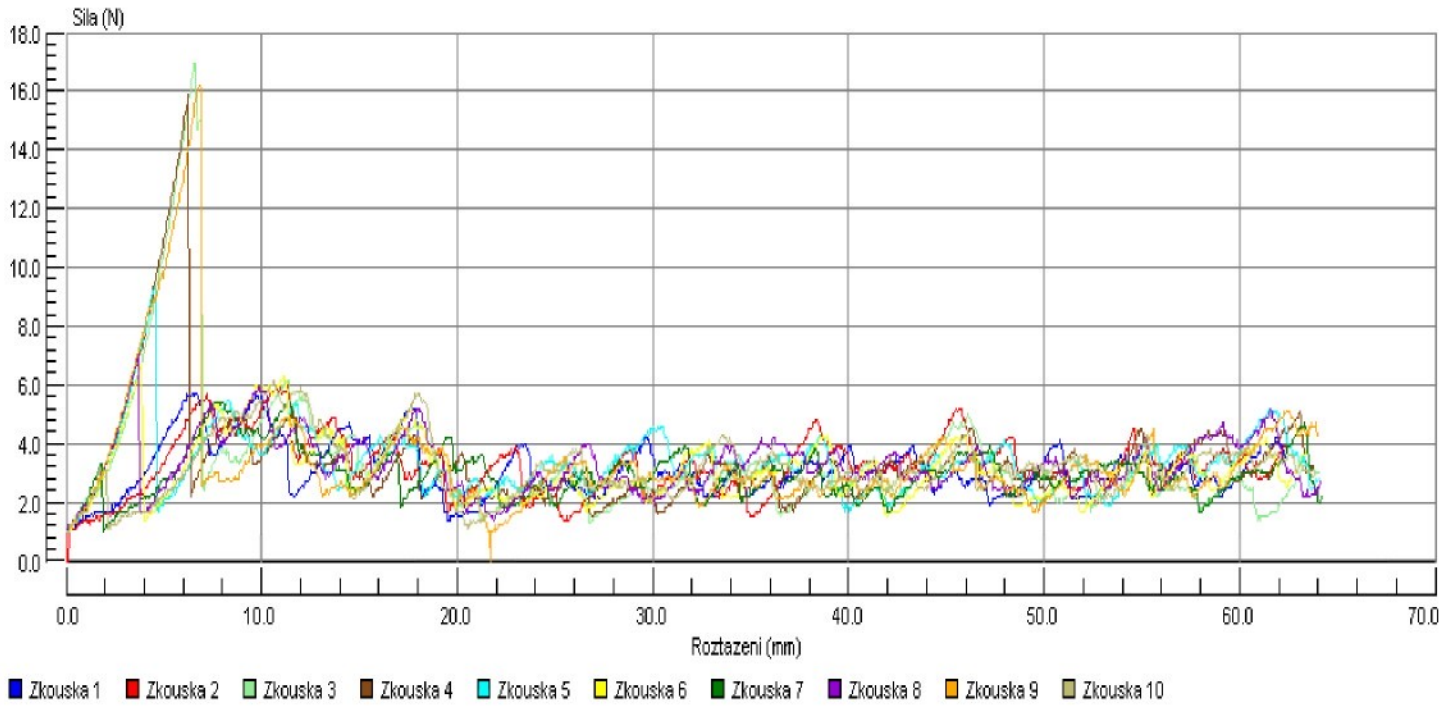
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_50pop_50co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 9:43
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	17.252	62.368	5.800	5.800	0.195	6.298
2	40.401	62.351	6.000	6.000	0.203	11.347
3	43.758	64.047	16.900	16.900	0.219	6.573
4	40.623	63.771	15.900	15.900	0.219	6.263
5	18.501	64.040	9.300	9.300	0.216	4.521
6	12.279	63.456	6.700	6.700	0.198	3.835
7	38.014	64.169	5.500	5.500	0.191	11.400
8	12.266	64.117	7.000	7.000	0.212	3.684
9	47.576	63.976	16.200	16.200	0.220	6.836
10	32.772	63.795	6.100	6.100	0.202	10.611
Min	12.266	62.351	5.500	5.500	0.191	3.684
Stred	30.344	63.609	9.540	9.540	0.207	7.137
Max	47.576	64.169	16.900	16.900	0.220	11.400
S.O.	13.797	0.690	4.810	4.810	0.011	2.972
VK	45.468	1.085	50.419	50.419	5.246	41.648
D.H.D	20.474	63.115	6.099	6.099	0.200	5.010
H.H.D.	40.214	64.103	12.981	12.981	0.215	9.263



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

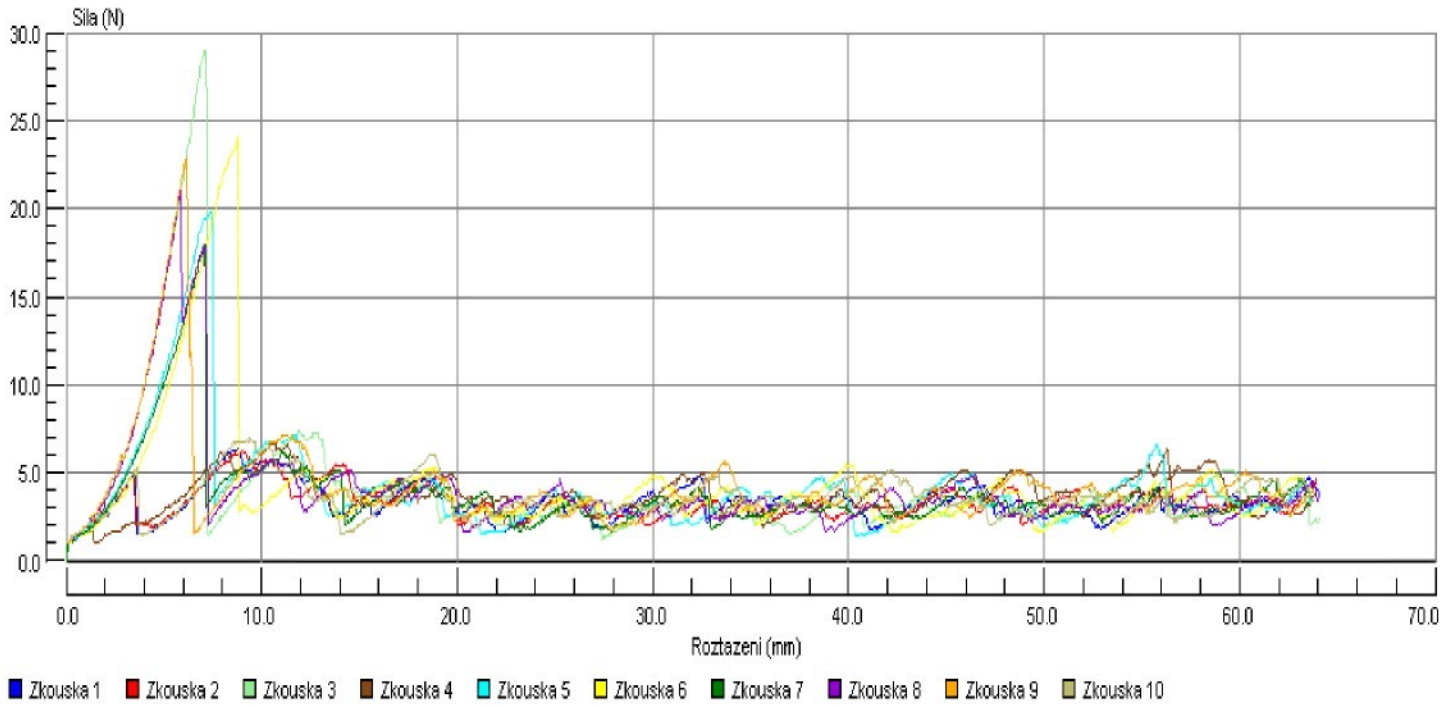
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_65pop_35co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 9:58
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	28.595	64.077	6.400	6.400	0.212	8.771
2	29.622	63.926	6.300	6.300	0.214	8.975
3	76.871	64.027	29.000	29.000	0.268	7.140
4	35.993	63.825	6.600	6.600	0.237	10.395
5	59.303	63.611	19.800	19.800	0.263	7.374
6	82.016	63.575	24.100	24.100	0.270	8.779
7	49.829	63.611	17.900	17.900	0.239	7.055
8	44.174	64.017	21.000	21.000	0.257	5.848
9	52.156	63.829	22.900	22.900	0.271	6.154
10	33.462	63.765	7.000	7.000	0.227	9.403
Min	28.595	63.575	6.300	6.300	0.212	5.848
Stred	49.202	63.826	16.100	16.100	0.246	7.989
Max	82.016	64.077	29.000	29.000	0.271	10.395
S.O.	18.883	0.185	8.697	8.697	0.023	1.488
VK	38.378	0.290	54.020	54.020	9.450	18.621
D.H.D	35.694	63.694	9.878	9.878	0.229	6.925
H.H.D.	62.710	63.959	22.322	22.322	0.262	9.054



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

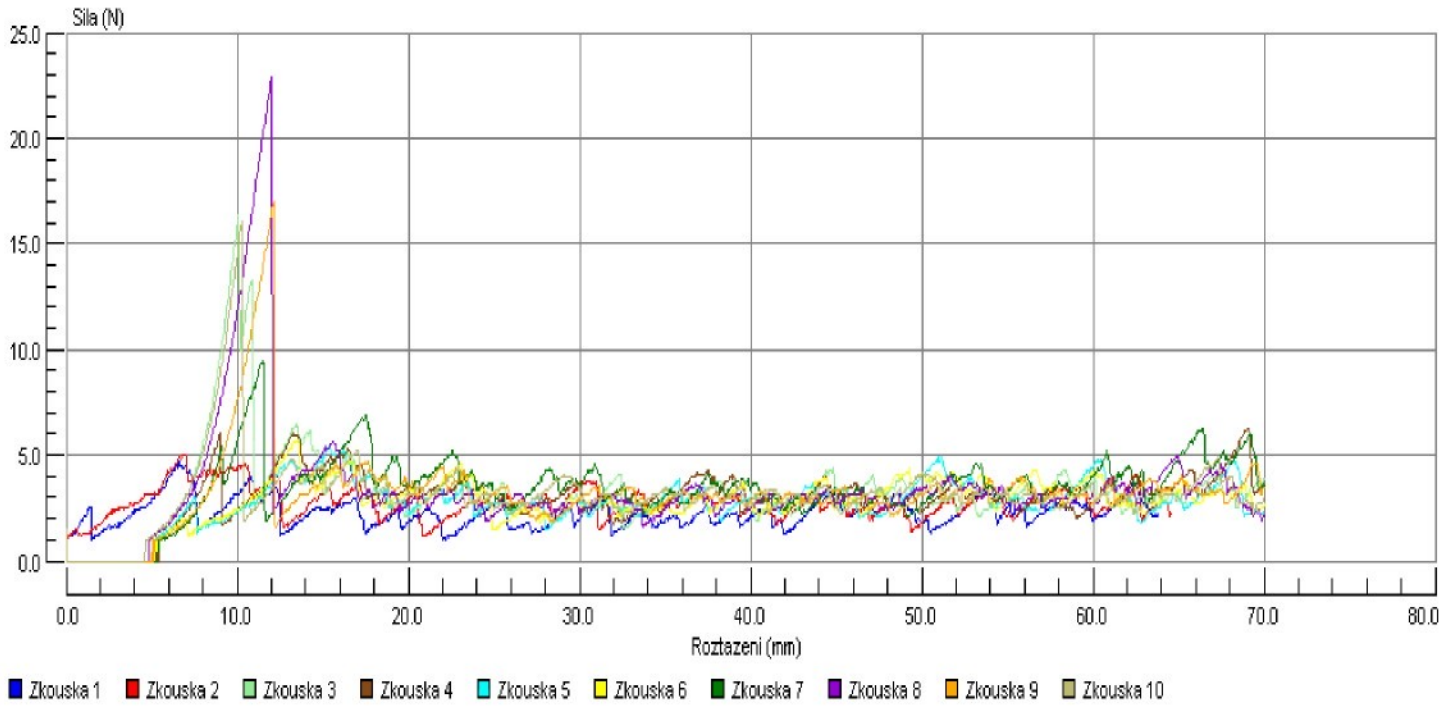
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_100co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 9:12
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	15.364	63.819	4.700	4.700	0.146	6.659
2	17.440	64.559	5.000	5.000	0.180	6.766
3	28.734	70.001	16.400	16.400	0.228	10.080
4	205.463	69.997	6.200	6.200	0.210	68.993
5	29.363	70.032	5.400	5.400	0.194	15.327
6	21.756	70.023	5.700	5.700	0.197	13.546
7	24.301	70.046	9.500	9.500	0.241	11.515
8	57.378	70.002	22.900	22.900	0.238	12.002
9	40.432	70.010	17.000	17.000	0.225	12.153
10	30.759	70.037	16.100	16.100	0.222	10.269
Min	15.364	63.819	4.700	4.700	0.146	6.659
Stred	47.099	68.853	10.890	10.890	0.208	16.731
Max	205.463	70.046	22.900	22.900	0.241	68.993
S.O.	56.957	2.464	6.609	6.609	0.030	18.561
VK	120.931	3.579	60.687	60.687	14.196	110.940
D.H.D	6.353	67.090	6.162	6.162	0.187	3.453
H.H.D.	87.844	70.615	15.618	15.618	0.229	30.009



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

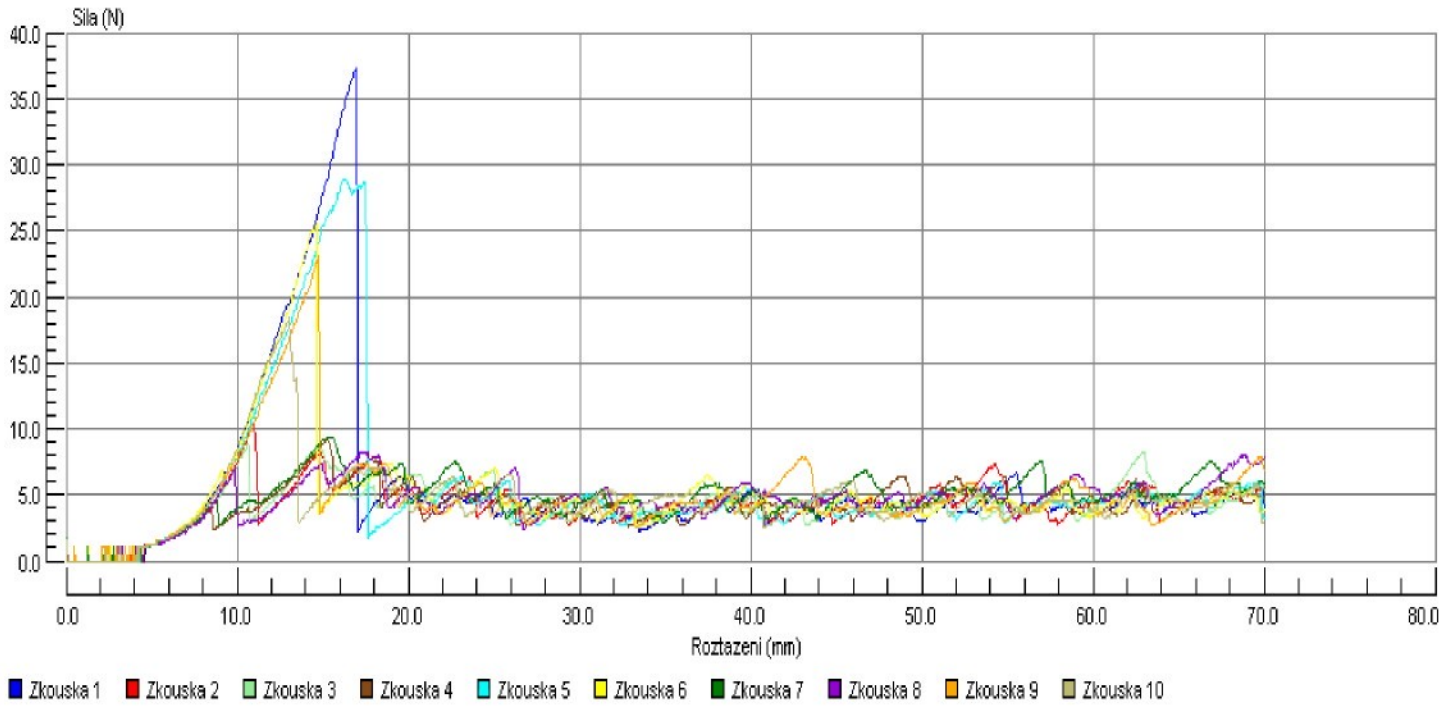
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_100pop
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 9:27
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	172.828	70.036	37.300	37.300	0.395	16.978
2	26.068	70.038	10.400	10.400	0.298	10.943
3	22.738	70.036	8.900	8.900	0.299	10.630
4	44.342	70.021	9.100	9.100	0.295	15.249
5	134.170	70.010	28.900	28.900	0.397	16.257
6	98.716	70.001	25.500	25.500	0.351	14.634
7	49.214	70.040	9.400	9.400	0.329	15.470
8	55.391	70.017	8.100	8.100	0.314	17.151
9	89.685	70.007	23.000	23.000	0.346	14.702
10	60.837	69.997	18.400	18.400	0.329	13.005
Min	22.738	69.997	8.100	8.100	0.295	10.630
Stred	75.399	70.020	17.900	17.900	0.335	14.502
Max	172.828	70.040	37.300	37.300	0.397	17.151
S.O.	48.492	0.016	10.351	10.351	0.038	2.302
VK	64.314	0.023	57.829	57.829	11.186	15.872
D.H.D	40.709	70.009	10.495	10.495	0.309	12.855
H.H.D.	110.089	70.032	25.305	25.305	0.362	16.148



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

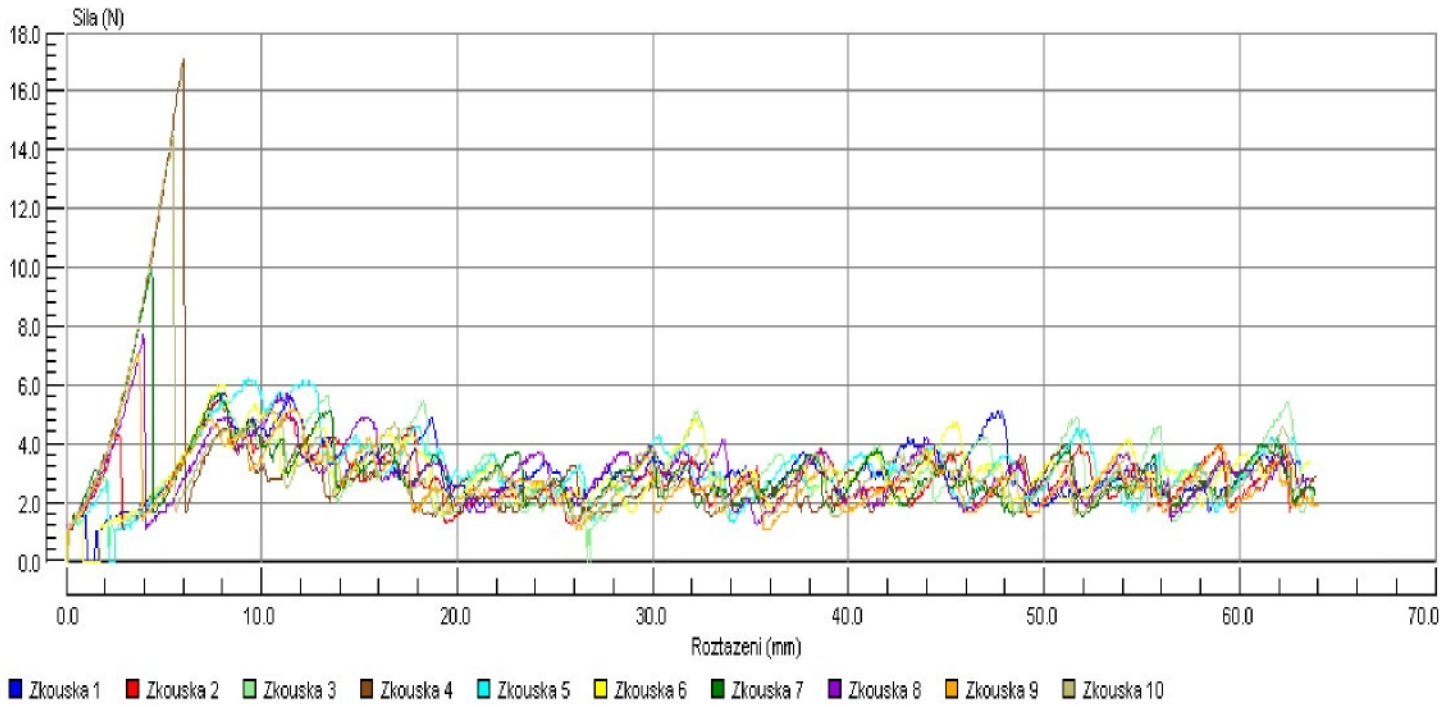
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_35pop_65co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 11:24
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	19.059	63.629	5.700	5.700	0.193	7.924
2	21.872	63.740	5.500	5.500	0.180	7.821
3	44.394	63.775	5.600	5.600	0.193	13.243
4	42.151	63.913	17.100	17.100	0.196	5.997
5	27.505	63.053	6.200	6.200	0.199	9.343
6	18.354	63.598	6.000	6.000	0.191	7.764
7	19.890	63.848	9.900	9.900	0.193	4.363
8	14.189	63.564	7.700	7.700	0.192	3.946
9	12.893	64.000	7.100	7.100	0.176	3.681
10	33.852	63.190	14.500	14.500	0.200	5.469
Min	12.893	63.053	5.500	5.500	0.176	3.681
Stred	25.416	63.631	8.530	8.530	0.191	6.955
Max	44.394	64.000	17.100	17.100	0.200	13.243
S.O.	11.215	0.304	4.100	4.100	0.008	2.929
VK	44.127	0.477	48.067	48.067	4.071	42.111
D.H.D	17.393	63.414	5.597	5.597	0.186	4.860
H.H.D.	33.439	63.848	11.463	11.463	0.197	9.050



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

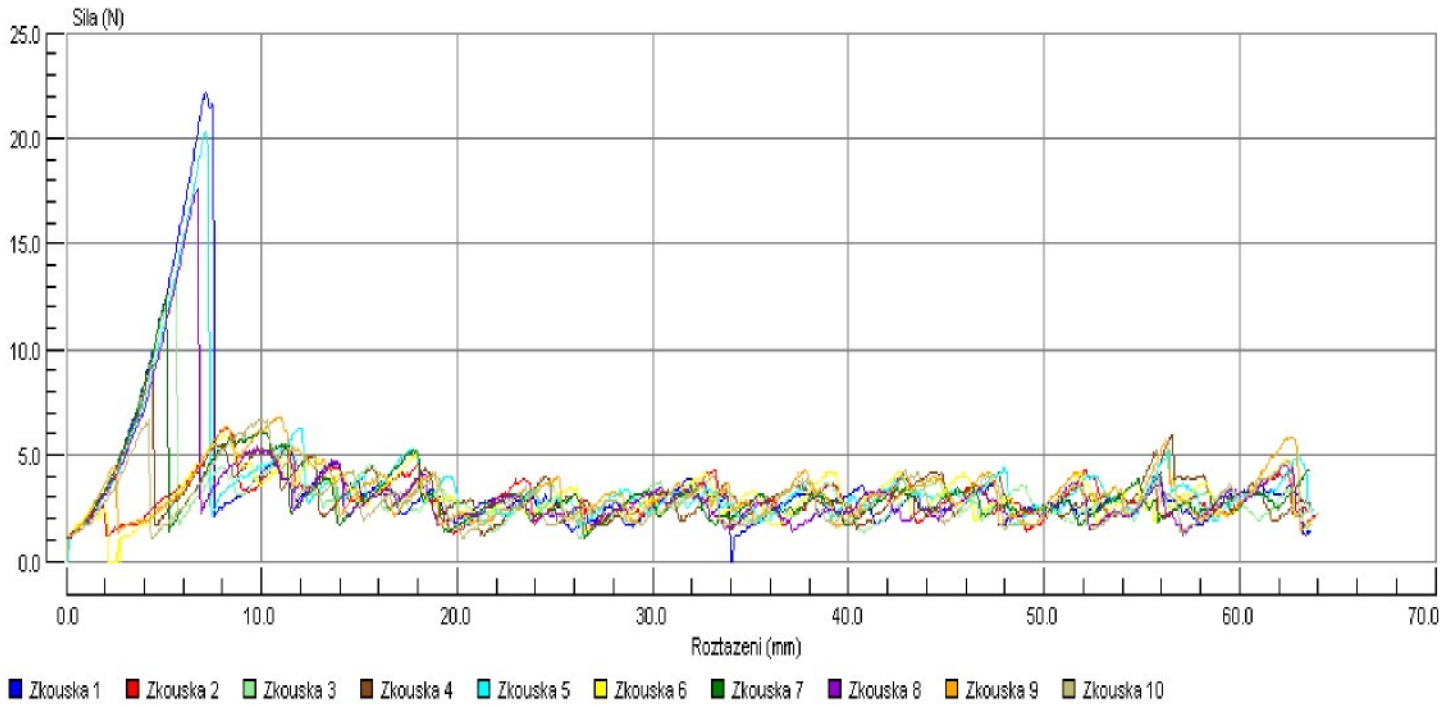
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_50pop_50co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 10:56
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	62.328	63.619	22.200	22.200	0.228	7.156
2	23.784	63.455	6.300	6.300	0.188	8.240
3	32.671	63.700	13.600	13.600	0.196	5.623
4	17.936	63.605	9.200	9.200	0.201	4.366
5	55.926	63.747	20.300	20.300	0.239	7.106
6	20.890	63.021	5.900	5.900	0.190	8.025
7	27.235	63.524	12.500	12.500	0.198	5.152
8	47.557	63.893	17.600	17.600	0.207	6.736
9	39.993	63.980	6.800	6.800	0.206	10.769
10	13.724	63.577	6.700	6.700	0.187	4.201
Min	13.724	63.021	5.900	5.900	0.187	4.201
Stred	34.205	63.612	12.110	12.110	0.204	6.737
Max	62.328	63.980	22.200	22.200	0.239	10.769
S.O.	16.652	0.263	6.143	6.143	0.017	2.008
VK	48.682	0.414	50.728	50.728	8.426	29.806
D.H.D	22.293	63.424	7.715	7.715	0.192	5.301
H.H.D.	46.117	63.800	16.505	16.505	0.216	8.174



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

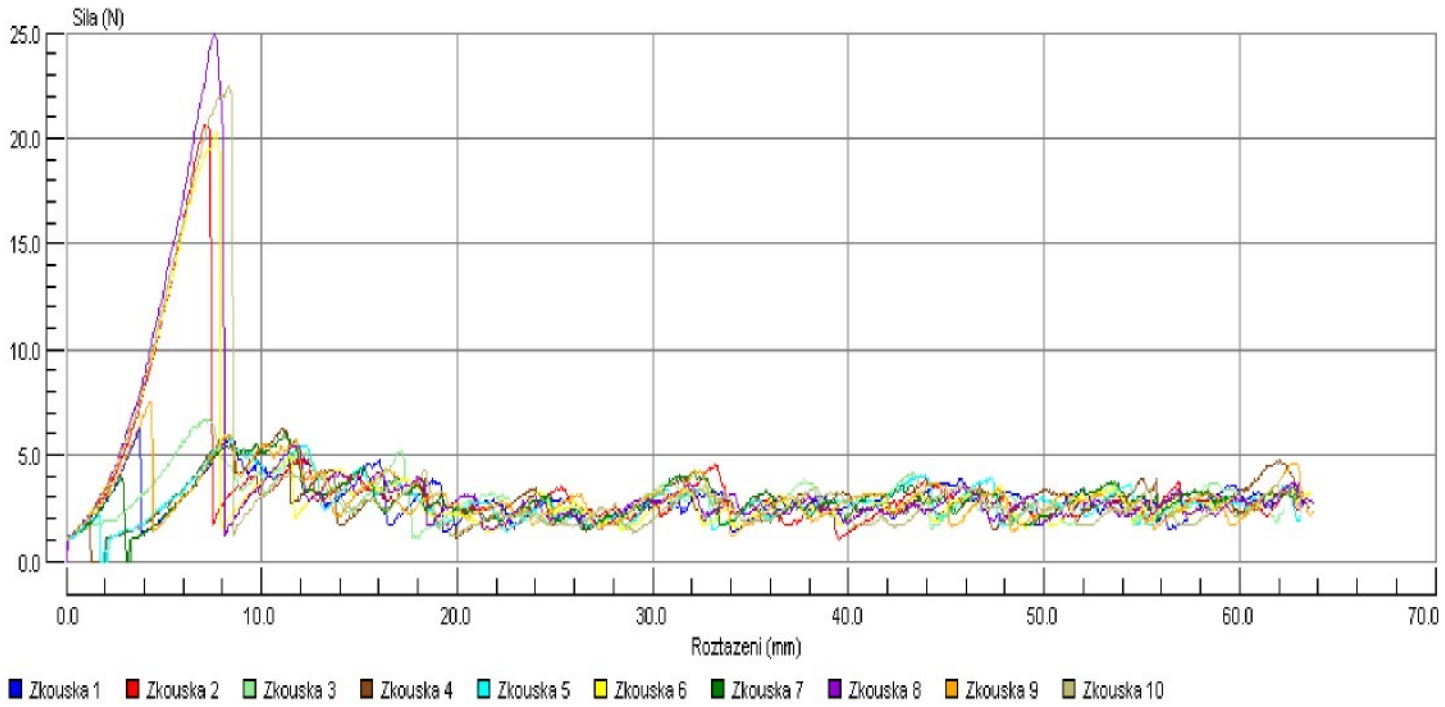
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_65pop_35co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 11:10
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	11.232	63.525	6.200	6.200	0.183	3.728
2	57.690	63.178	20.600	20.600	0.219	7.054
3	22.351	62.281	6.700	6.700	0.182	6.975
4	34.421	63.234	6.200	6.200	0.180	11.035
5	20.207	63.102	5.800	5.800	0.177	8.128
6	69.291	63.664	20.300	20.300	0.222	7.642
7	37.198	63.156	6.000	6.000	0.184	11.186
8	76.137	63.718	24.900	24.900	0.238	7.621
9	15.274	63.735	7.500	7.500	0.190	4.257
10	86.871	63.150	22.500	22.500	0.227	8.370
Min	11.232	62.281	5.800	5.800	0.177	3.728
Stred	43.067	63.274	12.670	12.670	0.200	7.600
Max	86.871	63.735	24.900	24.900	0.238	11.186
S.O.	27.408	0.432	8.199	8.199	0.023	2.413
VK	63.640	0.683	64.716	64.716	11.622	31.747
D.H.D	23.460	62.965	6.804	6.804	0.184	5.874
H.H.D.	62.674	63.583	18.536	18.536	0.217	9.326



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

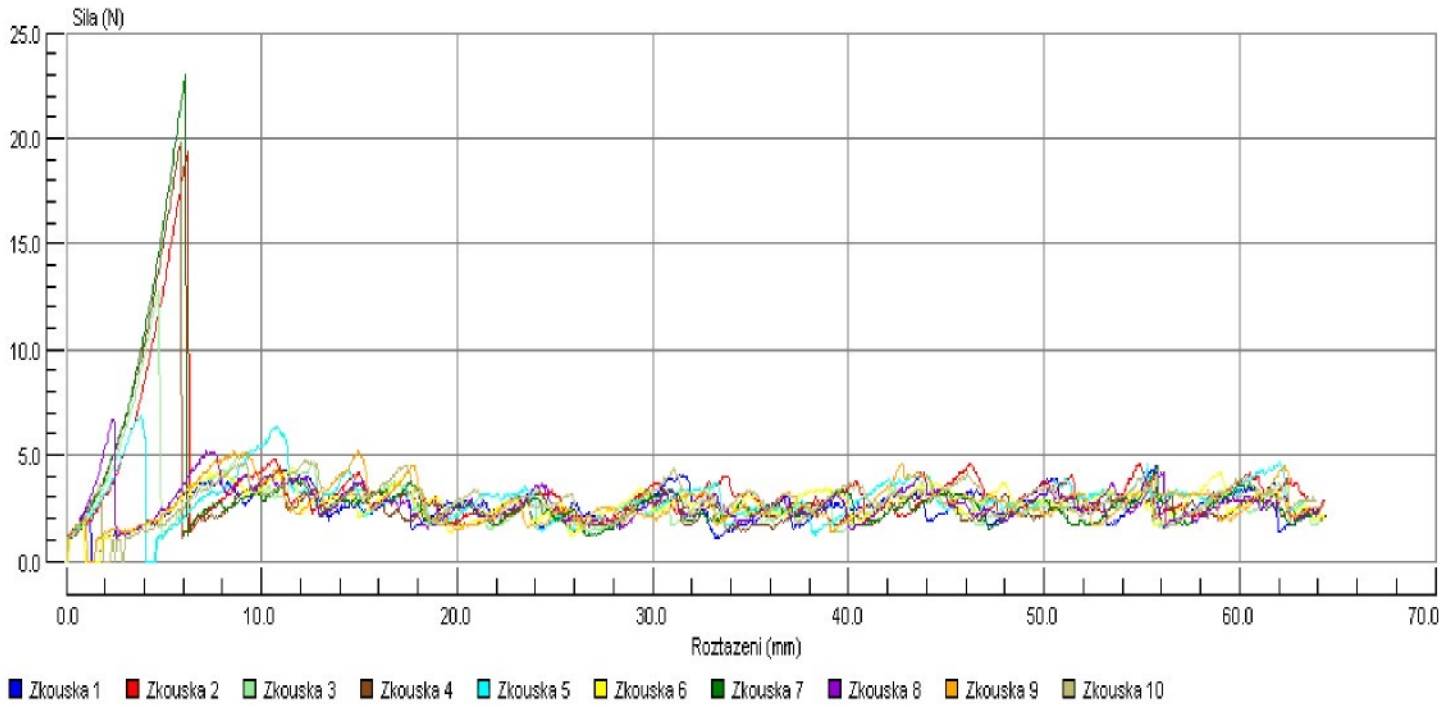
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_100co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 10:27
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	141.762	63.838	4.500	4.500	0.163	55.649
2	44.507	63.449	19.400	19.400	0.214	6.208
3	25.130	64.162	12.800	12.800	0.183	4.731
4	45.706	64.395	19.800	19.800	0.189	5.845
5	13.204	63.565	6.900	6.900	0.188	3.835
6	29.404	64.351	4.400	4.400	0.172	11.555
7	53.129	64.292	23.000	23.000	0.200	6.104
8	7.603	64.328	6.700	6.700	0.175	2.367
9	20.566	64.352	5.200	5.200	0.175	8.552
10	32.289	63.933	4.800	4.800	0.181	12.193
Min	7.603	63.449	4.400	4.400	0.163	2.367
Stred	41.330	64.066	10.750	10.750	0.184	11.704
Max	141.762	64.395	23.000	23.000	0.214	55.649
S.O.	38.154	0.350	7.362	7.362	0.015	15.758
VK	92.315	0.546	68.485	68.485	8.022	134.643
D.H.D	14.036	63.816	5.483	5.483	0.173	0.431
H.H.D.	68.624	64.317	16.017	16.017	0.195	22.977



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

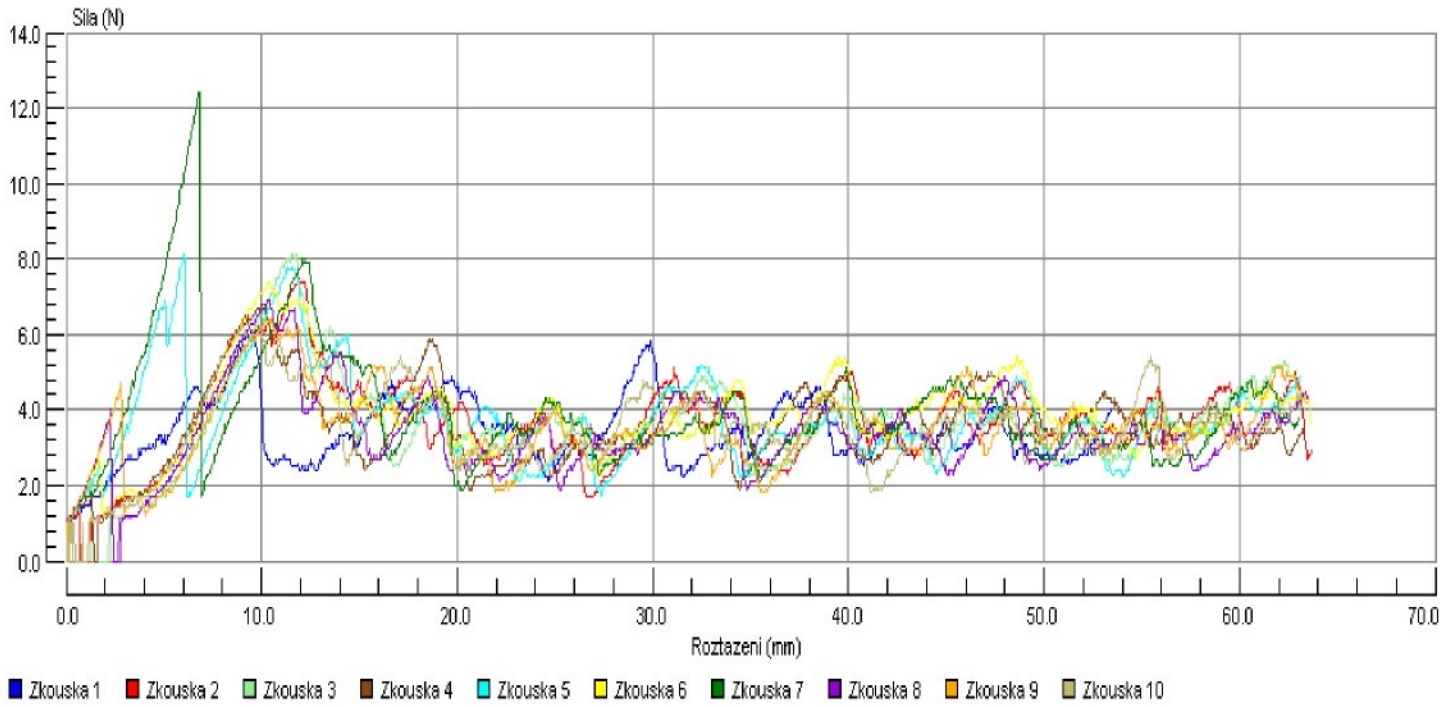
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : atlas_100pop
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 11.3.2010 10:42
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	31.098	53.422	6.100	6.100	0.182	9.459
2	42.524	63.647	7.500	7.500	0.236	11.937
3	37.255	63.305	8.100	8.100	0.230	11.559
4	31.277	63.302	6.800	6.800	0.226	9.981
5	23.425	63.087	8.100	8.100	0.238	6.040
6	33.820	63.676	7.400	7.400	0.248	10.299
7	35.462	63.018	12.400	12.400	0.251	6.776
8	32.276	63.427	6.900	6.900	0.217	10.296
9	32.052	63.488	6.400	6.400	0.226	10.189
10	22.811	63.322	6.300	6.300	0.224	8.973
Min	22.811	53.422	6.100	6.100	0.182	6.040
Stred	32.200	62.369	7.600	7.600	0.228	9.551
Max	42.524	63.676	12.400	12.400	0.251	11.937
S.O.	5.894	3.151	1.829	1.829	0.019	1.880
VK	18.305	5.052	24.063	24.063	8.486	19.681
D.H.D	27.984	60.115	6.292	6.292	0.214	8.206
H.H.D.	36.417	64.623	8.908	8.908	0.242	10.896



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

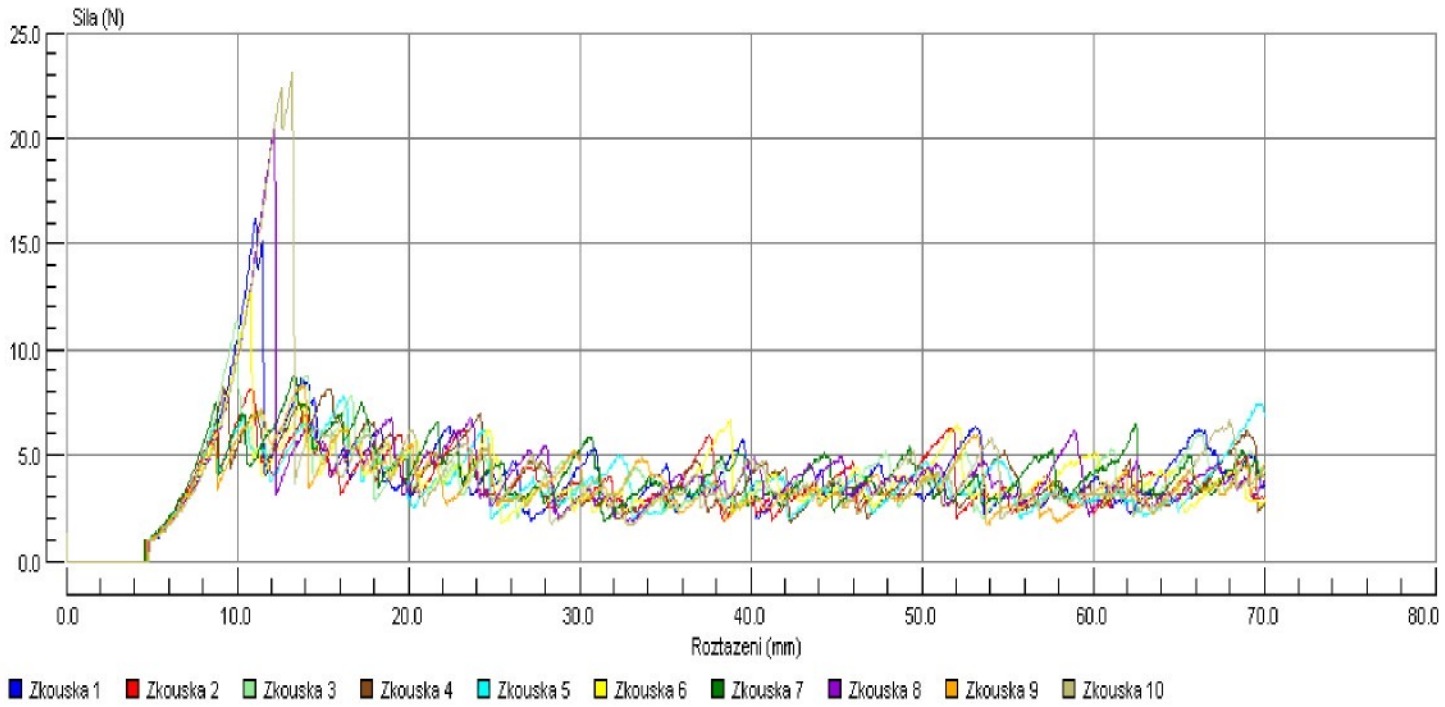
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_35POP_65Co
Meril : Chantal
Firma :
Technologie : 1_2warp
Jemnost [tex] : 45
Poznamka : 100

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 13:32
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	35.430	70.030	16.200	16.200	0.276	11.066
2	25.052	70.008	8.100	8.100	0.248	10.749
3	23.680	70.017	11.300	11.300	0.268	9.963
4	15.671	70.022	8.200	8.200	0.260	9.226
5	54.871	70.001	7.800	7.800	0.248	16.208
6	30.263	70.013	13.100	13.100	0.262	10.805
7	40.961	70.018	8.700	8.700	0.275	13.263
8	52.323	70.033	20.600	20.600	0.281	12.171
9	41.856	70.046	8.300	8.300	0.244	13.683
10	74.469	70.032	23.100	23.100	0.291	13.229
Min	15.671	70.001	7.800	7.800	0.244	9.226
Stred	39.458	70.022	12.540	12.540	0.265	12.036
Max	74.469	70.046	23.100	23.100	0.291	16.208
S.O.	17.512	0.013	5.632	5.632	0.016	2.092
VK	44.381	0.019	44.911	44.911	5.974	17.377
D.H.D	26.930	70.012	8.511	8.511	0.254	10.540
H.H.D.	51.985	70.032	16.569	16.569	0.277	13.533



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

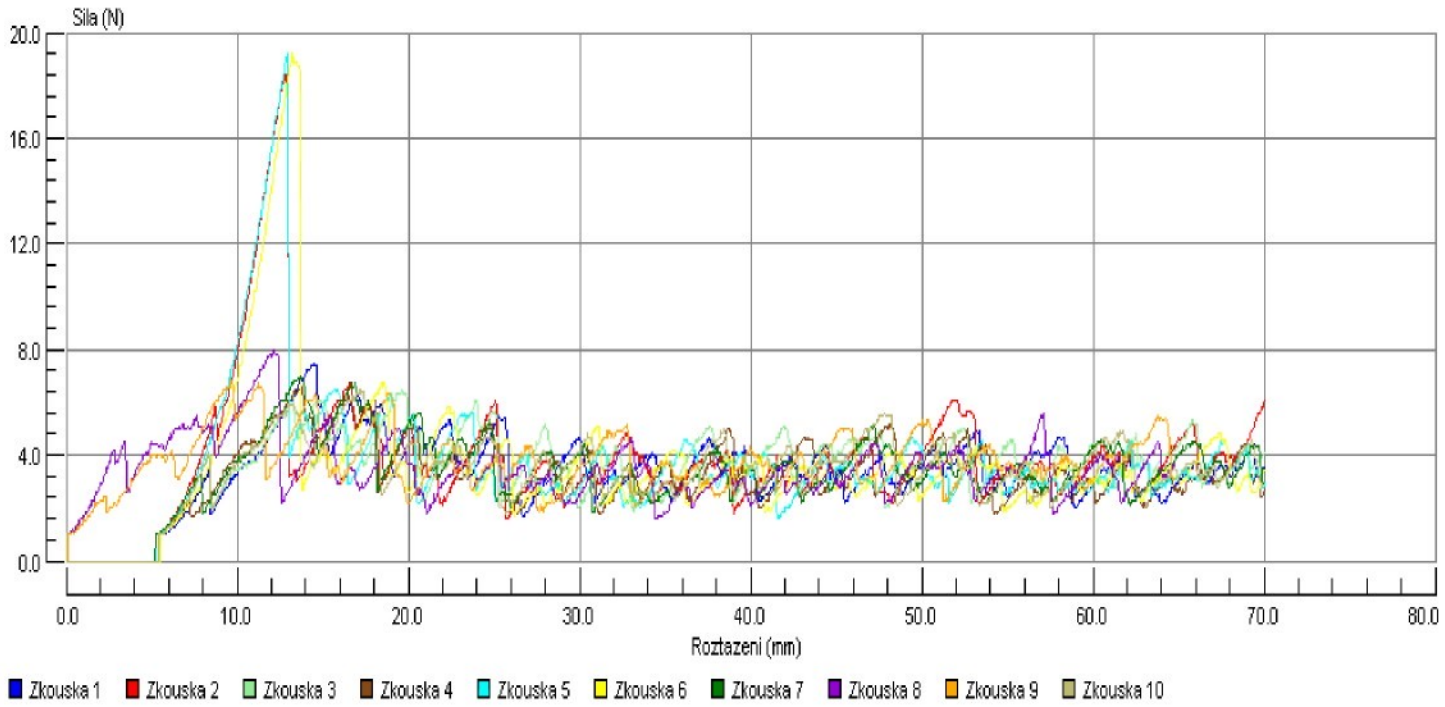
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_50Pop_50Co
Meril : Chantal
Firma :
Technologie : 1_2warp
Jemnost [tex] : 45
Poznamka : 100

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 14:17
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	33.245	70.042	7.500	7.500	0.235	14.515
2	54.036	70.048	18.500	18.500	0.271	12.797
3	58.396	70.032	6.500	6.500	0.249	19.628
4	29.966	70.046	6.600	6.600	0.227	13.786
5	56.395	70.002	19.200	19.200	0.260	12.908
6	54.745	70.035	19.200	19.200	0.256	13.220
7	30.778	69.999	7.000	7.000	0.235	13.678
8	53.067	64.727	8.000	8.000	0.228	12.131
9	33.126	64.749	6.800	6.800	0.245	9.649
10	46.823	69.998	6.500	6.500	0.233	17.150
Min	29.966	64.727	6.500	6.500	0.227	9.649
Stred	45.058	68.968	10.580	10.580	0.244	13.946
Max	58.396	70.048	19.200	19.200	0.271	19.628
S.O.	11.840	2.229	5.809	5.809	0.015	2.742
VK	26.278	3.233	54.907	54.907	6.091	19.660
D.H.D	36.588	67.373	6.424	6.424	0.233	11.985
H.H.D.	53.528	70.563	14.736	14.736	0.255	15.908



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

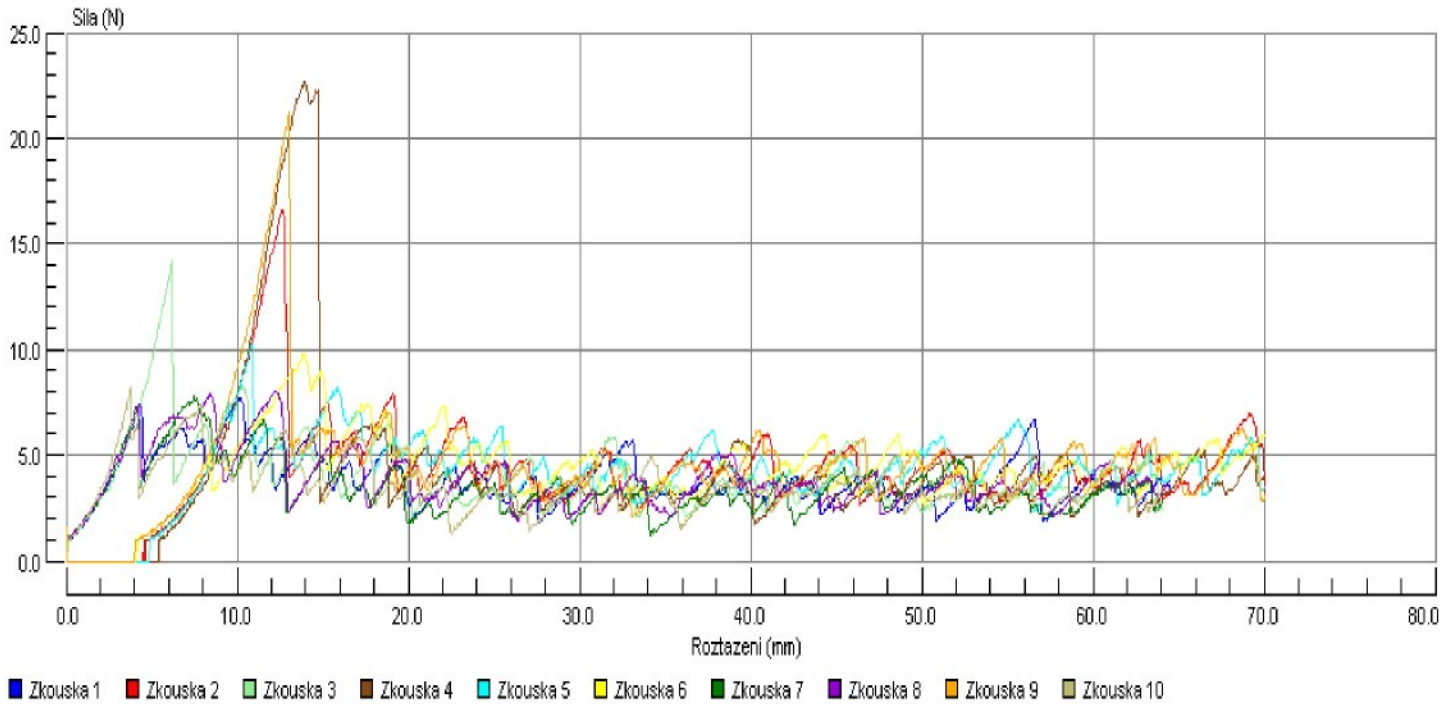
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_65POP_35Co
Meril : Chantal
Firma :
Technologie : 1_2warp
Jemnost [tex] : 45
Poznamka : 100

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 13:09
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	15.693	64.499	7.700	7.700	0.247	4.427
2	49.719	70.014	16.600	16.600	0.304	12.581
3	34.583	64.086	14.200	14.200	0.260	6.201
4	77.309	70.022	22.700	22.700	0.302	13.920
5	26.186	70.004	10.300	10.300	0.297	10.862
6	45.948	70.046	9.800	9.800	0.302	13.840
7	34.311	64.034	7.800	7.800	0.223	7.510
8	64.142	64.475	8.000	8.000	0.251	12.142
9	66.550	70.014	21.200	21.200	0.324	13.013
10	13.593	64.160	8.200	8.200	0.229	3.782
Min	13.593	64.034	7.700	7.700	0.223	3.782
Stred	42.803	67.135	12.650	12.650	0.274	9.828
Max	77.309	70.046	22.700	22.700	0.324	13.920
S.O.	21.786	3.044	5.727	5.727	0.036	3.961
VK	50.898	4.534	45.274	45.274	13.045	40.309
D.H.D	27.218	64.958	8.553	8.553	0.248	6.994
H.H.D.	58.389	69.313	16.747	16.747	0.299	12.662



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

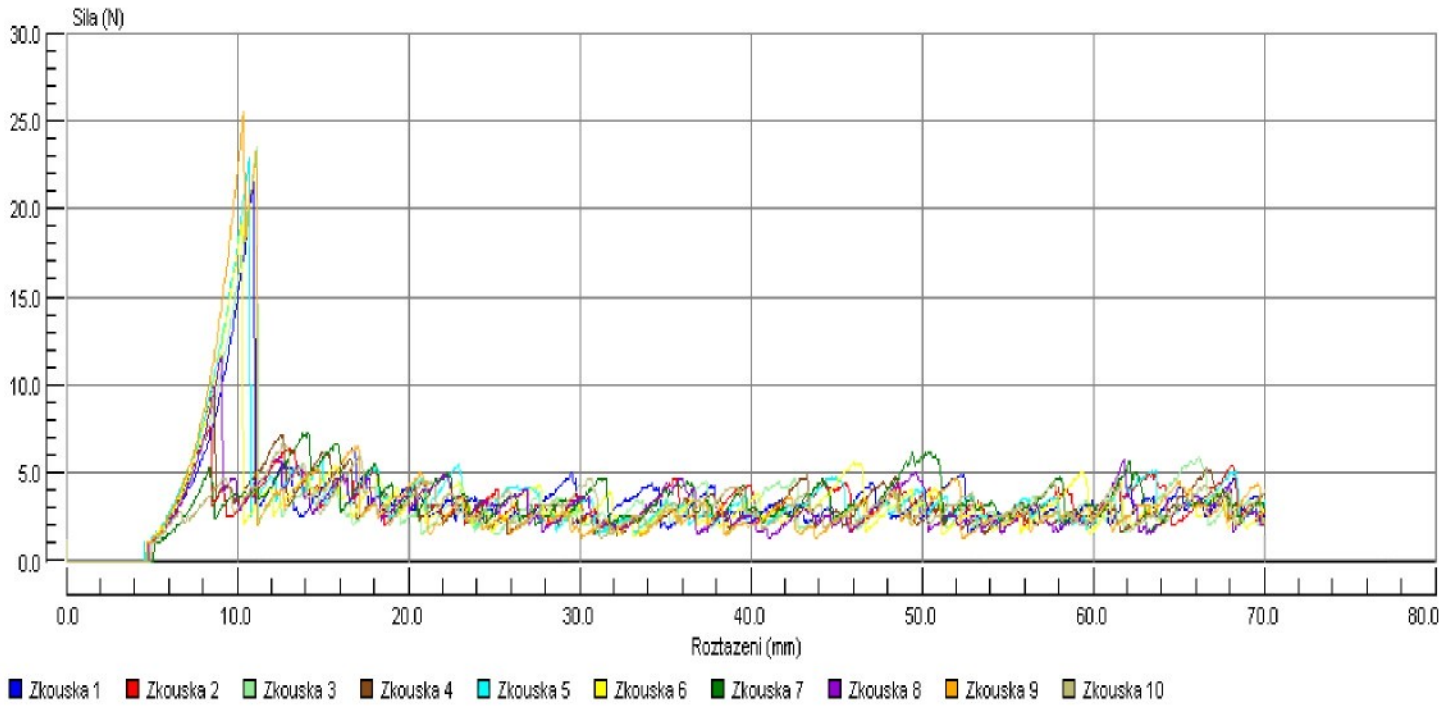
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_100Co
Meril : Chantal
Firma :
Technologie : 1_2warp
Jemnost [tex] : 45
Poznamka : 100

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 13:48
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	46.552	70.021	21.500	21.500	0.238	10.966
2	12.829	70.023	7.600	7.600	0.218	8.387
3	54.738	70.000	23.500	23.500	0.228	11.178
4	16.648	70.002	10.100	10.100	0.207	8.649
5	51.284	70.032	22.900	22.900	0.248	10.710
6	40.240	70.000	19.300	19.300	0.223	10.285
7	31.919	70.031	7.200	7.200	0.230	13.829
8	19.760	70.035	11.600	11.600	0.206	9.073
9	49.819	70.009	25.500	25.500	0.234	10.392
10	26.525	70.004	6.600	6.600	0.206	12.629
Min	12.829	70.000	6.600	6.600	0.206	8.387
Stred	35.031	70.016	15.580	15.580	0.224	10.610
Max	54.738	70.035	25.500	25.500	0.248	13.829
S.O.	15.553	0.014	7.630	7.630	0.015	1.706
VK	44.398	0.020	48.976	48.976	6.510	16.081
D.H.D	23.905	70.006	10.121	10.121	0.213	9.389
H.H.D.	46.158	70.026	21.039	21.039	0.234	11.830



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

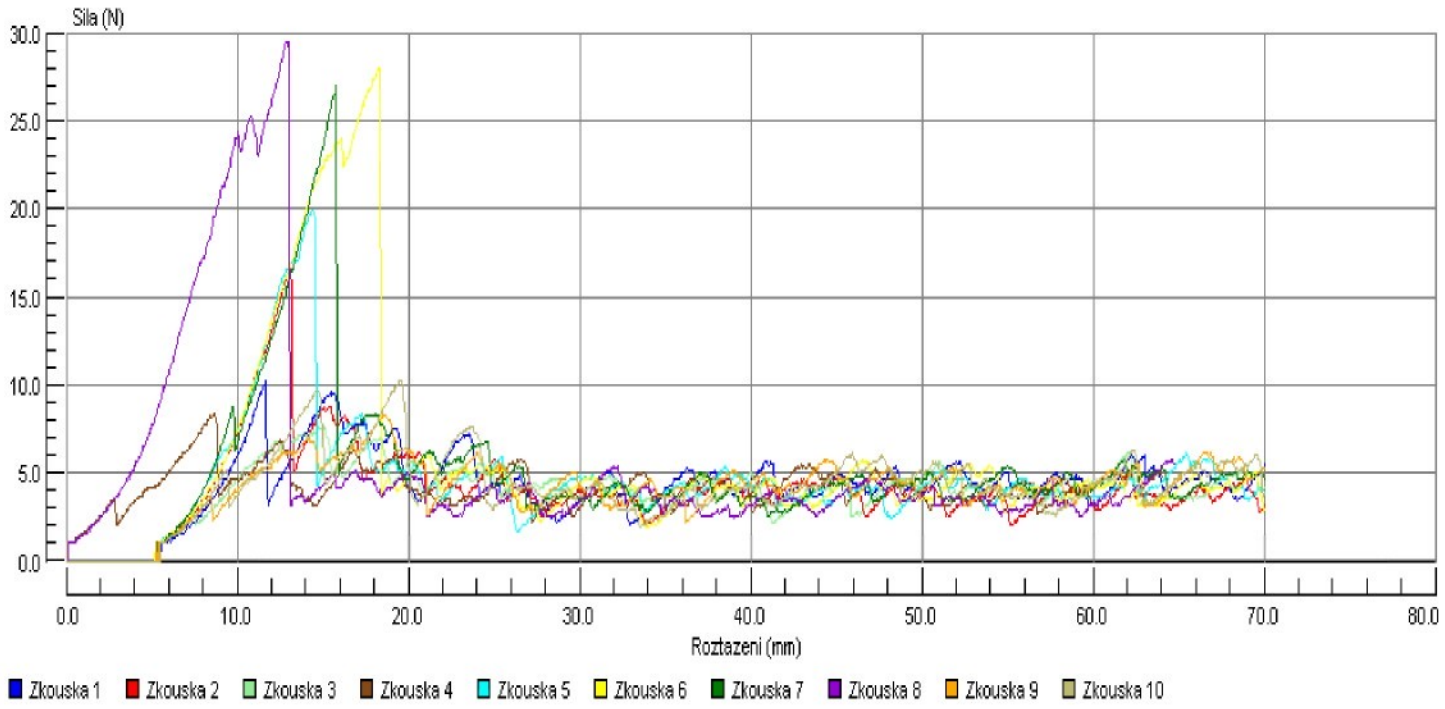
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_100Pop
Meril : Chantal
Firma :
Technologie : 1_2warp
Jemnost [tex] : 45
Poznamka : 100

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 23.2.2010 14:02
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	26.198	70.035	10.200	10.200	0.301	11.693
2	51.358	70.006	16.600	16.600	0.290	13.061
3	41.916	70.009	7.600	7.600	0.279	14.727
4	35.408	64.330	8.400	8.400	0.271	8.707
5	78.187	70.041	19.900	19.900	0.323	14.386
6	170.865	70.048	27.900	27.900	0.387	18.243
7	111.250	70.018	27.000	27.000	0.356	15.801
8	169.781	64.751	29.500	29.500	0.364	12.917
9	62.919	70.032	8.300	8.300	0.292	18.580
10	77.091	70.011	10.200	10.200	0.297	19.473
Min	26.198	64.330	7.600	7.600	0.271	8.707
Stred	82.497	68.928	16.560	16.560	0.316	14.759
Max	170.865	70.048	29.500	29.500	0.387	19.473
S.O.	52.375	2.315	8.896	8.896	0.040	3.375
VK	63.488	3.358	53.717	53.717	12.519	22.865
D.H.D	45.029	67.272	10.196	10.196	0.288	12.345
H.H.D.	119.965	70.584	22.924	22.924	0.344	17.173



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

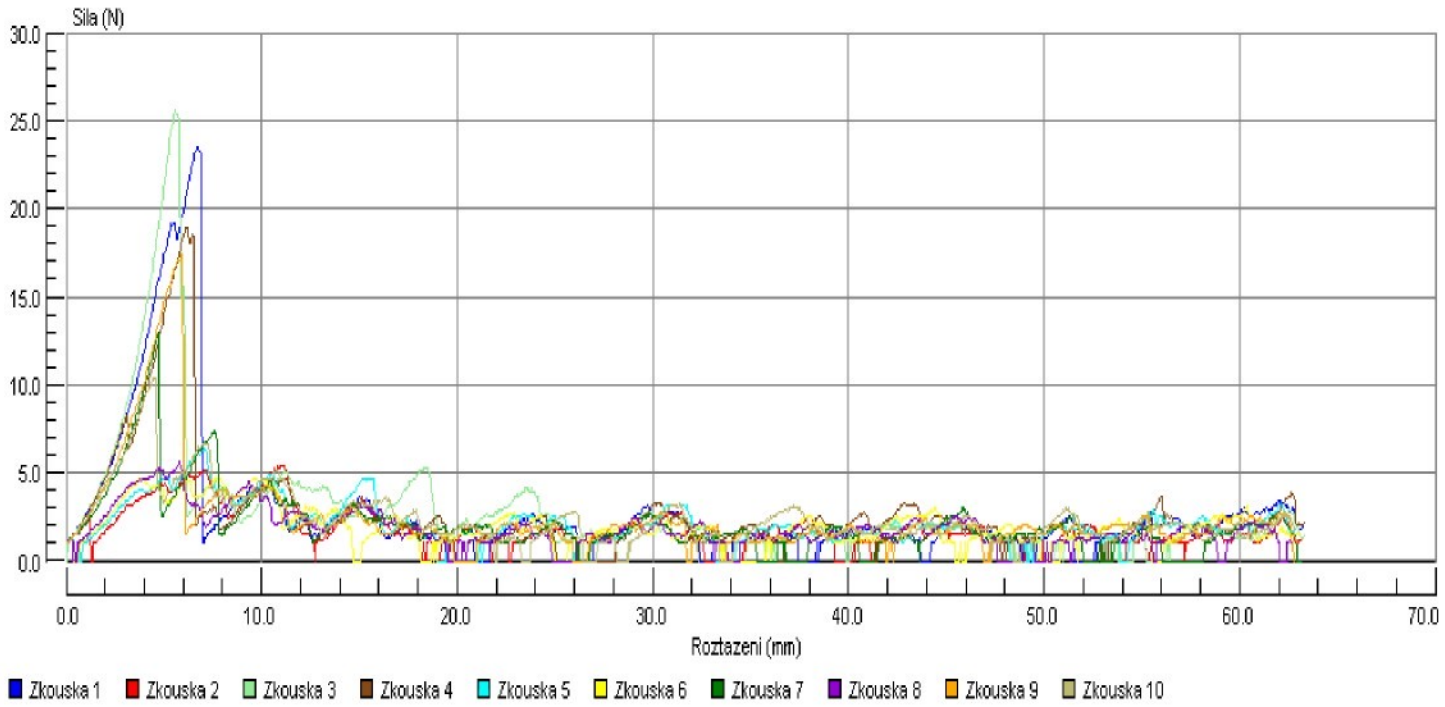
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_35POP_65Co
Meril : Chantal
Firma : spolsin
Technologie : 1_2weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 12:28
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	69.469	63.226	23.500	23.500	0.174	6.681
2	36.251	63.184	5.400	5.400	0.113	10.779
3	53.340	63.297	25.600	25.600	0.180	5.567
4	49.015	63.297	18.900	18.900	0.167	6.111
5	23.485	62.848	6.400	6.400	0.134	7.040
6	25.044	63.063	4.700	4.700	0.121	7.781
7	26.372	63.171	13.000	13.000	0.130	4.785
8	19.738	62.699	5.600	5.600	0.114	5.832
9	46.608	62.815	17.400	17.400	0.152	5.955
10	22.898	62.961	10.400	10.400	0.150	4.521
Min	19.738	62.699	4.700	4.700	0.113	4.521
Stred	37.222	63.056	13.090	13.090	0.143	6.505
Max	69.469	63.297	25.600	25.600	0.180	10.779
S.O.	16.645	0.214	7.852	7.852	0.025	1.792
VK	44.717	0.339	59.982	59.982	17.209	27.545
D.H.D	25.315	62.903	7.473	7.473	0.126	5.223
H.H.D.	49.129	63.209	18.707	18.707	0.161	7.787



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

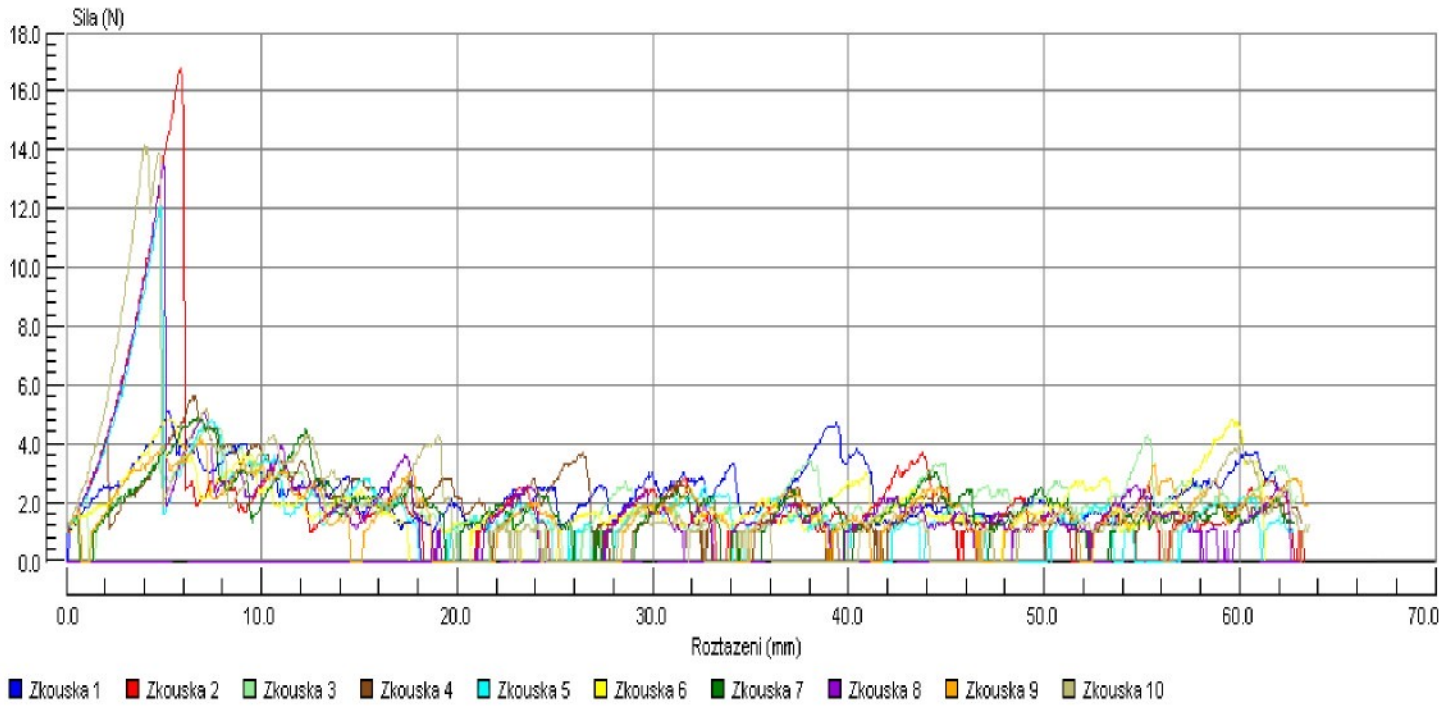
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_50Pop_50Co
Meril : Chantal
Firma : spolsin
Technologie : 1_2weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 12:03
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	14.384	61.936	5.100	5.100	0.144	5.194
2	42.407	63.277	16.800	16.800	0.136	5.847
3	17.818	62.907	4.600	4.600	0.131	7.245
4	18.924	63.178	5.600	5.600	0.122	6.460
5	26.673	62.730	12.100	12.100	0.110	4.891
6	13.104	61.586	4.800	4.800	0.116	5.086
7	16.205	62.772	4.900	4.900	0.111	6.663
8	28.495	63.030	13.500	13.500	0.119	4.942
9	17.403	63.492	4.200	4.200	0.105	6.875
10	24.451	63.535	14.200	14.200	0.124	4.004
Min	13.104	61.586	4.200	4.200	0.105	4.004
Stred	21.986	62.844	8.580	8.580	0.122	5.721
Max	42.407	63.535	16.800	16.800	0.144	7.245
S.O.	8.852	0.638	4.940	4.940	0.012	1.056
VK	40.262	1.015	57.571	57.571	10.179	18.452
D.H.D	15.654	62.388	5.046	5.046	0.113	4.966
H.H.D.	28.319	63.301	12.114	12.114	0.131	6.476



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

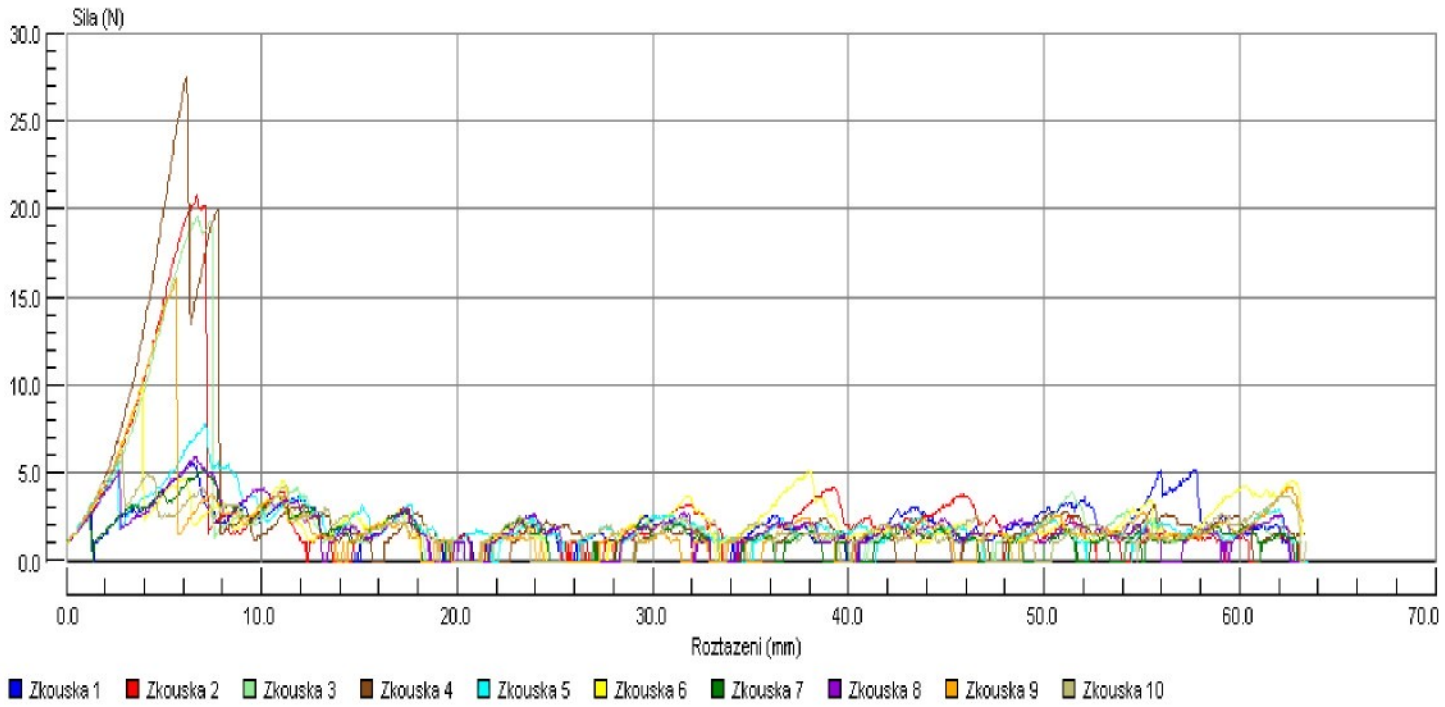
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_65POP_35Co
Meril : Chantal
Firma : spolsin
Technologie : 1_2weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 12:15
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	18.013	63.056	5.600	5.600	0.128	6.358
2	61.838	63.185	20.800	20.800	0.166	6.686
3	58.410	63.177	19.500	19.500	0.159	6.697
4	66.344	63.290	27.500	27.500	0.175	6.146
5	29.269	63.482	7.800	7.800	0.132	7.148
6	18.012	63.226	9.900	9.900	0.141	3.891
7	20.992	63.267	5.200	5.200	0.092	7.143
8	21.888	63.084	5.900	5.900	0.114	6.567
9	41.394	63.220	16.000	16.000	0.128	5.631
10	9.771	63.361	6.200	6.200	0.117	2.845
Min	9.771	63.056	5.200	5.200	0.092	2.845
Stred	34.593	63.235	12.440	12.440	0.135	5.911
Max	66.344	63.482	27.500	27.500	0.175	7.148
S.O.	20.829	0.126	7.945	7.945	0.025	1.434
VK	60.211	0.199	63.866	63.866	18.852	24.261
D.H.D	19.693	63.145	6.756	6.756	0.117	4.885
H.H.D.	49.494	63.325	18.124	18.124	0.153	6.937



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

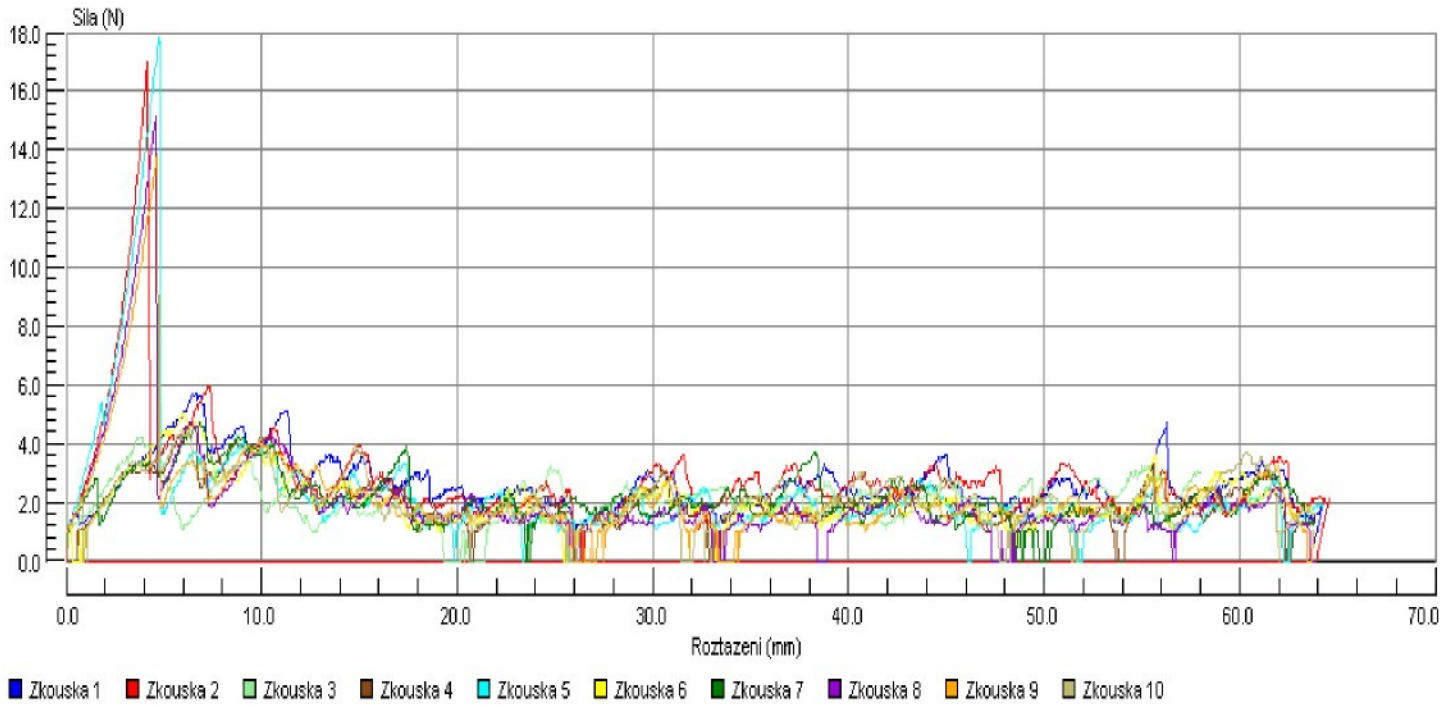
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_100Co
Meril : Chantal
Firma : spolsin
Technologie : 1_2weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 10:27
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	19.707	64.232	5.700	5.700	0.167	6.461
2	27.527	64.576	17.000	17.000	0.182	4.167
3	22.634	57.988	4.300	4.300	0.121	8.731
4	15.432	63.790	4.600	4.600	0.127	6.189
5	35.923	64.272	17.800	17.800	0.149	4.749
6	15.789	63.763	5.000	5.000	0.129	5.933
7	19.083	63.862	4.700	4.700	0.136	6.830
8	28.811	63.837	15.100	15.100	0.133	4.583
9	27.849	63.745	13.900	13.900	0.142	4.687
10	17.132	63.926	4.500	4.500	0.131	6.302
Min	15.432	57.988	4.300	4.300	0.121	4.167
Stred	22.989	63.399	9.260	9.260	0.142	5.863
Max	35.923	64.576	17.800	17.800	0.182	8.731
S.O.	6.789	1.921	5.860	5.860	0.019	1.373
VK	29.531	3.030	63.284	63.284	13.544	23.414
D.H.D	18.132	62.025	5.068	5.068	0.128	4.881
H.H.D.	27.845	64.773	13.452	13.452	0.155	6.845



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

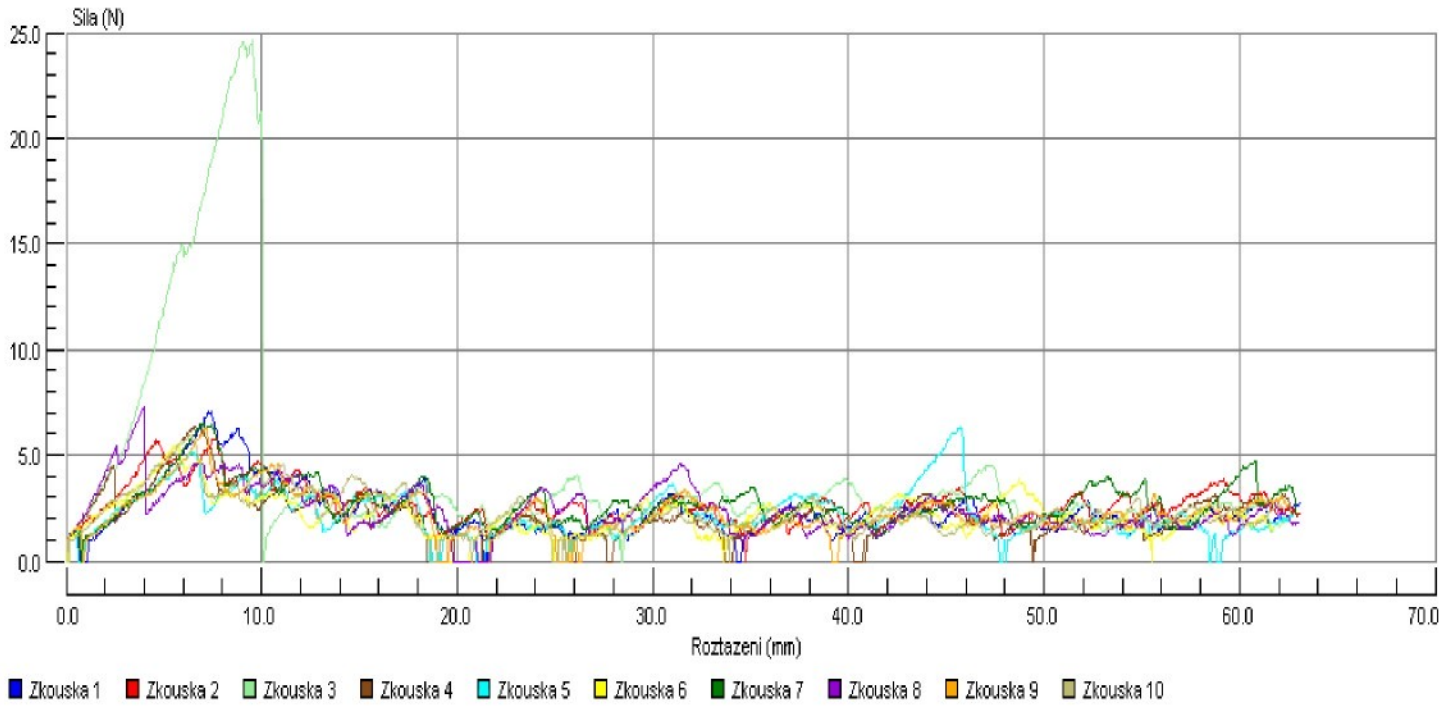
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Kepr_100Pop
Meril : Chantal
Firma : spolsin
Technologie : 1_2weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 11:50
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	22.704	63.046	7.100	7.100	0.148	7.304
2	13.855	63.054	5.700	5.700	0.166	4.622
3	109.711	62.609	24.600	24.600	0.251	9.517
4	22.363	62.741	6.400	6.400	0.135	6.516
5	111.618	62.693	6.400	6.400	0.140	45.761
6	17.313	61.752	5.500	5.500	0.134	5.724
7	20.894	62.937	6.500	6.500	0.174	6.880
8	15.728	62.995	7.300	7.300	0.153	3.995
9	21.200	62.594	6.200	6.200	0.143	7.092
10	20.128	62.198	5.900	5.900	0.141	6.249
Min	13.855	61.752	5.500	5.500	0.134	3.995
Stred	37.551	62.662	8.160	8.160	0.158	10.366
Max	111.618	63.054	24.600	24.600	0.251	45.761
S.O.	38.643	0.414	5.804	5.804	0.035	12.529
VK	102.908	0.661	71.126	71.126	22.081	120.862
D.H.D	9.907	62.365	4.008	4.008	0.133	1.403
H.H.D.	65.196	62.958	12.312	12.312	0.184	19.329



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

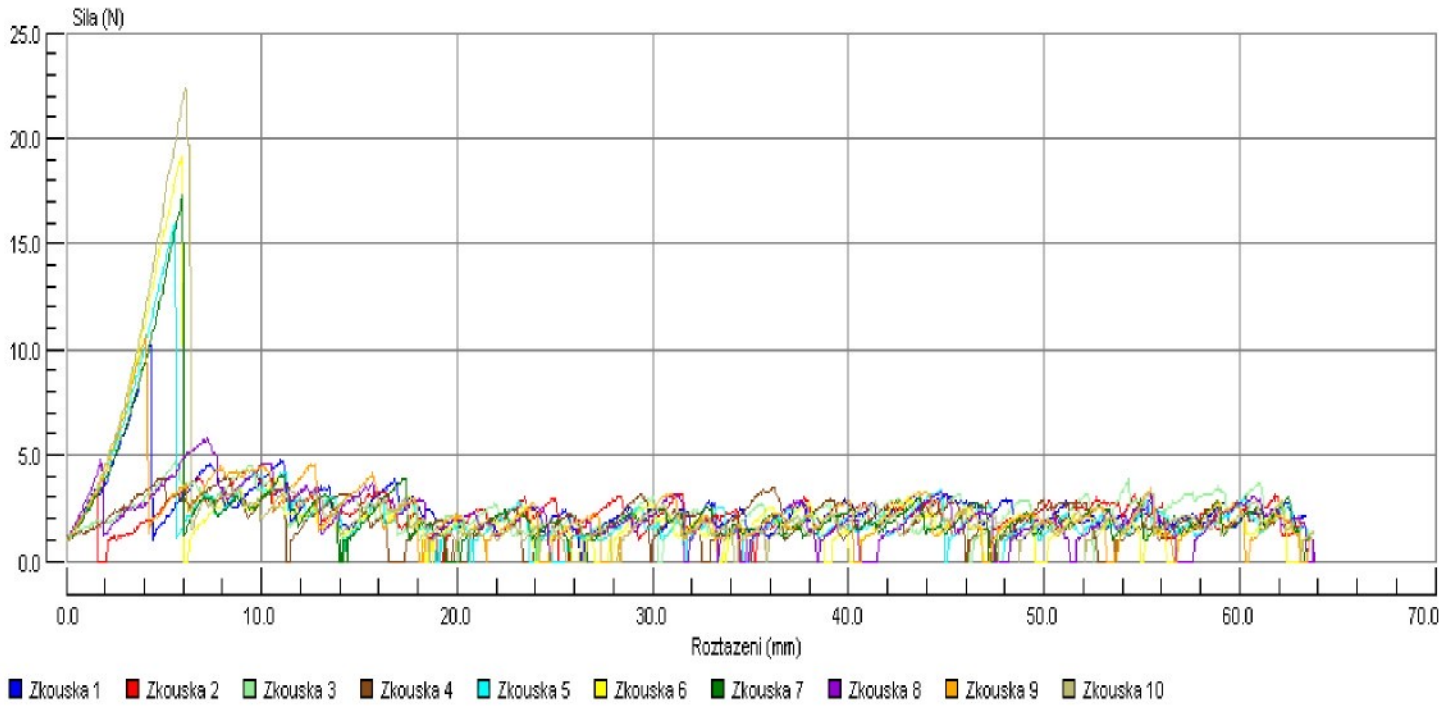
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_35pop65co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 14:54
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	20.312	63.355	10.200	10.200	0.154	4.302
2	21.853	63.200	4.300	4.300	0.136	9.119
3	13.425	62.309	4.700	4.700	0.140	5.551
4	21.479	61.822	4.000	4.000	0.122	8.132
5	39.147	63.599	16.000	16.000	0.147	5.574
6	49.786	63.606	19.200	19.200	0.147	5.950
7	42.606	63.495	17.300	17.300	0.152	5.942
8	23.660	63.825	5.800	5.800	0.136	7.245
9	19.583	63.650	10.700	10.700	0.143	4.046
10	56.324	63.790	22.400	22.400	0.166	6.103
Min	13.425	61.822	4.000	4.000	0.122	4.046
Stred	30.818	63.265	11.460	11.460	0.144	6.196
Max	56.324	63.825	22.400	22.400	0.166	9.119
S.O.	14.820	0.669	6.840	6.840	0.012	1.582
VK	48.088	1.057	59.690	59.690	8.395	25.539
D.H.D	20.216	62.787	6.567	6.567	0.136	5.064
H.H.D.	41.419	63.744	16.353	16.353	0.153	7.328



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

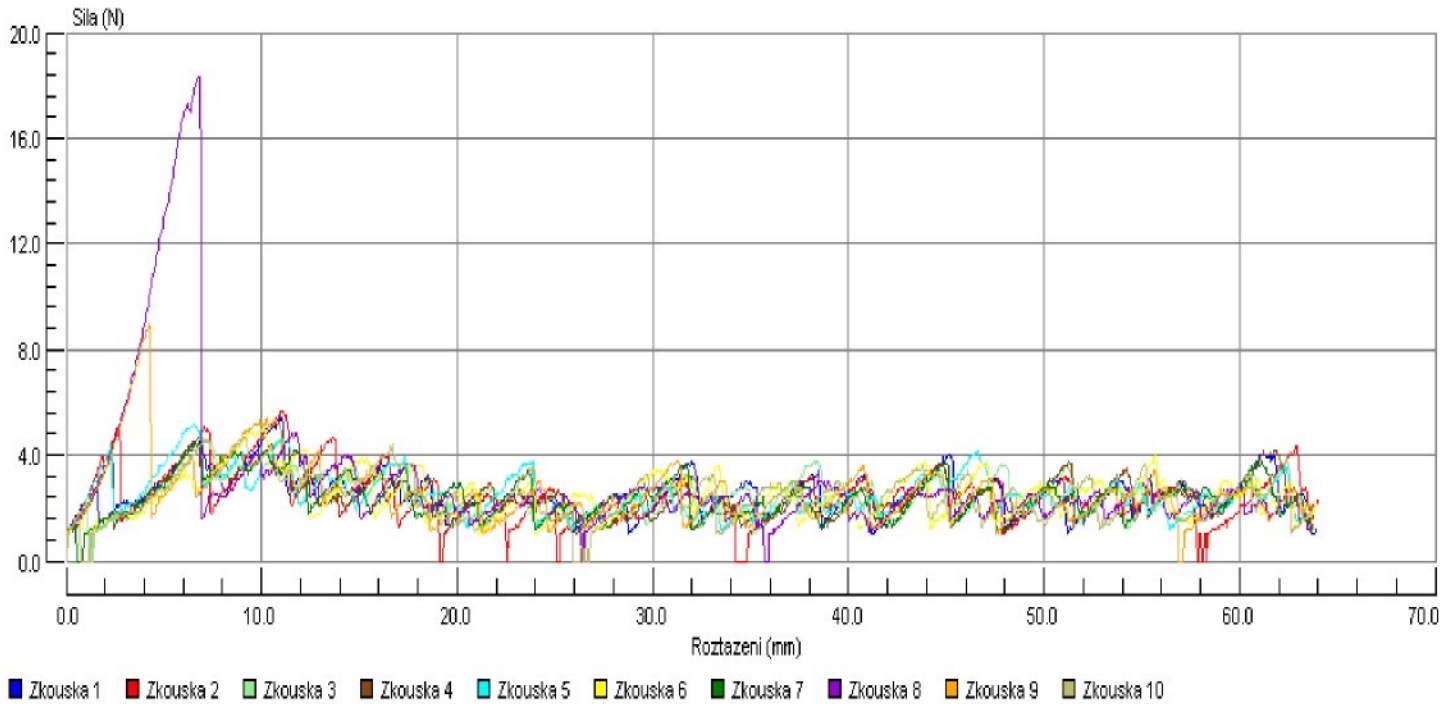
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_50pop50co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 14:03
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	33.689	63.874	5.400	5.400	0.161	10.971
2	36.735	63.964	5.700	5.700	0.160	10.978
3	15.938	63.623	4.700	4.700	0.158	7.014
4	16.493	63.771	4.500	4.500	0.158	6.498
5	19.717	63.793	5.200	5.200	0.162	6.558
6	25.368	63.929	4.900	4.900	0.159	9.803
7	14.400	63.657	4.500	4.500	0.154	6.596
8	54.922	63.697	18.300	18.300	0.192	6.739
9	17.945	63.782	9.000	9.000	0.165	4.254
10	23.332	63.502	4.700	4.700	0.155	9.071
Min	14.400	63.502	4.500	4.500	0.154	4.254
Stred	25.854	63.759	6.690	6.690	0.162	7.848
Max	54.922	63.964	18.300	18.300	0.192	10.978
S.O.	12.687	0.143	4.291	4.291	0.011	2.230
VK	49.073	0.225	64.140	64.140	6.721	28.417
D.H.D	16.778	63.657	3.620	3.620	0.154	6.253
H.H.D.	34.930	63.862	9.760	9.760	0.170	9.444



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

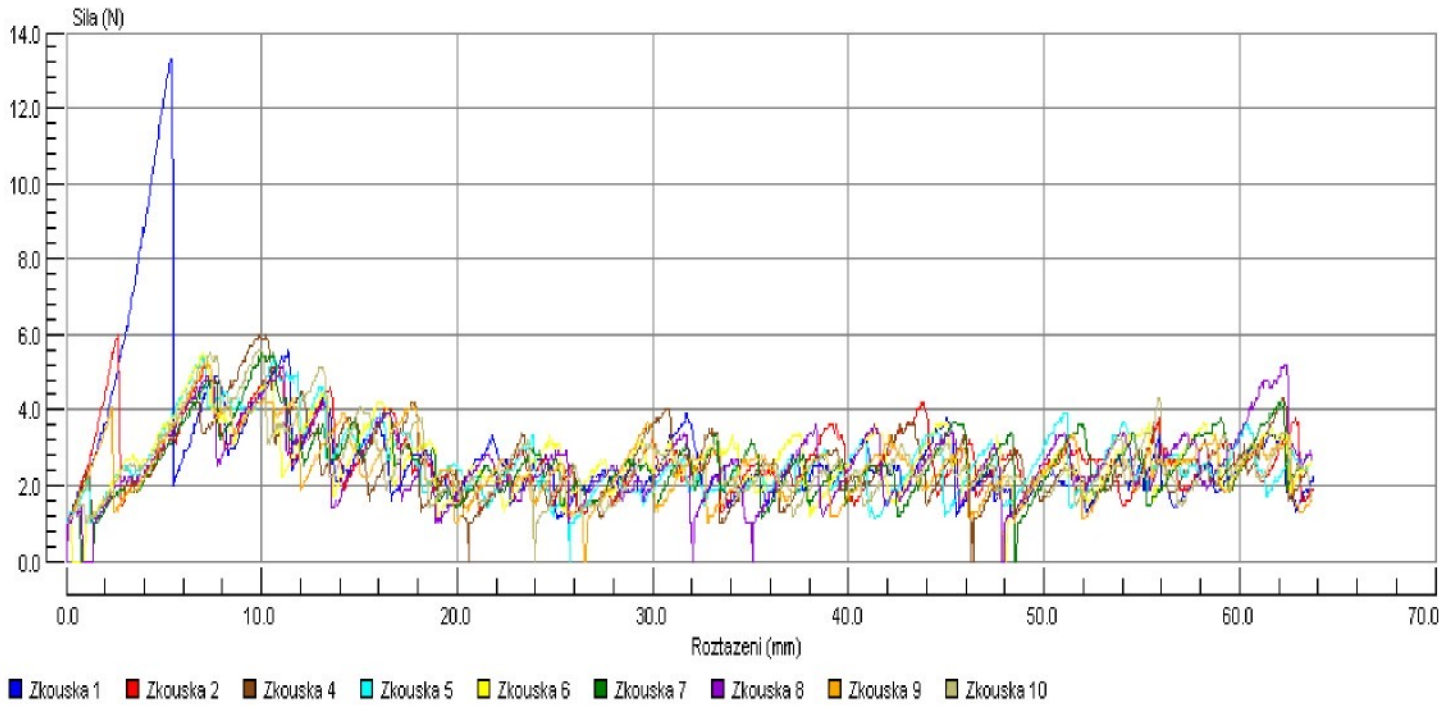
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_65pop35co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 14:29
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	31.826	63.789	13.300	13.300	0.182	5.362
2	8.258	63.762	6.000	6.000	0.174	2.627
3	14.479	63.533	8.100	8.100	0.190	3.681
4	30.742	63.394	6.000	6.000	0.166	9.864
5	18.866	63.582	5.400	5.400	0.167	6.916
6	18.259	63.663	5.500	5.500	0.171	6.975
7	28.028	63.444	5.500	5.500	0.166	9.970
8	32.909	63.717	5.200	5.200	0.166	11.076
9	20.665	63.667	5.300	5.300	0.161	7.235
10	32.159	63.681	5.600	5.600	0.166	9.823
Min	8.258	63.394	5.200	5.200	0.161	2.627
Stred	23.619	63.623	6.590	6.590	0.171	7.353
Max	32.909	63.789	13.300	13.300	0.190	11.076
S.O.	8.669	0.132	2.503	2.503	0.009	2.853
VK	36.702	0.208	37.976	37.976	5.211	38.798
D.H.D	17.418	63.529	4.800	4.800	0.164	5.312
H.H.D.	29.820	63.718	8.380	8.380	0.177	9.394



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

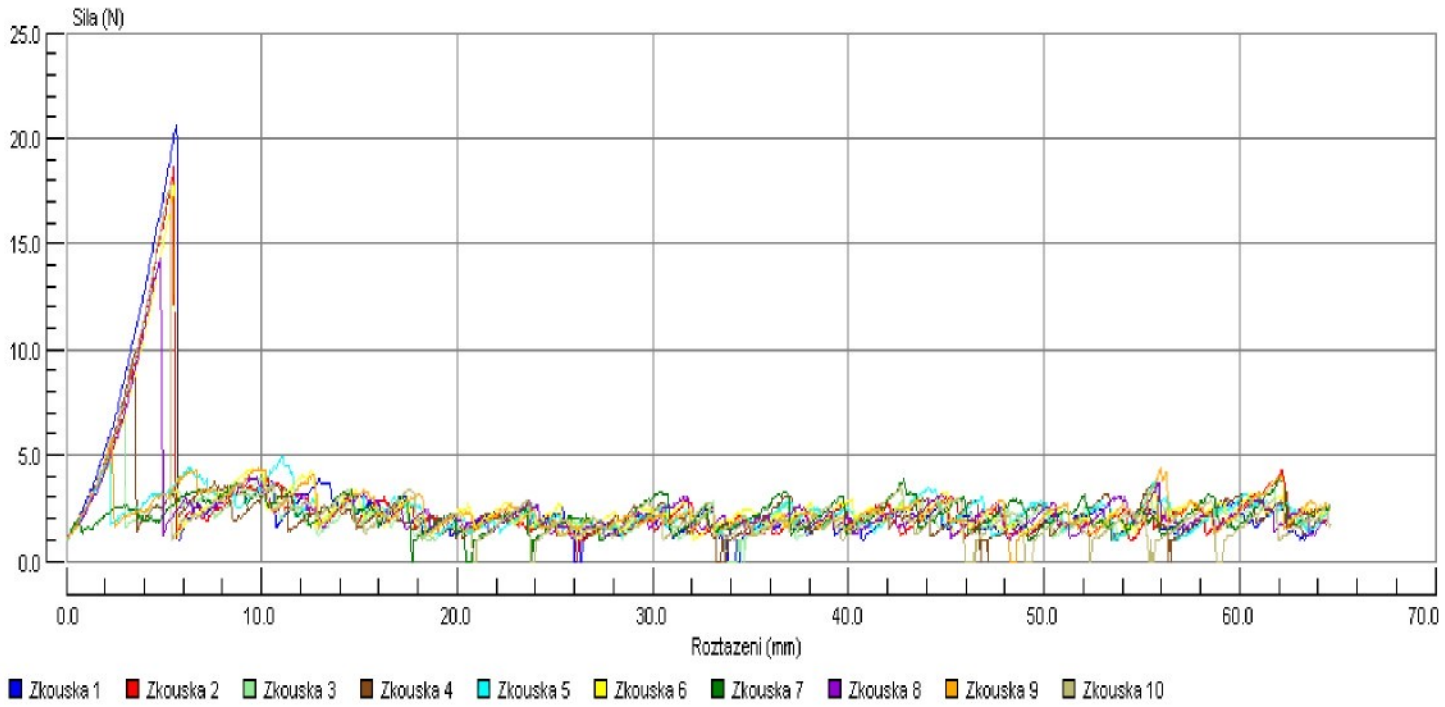
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_100Co
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 13:07
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	50.469	64.467	20.600	20.600	0.168	5.636
2	43.252	64.484	18.600	18.600	0.165	5.529
3	10.946	64.583	7.400	7.400	0.135	2.946
4	16.168	64.549	9.900	9.900	0.143	3.523
5	5.920	64.537	4.900	4.900	0.149	2.207
6	41.470	64.330	17.900	17.900	0.175	5.580
7	92.884	64.605	3.900	3.900	0.141	42.782
8	29.427	64.502	14.300	14.300	0.157	4.790
9	7.211	64.566	5.800	5.800	0.151	2.368
10	40.136	64.636	17.700	17.700	0.154	5.319
Min	5.920	64.330	3.900	3.900	0.135	2.207
Stred	33.788	64.526	12.100	12.100	0.154	8.068
Max	92.884	64.636	20.600	20.600	0.175	42.782
S.O.	26.444	0.087	6.412	6.412	0.013	12.273
VK	78.265	0.135	52.993	52.993	8.290	152.120
D.H.D	14.871	64.464	7.513	7.513	0.145	-0.712
H.H.D.	52.705	64.588	16.687	16.687	0.163	16.848



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

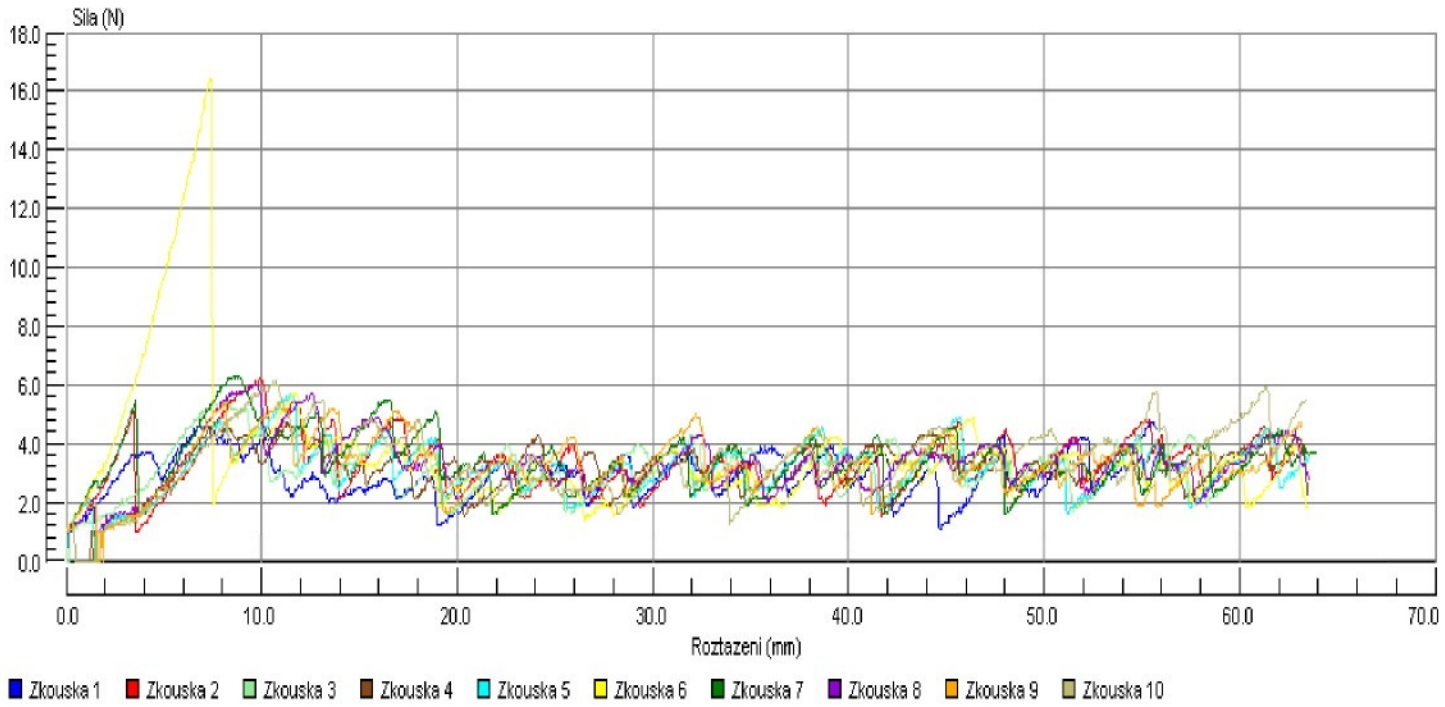
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_100pop
Meril : Chantal
Firma : spolsin
Technologie : warp
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 13:34
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	21.326	55.722	4.700	4.700	0.163	7.198
2	32.951	63.397	6.200	6.200	0.214	9.915
3	20.045	61.972	5.400	5.400	0.197	7.438
4	31.593	63.449	4.800	4.800	0.199	11.445
5	34.184	63.605	5.700	5.700	0.200	11.493
6	53.416	63.471	16.400	16.400	0.231	7.367
7	29.873	63.894	6.300	6.300	0.218	8.558
8	28.451	63.523	6.000	6.000	0.213	9.493
9	19.784	63.173	5.400	5.400	0.208	8.067
10	29.503	63.398	6.100	6.100	0.215	10.600
Min	19.784	55.722	4.700	4.700	0.163	7.198
Stred	30.113	62.560	6.700	6.700	0.206	9.157
Max	53.416	63.894	16.400	16.400	0.231	11.493
S.O.	9.766	2.456	3.454	3.454	0.018	1.667
VK	32.430	3.926	51.545	51.545	8.839	18.202
D.H.D	23.127	60.803	4.229	4.229	0.193	7.965
H.H.D.	37.099	64.318	9.171	9.171	0.219	10.350



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

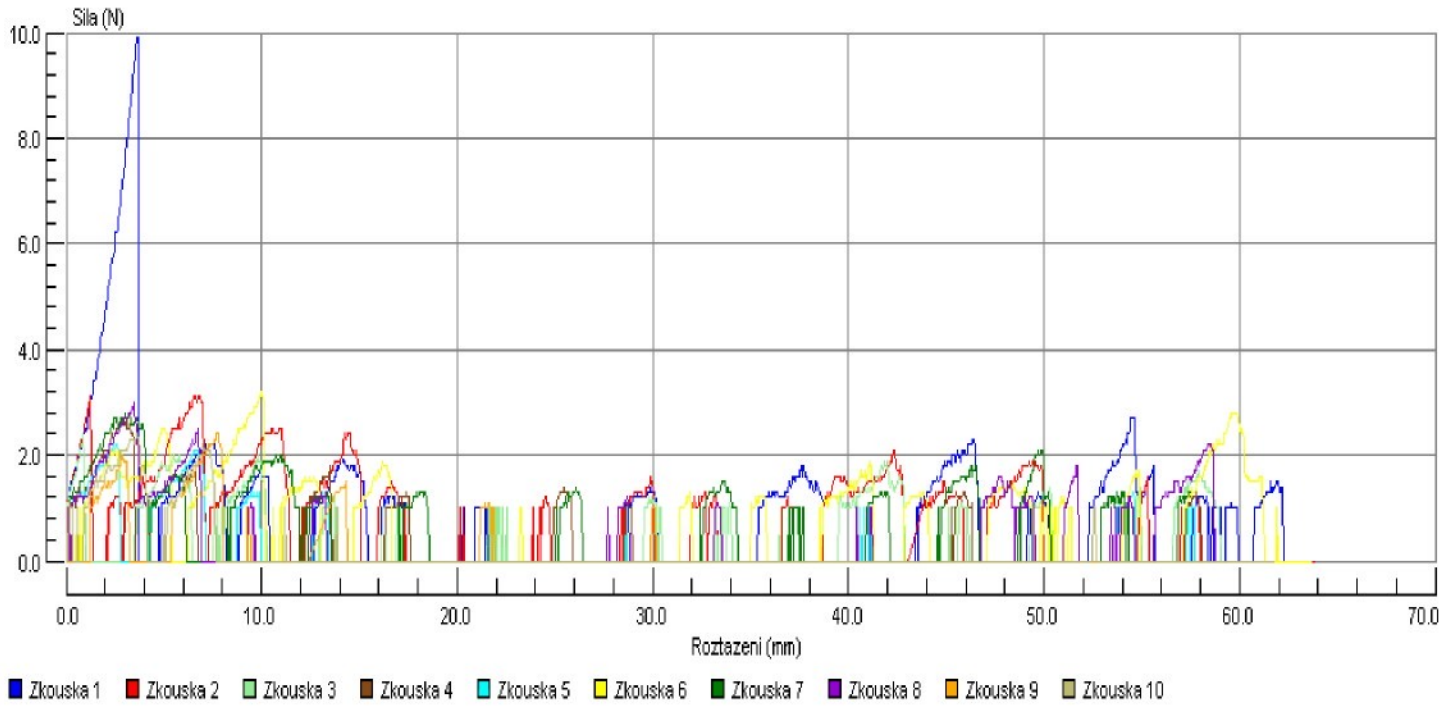
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_35pop65co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 15:07
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	16.817	63.718	9.900	9.900	0.054	3.628
2	2.548	63.850	3.100	3.100	0.046	1.261
3	1.481	63.697	2.400	2.400	0.023	0.894
4	4.921	60.434	2.700	2.700	0.017	2.925
5	3.596	60.480	2.200	2.200	0.013	2.397
6	15.941	63.605	3.200	3.200	0.042	10.006
7	5.938	57.472	2.800	2.800	0.033	3.042
8	6.156	60.163	3.000	3.000	0.024	3.444
9	6.816	61.619	2.400	2.400	0.010	7.694
10	4.926	61.738	2.400	2.400	0.010	3.604
Min	1.481	57.472	2.200	2.200	0.010	0.894
Stred	6.914	61.678	3.410	3.410	0.027	3.889
Max	16.817	63.850	9.900	9.900	0.054	10.006
S.O.	5.256	2.099	2.305	2.305	0.016	2.828
VK	76.017	3.403	67.604	67.604	57.816	72.717
D.H.D	3.154	60.176	1.761	1.761	0.016	1.866
H.H.D.	10.674	63.179	5.059	5.059	0.039	5.913



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

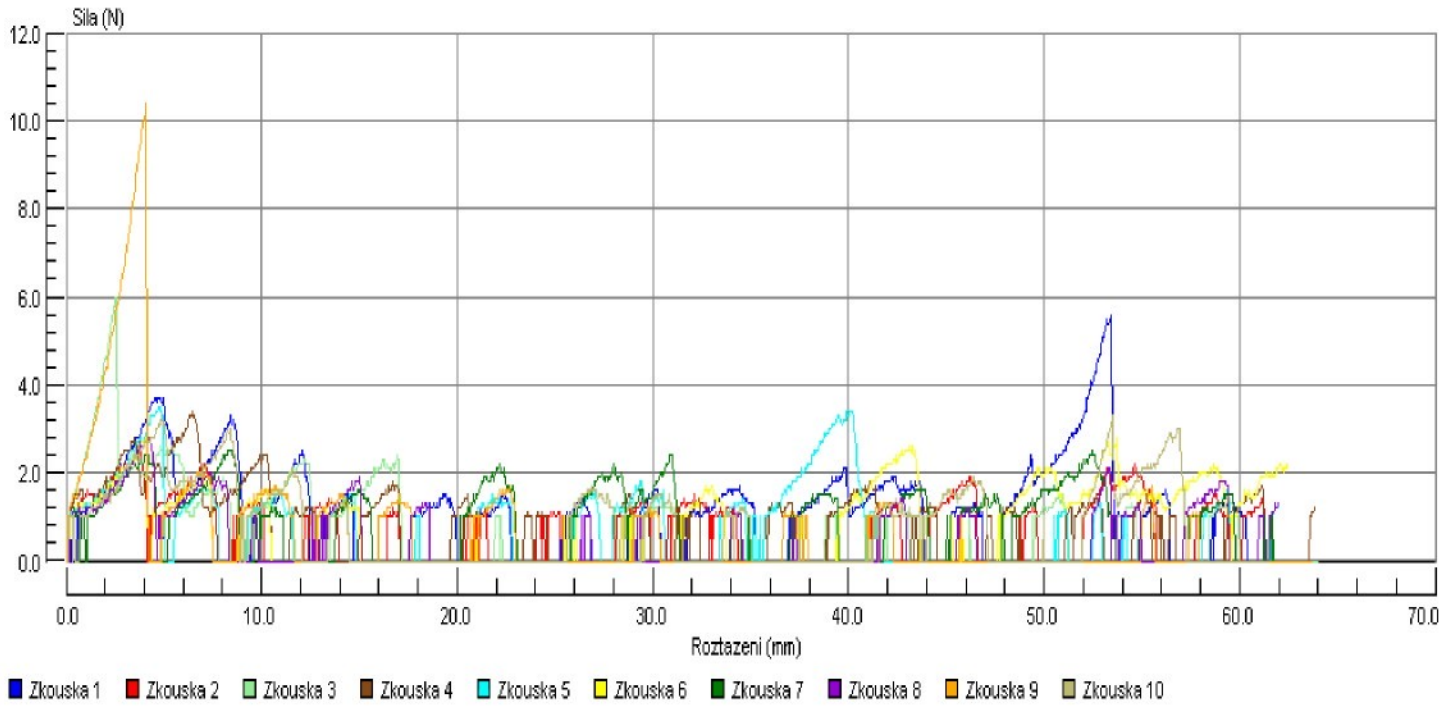
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_50pop50co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 14:14
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	66.055	61.165	5.600	5.600	0.071	53.405
2	6.421	62.588	2.500	2.500	0.041	3.761
3	7.765	63.955	6.000	6.000	0.040	2.522
4	13.127	63.817	3.400	3.400	0.046	6.493
5	9.301	61.946	3.500	3.500	0.043	4.756
6	6.802	62.435	2.800	2.800	0.053	4.075
7	6.053	61.749	2.500	2.500	0.052	4.144
8	6.757	61.953	2.800	2.800	0.028	4.228
9	19.785	63.704	10.400	10.400	0.040	4.098
10	8.482	61.410	3.300	3.300	0.049	4.914
Min	6.053	61.165	2.500	2.500	0.028	2.522
Stred	15.055	62.472	4.280	4.280	0.046	9.240
Max	66.055	63.955	10.400	10.400	0.071	53.405
S.O.	18.406	1.024	2.477	2.477	0.011	15.550
VK	122.262	1.640	57.872	57.872	24.268	168.299
D.H.D	1.888	61.739	2.508	2.508	0.038	-1.885
H.H.D.	28.222	63.205	6.052	6.052	0.054	20.364



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

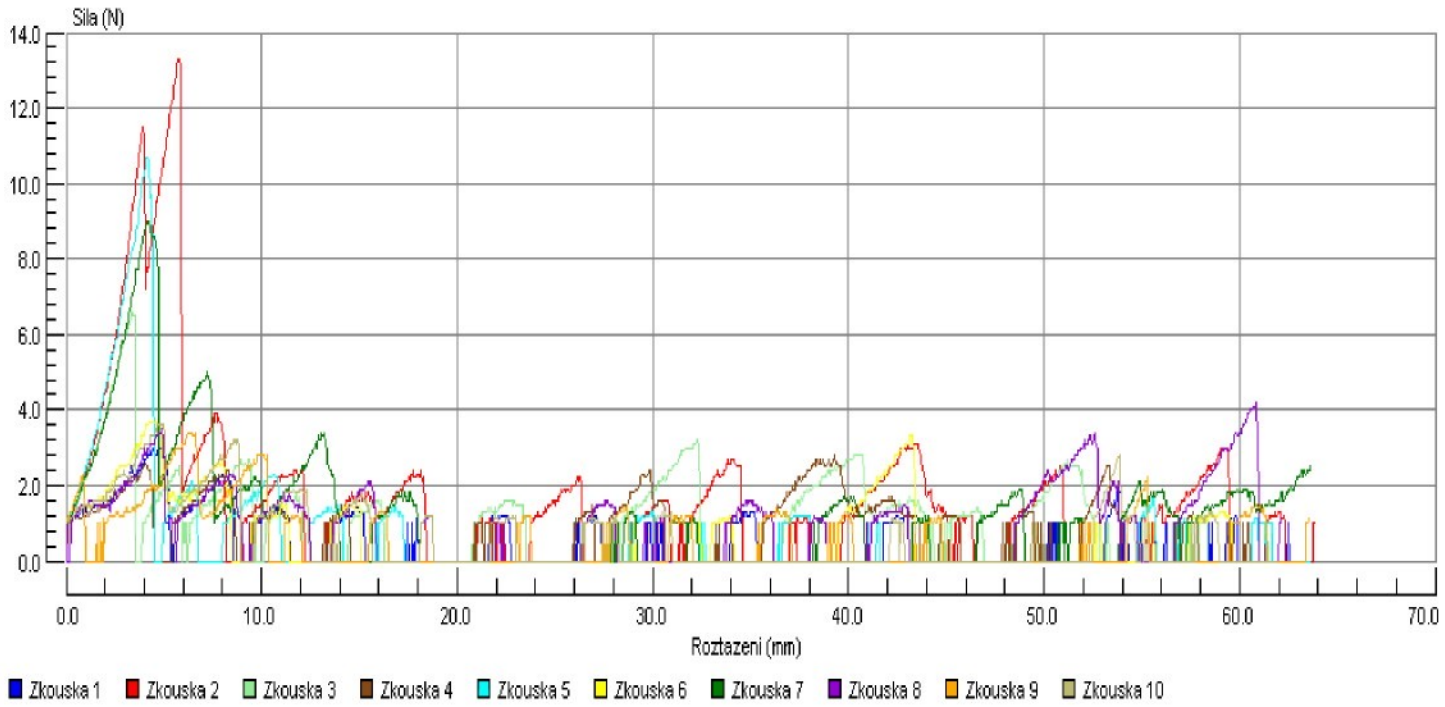
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_65pop35co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 14:42
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	8.001	62.541	3.000	3.000	0.029	4.442
2	38.212	63.840	13.300	13.300	0.103	5.728
3	11.574	63.520	6.700	6.700	0.065	3.364
4	31.398	61.786	2.800	2.800	0.046	39.318
5	20.527	63.600	10.700	10.700	0.042	4.097
6	8.753	61.830	3.700	3.700	0.035	4.239
7	18.004	63.627	9.000	9.000	0.076	4.152
8	56.854	62.132	4.200	4.200	0.058	60.808
9	9.881	63.564	3.400	3.400	0.033	6.224
10	9.801	61.902	3.600	3.600	0.037	4.706
Min	8.001	61.786	2.800	2.800	0.029	3.364
Stred	21.300	62.834	6.040	6.040	0.052	13.708
Max	56.854	63.840	13.300	13.300	0.103	60.808
S.O.	16.176	0.868	3.729	3.729	0.023	19.836
VK	75.944	1.382	61.737	61.737	44.741	144.706
D.H.D	9.728	62.213	3.372	3.372	0.036	-0.482
H.H.D.	32.873	63.455	8.708	8.708	0.069	27.898



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

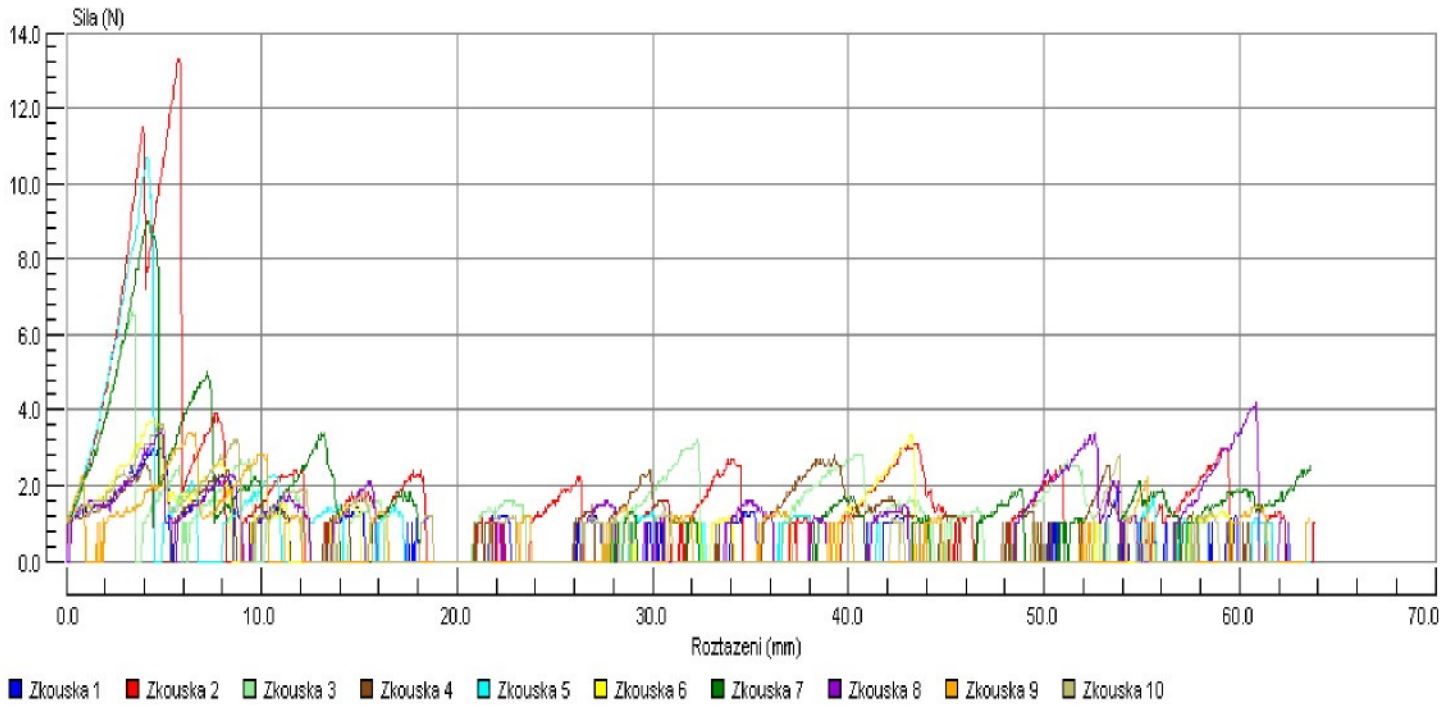
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_65pop35co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 14:42
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	8.001	62.541	3.000	3.000	0.029	4.442
2	38.212	63.840	13.300	13.300	0.103	5.728
3	11.574	63.520	6.700	6.700	0.065	3.364
4	31.398	61.786	2.800	2.800	0.046	39.318
5	20.527	63.600	10.700	10.700	0.042	4.097
6	8.753	61.830	3.700	3.700	0.035	4.239
7	18.004	63.627	9.000	9.000	0.076	4.152
8	56.854	62.132	4.200	4.200	0.058	60.808
9	9.881	63.564	3.400	3.400	0.033	6.224
10	9.801	61.902	3.600	3.600	0.037	4.706
Min	8.001	61.786	2.800	2.800	0.029	3.364
Stred	21.300	62.834	6.040	6.040	0.052	13.708
Max	56.854	63.840	13.300	13.300	0.103	60.808
S.O.	16.176	0.868	3.729	3.729	0.023	19.836
VK	75.944	1.382	61.737	61.737	44.741	144.706
D.H.D	9.728	62.213	3.372	3.372	0.036	-0.482
H.H.D.	32.873	63.455	8.708	8.708	0.069	27.898



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

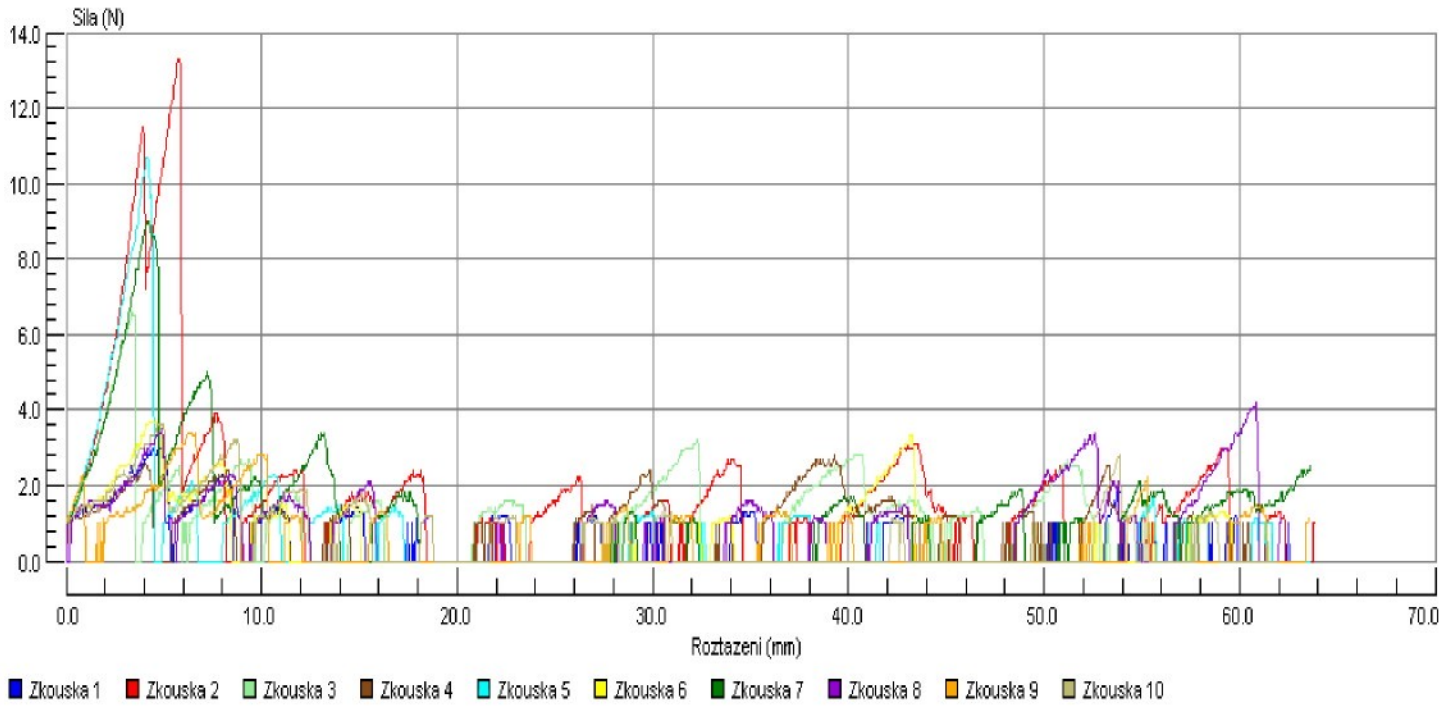
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_65pop35co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 14:42
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	8.001	62.541	3.000	3.000	0.029	4.442
2	38.212	63.840	13.300	13.300	0.103	5.728
3	11.574	63.520	6.700	6.700	0.065	3.364
4	31.398	61.786	2.800	2.800	0.046	39.318
5	20.527	63.600	10.700	10.700	0.042	4.097
6	8.753	61.830	3.700	3.700	0.035	4.239
7	18.004	63.627	9.000	9.000	0.076	4.152
8	56.854	62.132	4.200	4.200	0.058	60.808
9	9.881	63.564	3.400	3.400	0.033	6.224
10	9.801	61.902	3.600	3.600	0.037	4.706
Min	8.001	61.786	2.800	2.800	0.029	3.364
Stred	21.300	62.834	6.040	6.040	0.052	13.708
Max	56.854	63.840	13.300	13.300	0.103	60.808
S.O.	16.176	0.868	3.729	3.729	0.023	19.836
VK	75.944	1.382	61.737	61.737	44.741	144.706
D.H.D	9.728	62.213	3.372	3.372	0.036	-0.482
H.H.D.	32.873	63.455	8.708	8.708	0.069	27.898



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

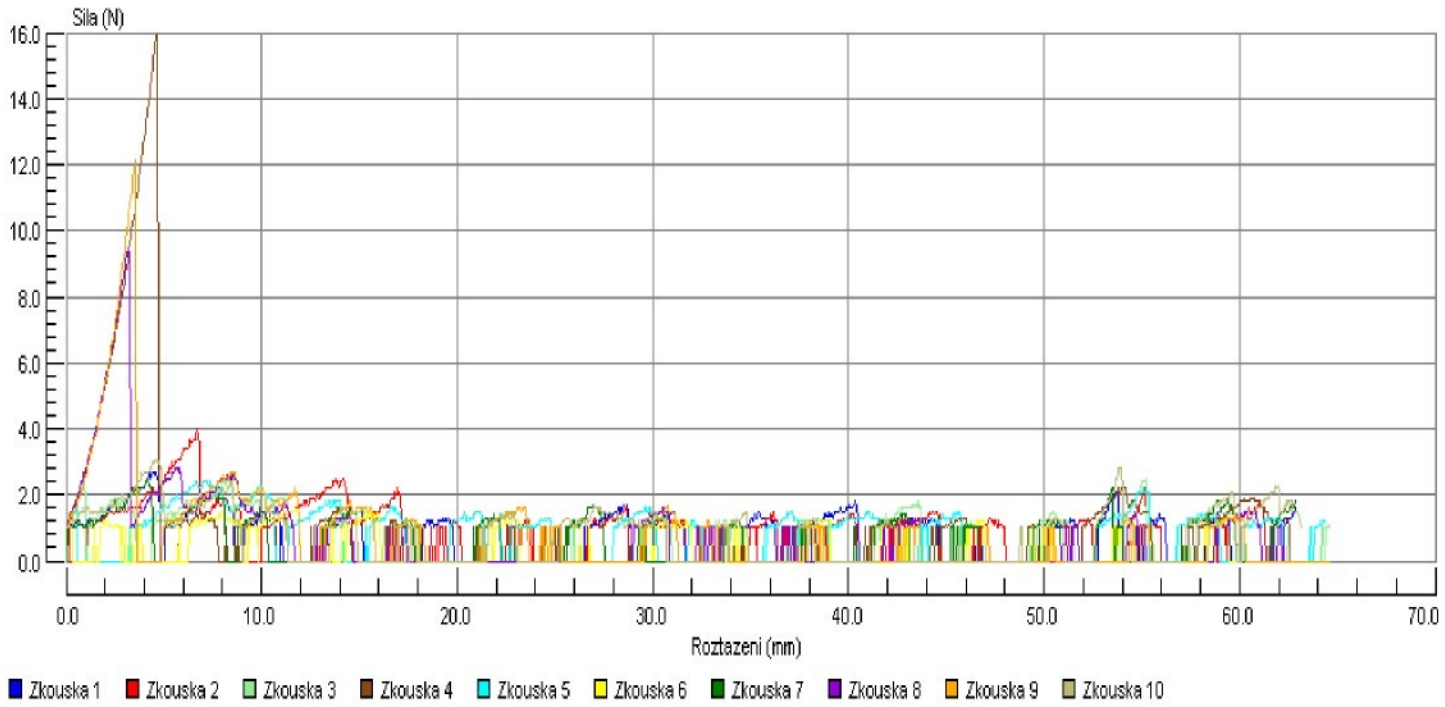
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_100Co
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 13:21
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	6.837	62.861	2.700	2.700	0.043	4.282
2	11.944	64.557	4.000	4.000	0.050	6.705
3	12.188	64.610	2.500	2.500	0.044	8.214
4	33.339	64.584	16.000	16.000	0.064	4.689
5	5.907	64.376	2.400	2.400	0.047	6.596
6	8.311	64.505	1.600	1.600	0.021	11.683
7	6.169	62.865	2.500	2.500	0.036	4.126
8	14.291	64.552	9.500	9.500	0.045	3.155
9	18.518	64.555	12.100	12.100	0.051	3.526
10	8.414	63.164	3.100	3.100	0.047	4.603
Min	5.907	62.861	1.600	1.600	0.021	3.155
Stred	12.592	64.063	5.640	5.640	0.045	5.758
Max	33.339	64.610	16.000	16.000	0.064	11.683
S.O.	8.326	0.766	5.036	5.036	0.011	2.621
VK	66.121	1.195	89.297	89.297	24.647	45.515
D.H.D	6.636	63.515	2.037	2.037	0.037	3.883
H.H.D.	18.548	64.611	9.243	9.243	0.053	7.633



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

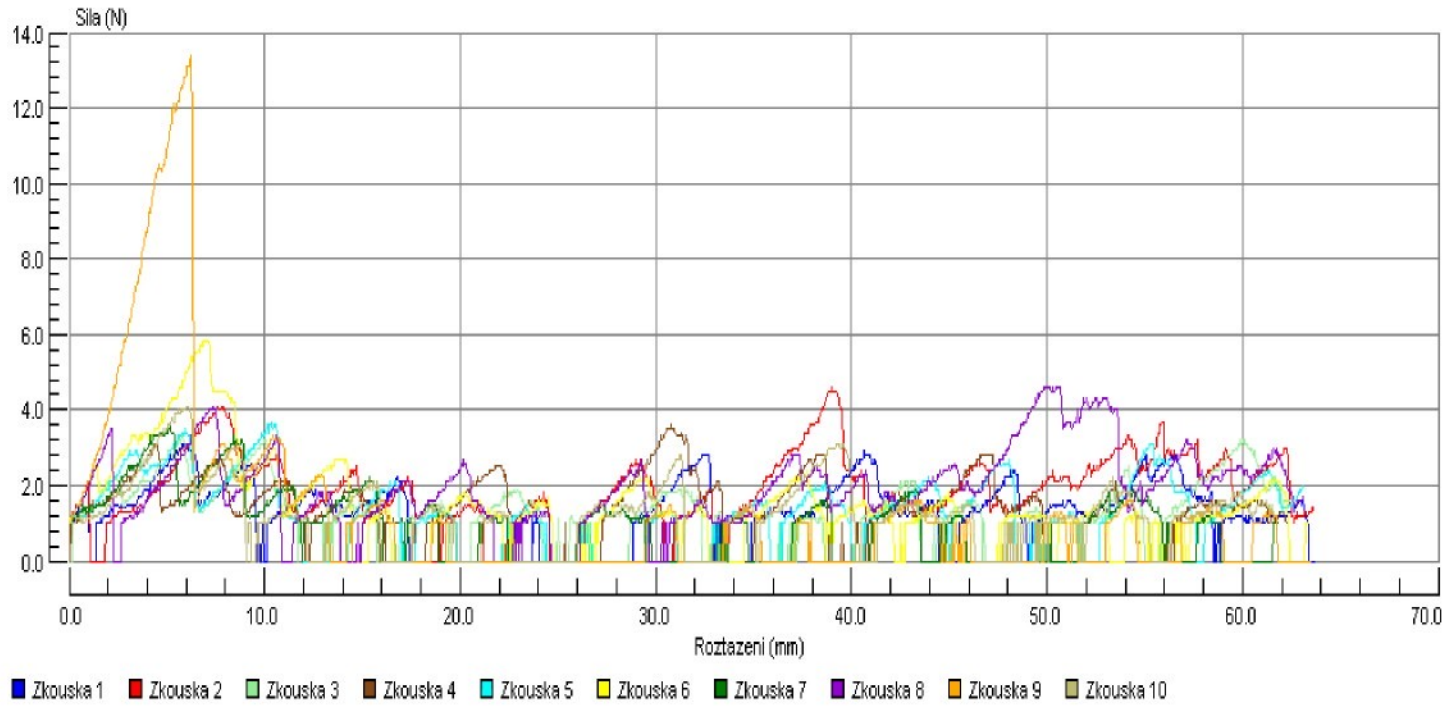
Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Zkouška prořez
TUL, FT, Katedra textilních technologií

Oznaceni (kod) : 4_23_008
Material : Platno_100pop
Meril : Chantal
Firma : spolsin
Technologie : weft
Jemnost [tex] : 45
Poznamka : 100mm_min

Nazev zkousky : prutlak
Druh zkousky : Pruraz
Datum zkousky : 4.3.2010 13:50
Rychlost zkousky : 100.000 mm/min
Predzatez : 1.000 N
Prumer : 44.450 mm

Zkouska c.	Prace pri nejvyssi sile (N.mm)	Roztazeni pri pretrhu (mm)	Nejvyssi pevnost (N)	Pevnost v prurazu (N)	Prace pri pretrhu (N.m)	Roztazeni pri nejvyssi sile (mm)
1	9.742	63.664	3.100	3.100	0.082	5.805
2	65.381	63.604	4.600	4.600	0.119	39.038
3	10.690	62.377	3.300	3.300	0.074	5.594
4	44.172	62.318	3.600	3.600	0.086	30.751
5	23.993	63.119	3.700	3.700	0.081	10.336
6	22.319	63.353	5.800	5.800	0.092	6.873
7	11.270	61.782	3.600	3.600	0.056	5.181
8	86.157	63.072	4.600	4.600	0.123	49.835
9	42.419	63.450	13.400	13.400	0.081	6.259
10	13.414	61.603	4.100	4.100	0.077	6.020
Min	9.742	61.603	3.100	3.100	0.056	5.181
Stred	32.956	62.834	4.980	4.980	0.087	16.569
Max	86.157	63.664	13.400	13.400	0.123	49.835
S.O.	26.199	0.758	3.063	3.063	0.020	16.763
VK	79.497	1.206	61.505	61.505	23.256	101.171
D.H.D	14.214	62.292	2.789	2.789	0.073	4.577
H.H.D.	51.698	63.376	7.171	7.171	0.101	28.561



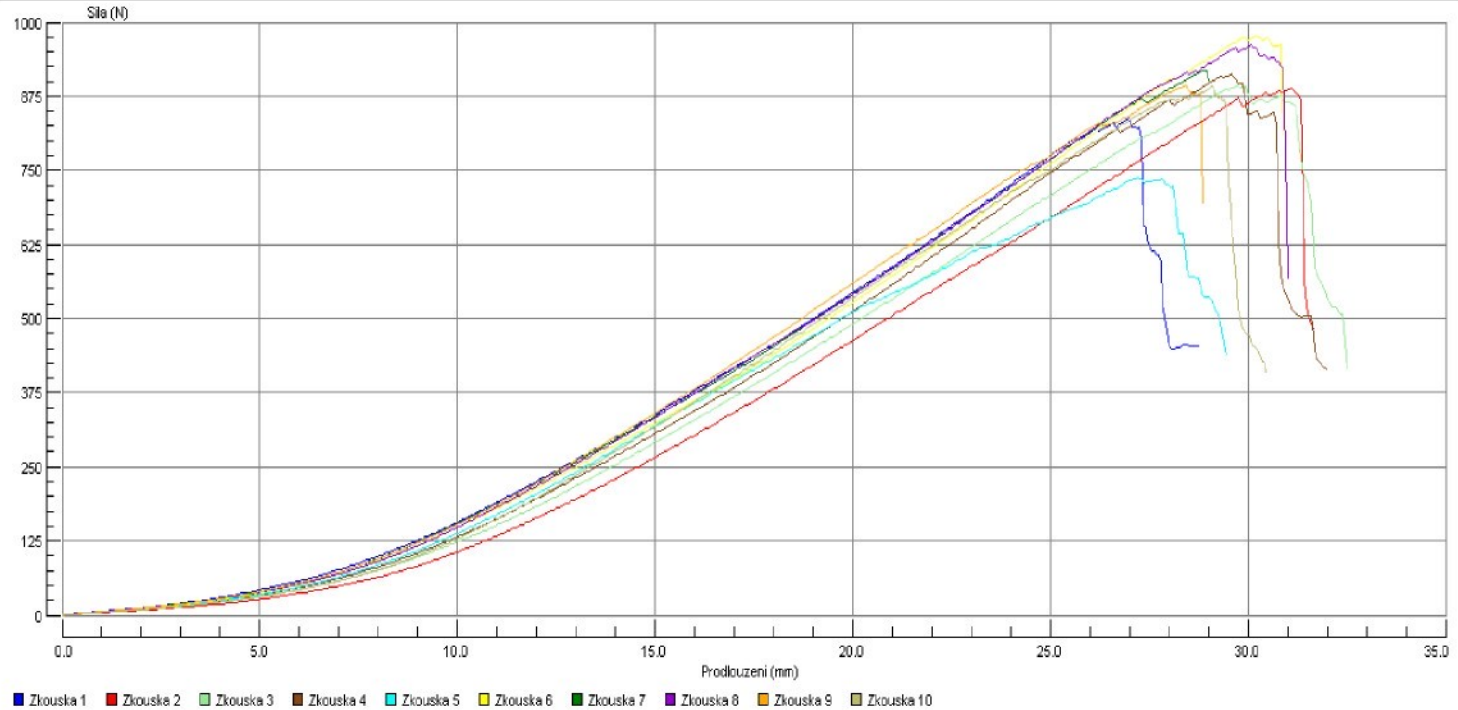
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 35_pop_65co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 11:39
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	28.748	453.810	17.292	9883.316	14.374	8857.010	26.973	13.486	837.400
2	31.663	483.690	19.045	11161.876	15.832	10775.454	31.108	15.554	889.100
3	32.516	414.960	19.559	12270.902	16.258	10203.120	29.742	14.871	893.500
4	31.995	414.540	19.243	12164.287	15.998	10542.972	29.589	14.795	914.200
5	29.455	438.620	17.718	9594.365	14.727	8175.757	27.206	13.603	737.500
6	30.905	808.500	18.588	12245.219	15.453	11565.544	30.198	15.099	977.800
7	28.999	901.700	17.445	10588.094	14.500	10484.814	28.886	14.443	919.700
8	31.006	569.100	18.650	12461.395	15.503	11605.689	30.076	15.038	961.900
9	28.863	695.000	17.363	10589.611	14.432	10205.469	28.421	14.210	893.300
10	30.466	409.810	18.325	11114.170	15.233	10261.237	29.078	14.539	890.600
Stred	30.462	558.973	18.323	11207.324	15.231	10267.707	29.128	14.564	891.500



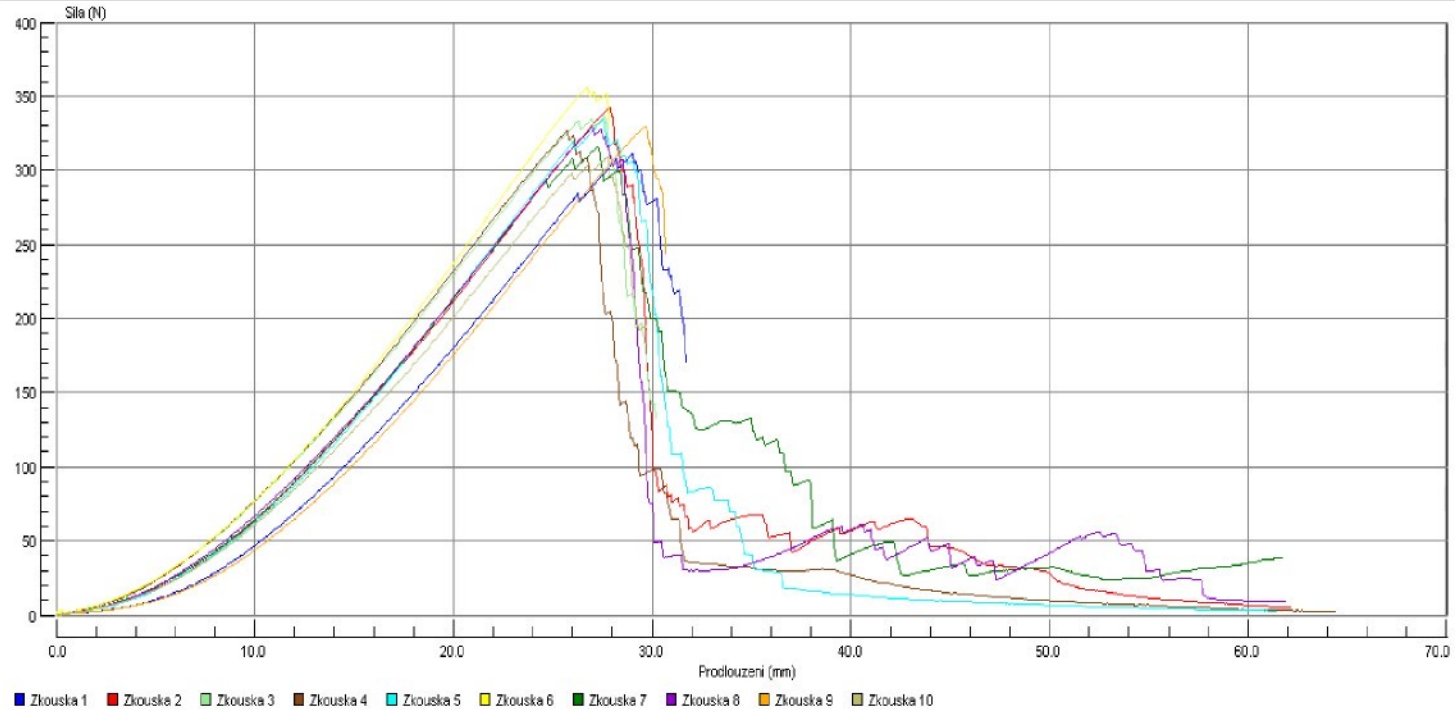
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 35_pop_65co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 11:51
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	31.700	171.180	19.067	4196.289	15.850	3521.301	29.044	14.522	311.160
2	62.100	4.900	37.333	5556.303	31.050	3753.461	27.838	13.919	342.310
3	30.187	133.300	18.156	4593.452	15.094	4013.534	27.640	13.820	335.800
4	64.410	2.150	38.718	4917.253	32.205	3413.828	25.748	12.874	326.800
5	61.427	2.740	36.930	5108.765	30.713	3664.880	27.574	13.787	334.680
6	27.841	327.780	51.195	4268.235	13.920	3878.634	26.725	13.362	355.920
7	61.731	38.760	37.108	6103.369	30.865	3554.517	27.270	13.635	315.810
8	61.874	9.330	37.198	5453.602	30.937	3519.341	27.002	13.501	329.360
9	30.655	243.550	18.441	3947.103	15.328	3667.020	29.717	14.858	329.890
10	29.750	192.030	17.895	4009.080	14.875	3538.782	27.813	13.906	309.130
Stred	46.168	112.572	31.204	4815.345	23.084	3652.530	27.637	13.819	329.086



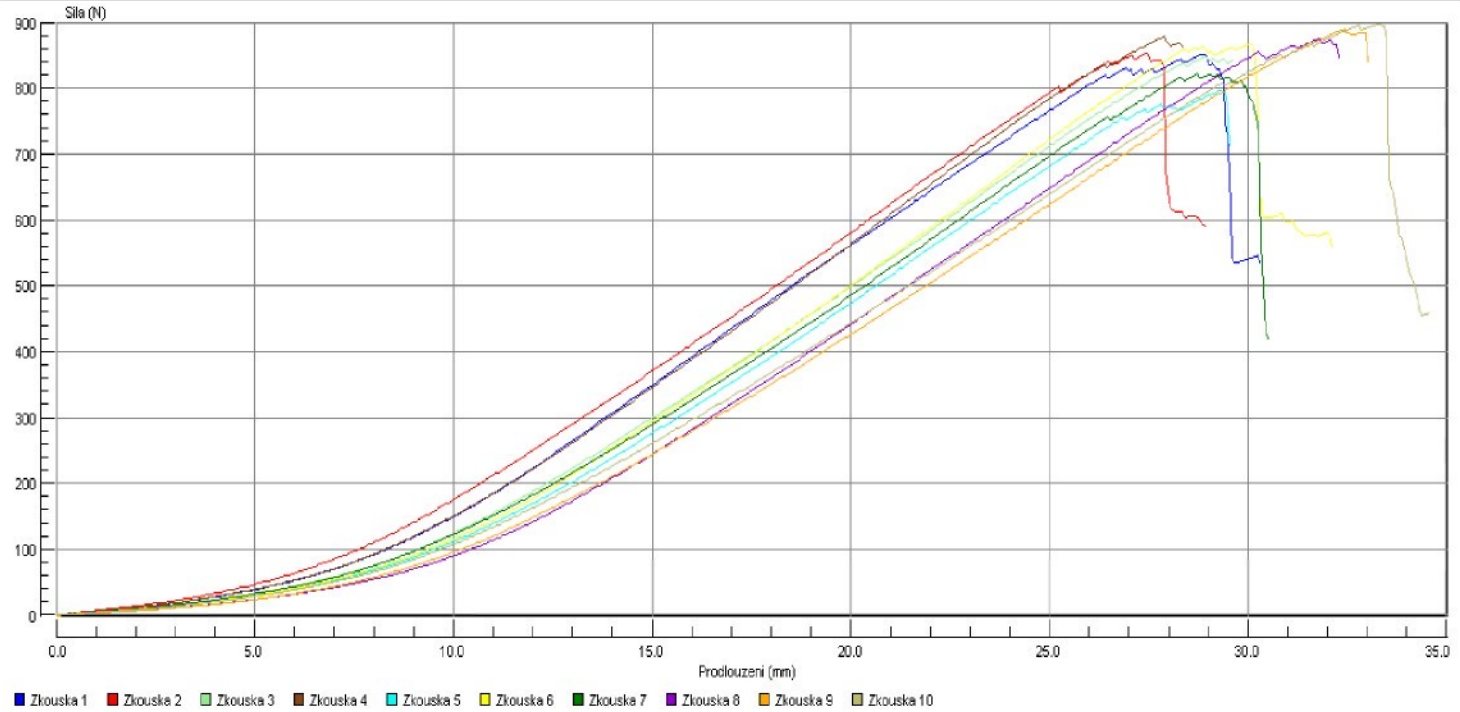
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 50_pop_50co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 10:51
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	30.297	534.600	18.224	11467.344	15.148	10527.042	28.890	14.445	851.500
2	28.923	589.800	17.400	10813.198	14.462	9806.184	27.451	13.726	853.500
3	29.640	842.200	17.829	10167.676	14.820	9574.993	28.936	14.468	848.100
4	28.379	861.200	17.074	10218.847	14.189	9792.766	27.888	13.944	878.400
5	29.534	712.100	17.768	9491.030	14.767	9276.046	29.259	14.630	795.400
6	32.108	560.200	19.313	11803.869	16.054	10534.257	30.051	15.026	867.900
7	30.508	419.270	18.351	10535.864	15.254	9159.678	28.719	14.359	821.400
8	32.297	846.300	19.428	11267.721	16.149	10798.042	31.756	15.878	874.100
9	33.027	840.100	19.863	11659.898	16.514	11130.308	32.426	16.213	890.200
10	34.550	459.020	20.778	13024.874	17.275	12300.197	33.330	16.665	897.400
Stred	30.926	666.479	18.603	11045.032	15.463	10289.951	29.871	14.935	857.790



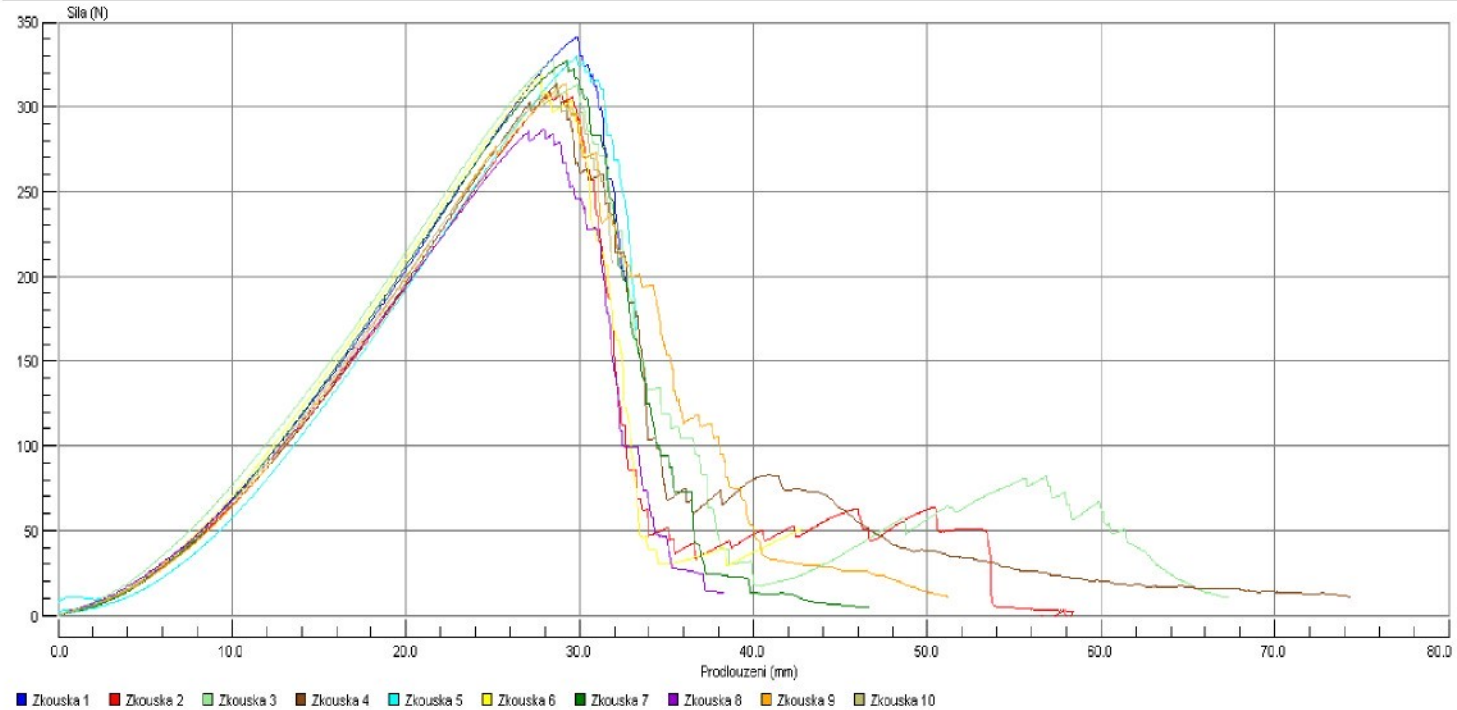
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 50_pop_50co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 10:58
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	32.618	196.840	19.615	5114.623	16.309	4346.296	29.895	14.948	341.350
2	58.390	2.130	35.104	5760.668	29.195	3633.111	28.373	14.186	308.140
3	67.331	10.540	40.469	7195.059	33.666	4051.871	28.423	14.212	327.190
4	74.360	10.530	44.692	6577.107	37.180	3777.958	28.705	14.352	313.440
5	33.218	168.430	51.620	5074.882	16.609	4118.424	29.836	14.918	329.670
6	42.843	51.210	25.773	5372.314	21.421	3725.839	27.788	13.894	319.010
7	46.596	4.670	28.024	5630.754	23.298	4123.460	29.278	14.639	327.010
8	38.279	13.290	23.035	4806.303	19.139	3506.109	27.929	13.965	286.850
9	51.163	10.850	30.765	6068.613	25.582	3944.087	29.197	14.599	313.830
10	31.901	208.060	19.189	4721.578	15.950	3868.868	28.816	14.408	308.120
Stred	47.670	67.655	31.829	5632.190	23.835	3909.602	28.824	14.412	317.461



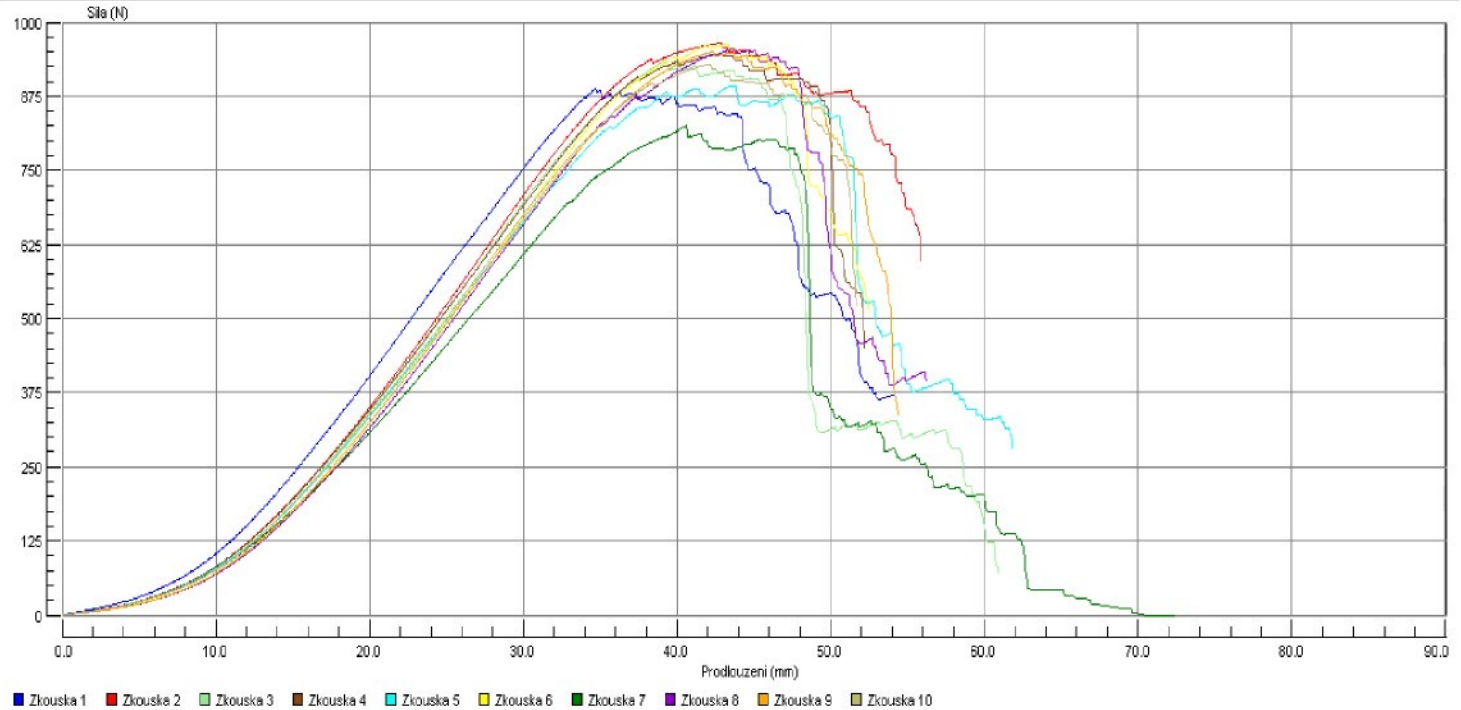
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 65_pop_35co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 11:15
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	54.102	370.280	32.513	26251.366	27.051	12506.631	34.724	17.362	888.400
2	55.853	597.000	33.567	30123.699	27.927	18817.397	42.809	21.404	964.500
3	60.925	72.000	36.608	26716.225	30.462	15066.791	39.227	19.614	934.700
4	52.202	451.380	31.372	26287.630	26.101	18497.458	42.841	21.420	947.100
5	61.828	282.200	37.152	29267.717	30.914	18225.818	43.505	21.753	892.900
6	52.497	510.200	31.553	25864.547	26.249	17328.690	42.112	21.056	963.100
7	86.629	-6.120	52.054	24490.072	43.314	14477.214	40.600	20.300	824.900
8	56.209	394.840	69.163	27111.593	28.104	18628.426	43.596	21.798	955.500
9	54.365	336.570	32.669	27239.929	27.183	17383.882	42.346	21.173	949.600
10	51.674	521.400	31.057	25515.603	25.837	17418.362	42.188	21.094	929.300
Stred	58.628	352.975	38.771	26886.838	29.314	16835.067	41.395	20.697	925.000



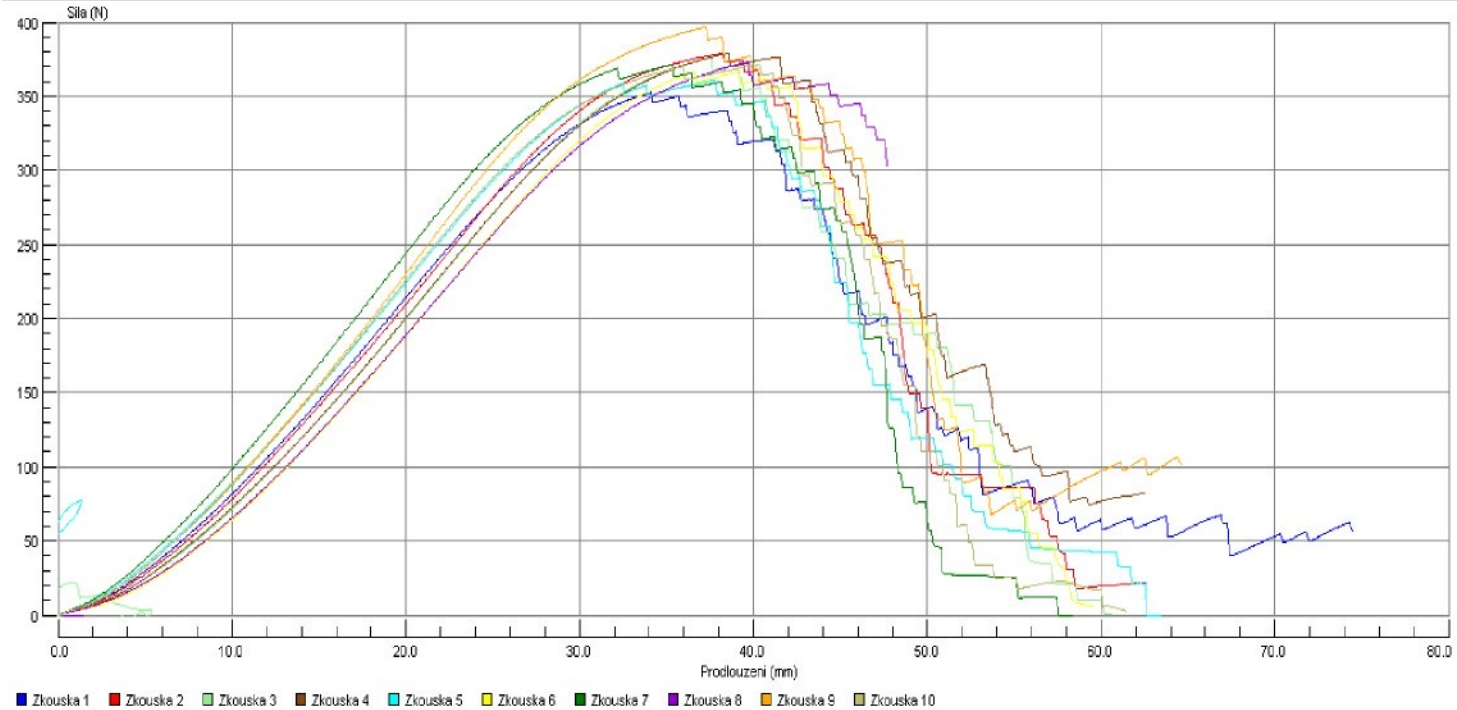
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 65_pop_35co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 11:27
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	74.478	56.670	44.762	12061.234	37.239	5991.896	34.129	17.065	352.320
2	62.531	22.220	37.589	11705.444	31.265	7511.961	38.189	19.094	379.270
3	60.621	0.590	59.731	11403.319	30.311	7107.778	37.446	18.723	376.000
4	62.496	82.050	37.569	12416.271	31.248	7405.328	38.582	19.291	379.160
5	63.424	-1.100	72.402	11124.210	31.712	7361.793	37.808	18.904	361.050
6	59.564	5.910	35.809	11205.084	29.782	6351.193	36.625	18.313	366.620
7	58.370	-0.940	35.092	11285.941	29.185	7117.093	35.235	17.618	371.010
8	47.706	303.610	54.886	10439.654	23.853	7618.955	39.647	19.823	373.130
9	64.623	101.830	38.847	13222.615	32.312	7697.605	37.197	18.598	396.650
10	61.439	2.570	36.935	11455.789	30.719	8564.037	40.327	20.163	371.190
Stred	61.525	57.341	45.362	11631.956	30.763	7272.764	37.518	18.759	372.640



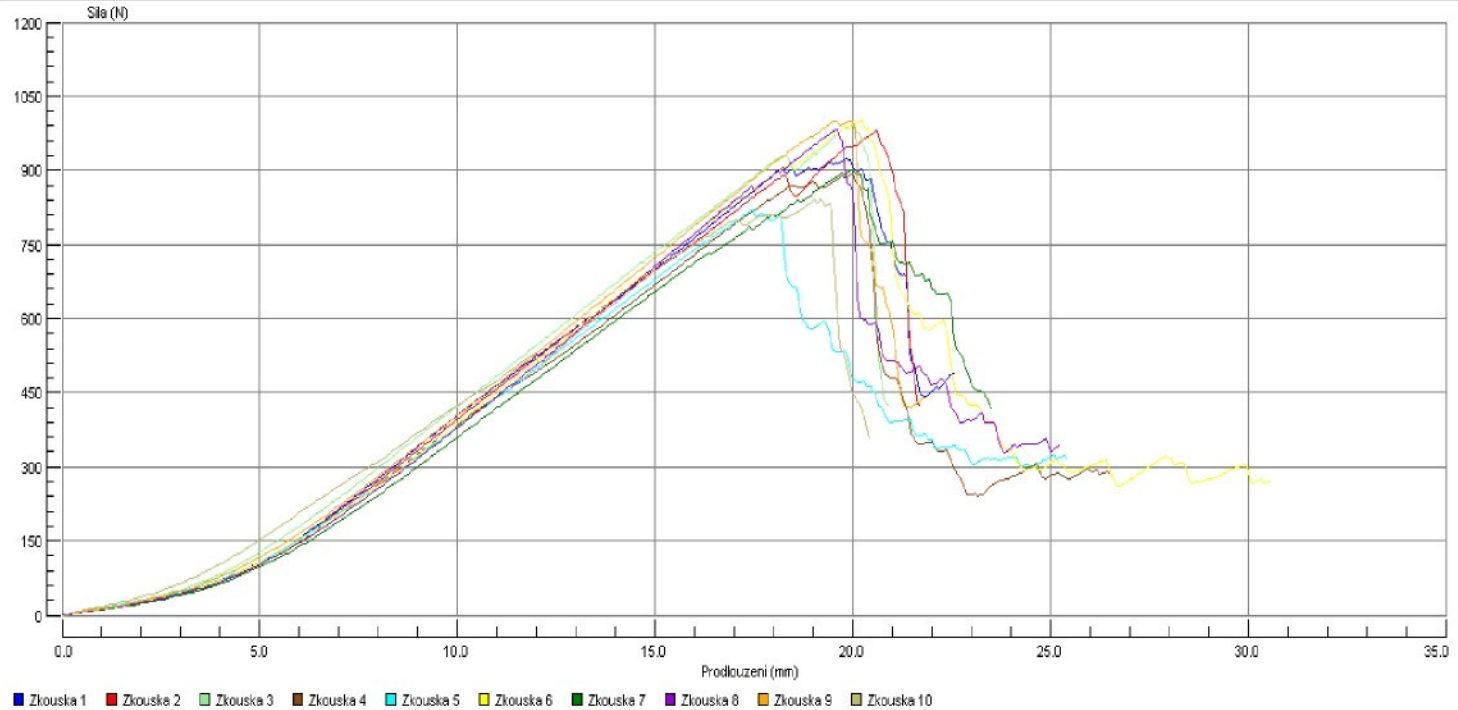
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100_co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 8:30
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	22.571	488.340	13.586	10082.154	11.286	8252.957	19.827	9.913	924.000
2	21.678	424.310	13.051	9752.145	10.839	8895.053	20.586	10.293	981.400
3	20.886	425.080	12.574	9525.016	10.443	8851.062	20.004	10.002	993.500
4	26.469	288.810	15.925	10379.885	13.234	8027.432	19.998	9.999	894.700
5	25.431	316.230	15.302	9486.835	12.715	5900.678	17.457	8.729	820.300
6	30.566	271.460	18.382	12791.382	15.283	8636.443	20.228	10.114	1002.300
7	23.497	419.270	14.143	10072.608	11.748	7688.935	19.936	9.968	901.200
8	25.221	343.130	15.175	10655.467	12.611	7996.950	19.622	9.811	983.700
9	21.815	438.450	13.130	9810.561	10.908	8659.505	19.948	9.974	1001.400
10	20.406	358.490	12.286	8473.723	10.203	7637.636	19.028	9.514	841.200
Stred	23.854	377.357	14.356	10102.978	11.927	8054.665	19.663	9.832	934.370



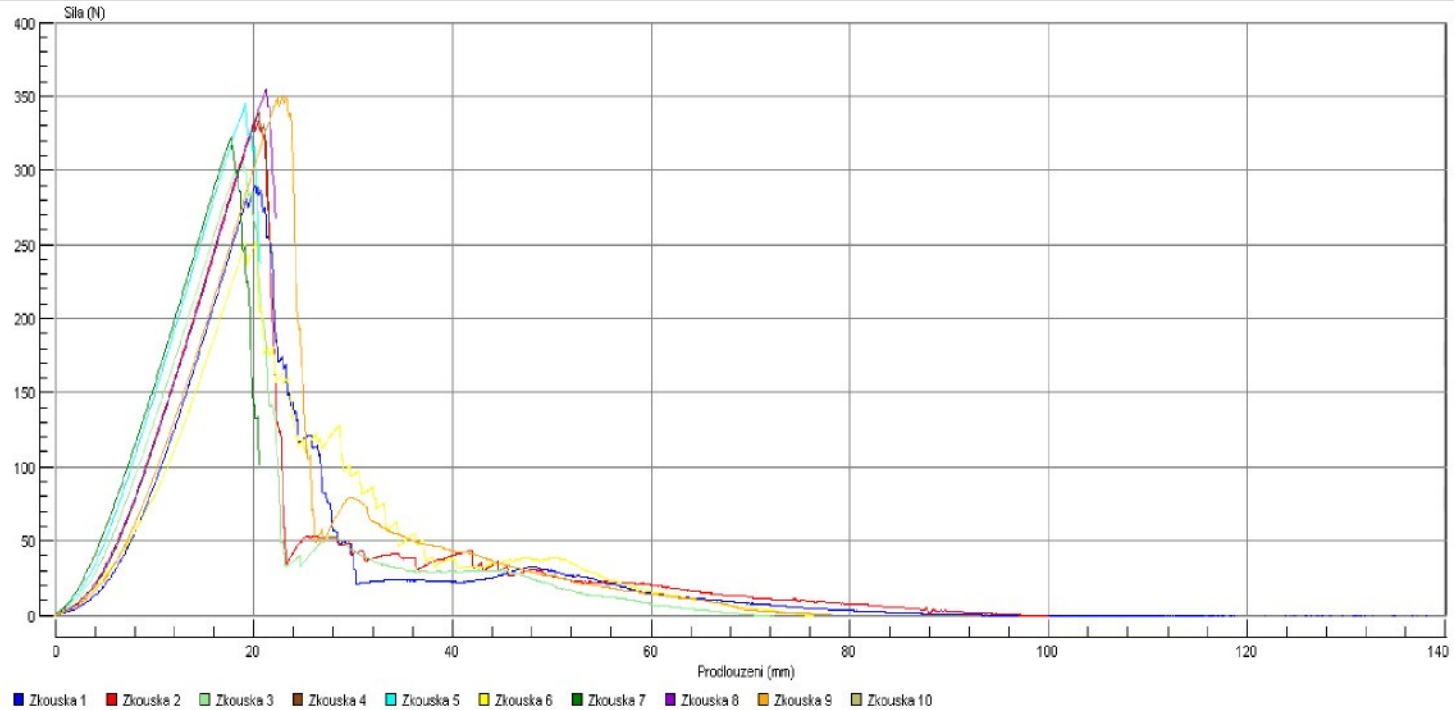
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100_co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 10:05
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	138.455	-1.380	83.167	4439.578	69.228	2225.209	20.169	10.085	290.630
2	100.316	-1.430	60.274	4965.865	50.158	2819.763	20.490	10.245	333.450
3	72.336	-1.280	43.478	4356.270	36.168	2467.028	18.844	9.422	305.120
4	21.647	244.590	13.034	3153.356	10.823	2810.321	20.536	10.268	339.270
5	20.644	238.200	12.428	3320.070	10.322	2879.377	19.198	9.599	344.620
6	76.289	-0.630	45.851	4715.923	38.145	2045.607	20.204	10.102	252.730
7	20.524	101.550	12.355	3139.314	10.262	2490.178	17.698	8.849	322.650
8	22.193	268.340	13.358	3378.693	11.097	3079.347	21.252	10.626	354.430
9	78.214	0.170	47.003	5375.917	39.107	3246.059	22.951	11.476	350.960
10	-0.220	-4.510	0.024		-0.110	2216.017	-62.131	-31.066	278.710
Stred	55.040	84.362	33.097	4093.887	27.520	2627.890	11.921	5.961	317.257



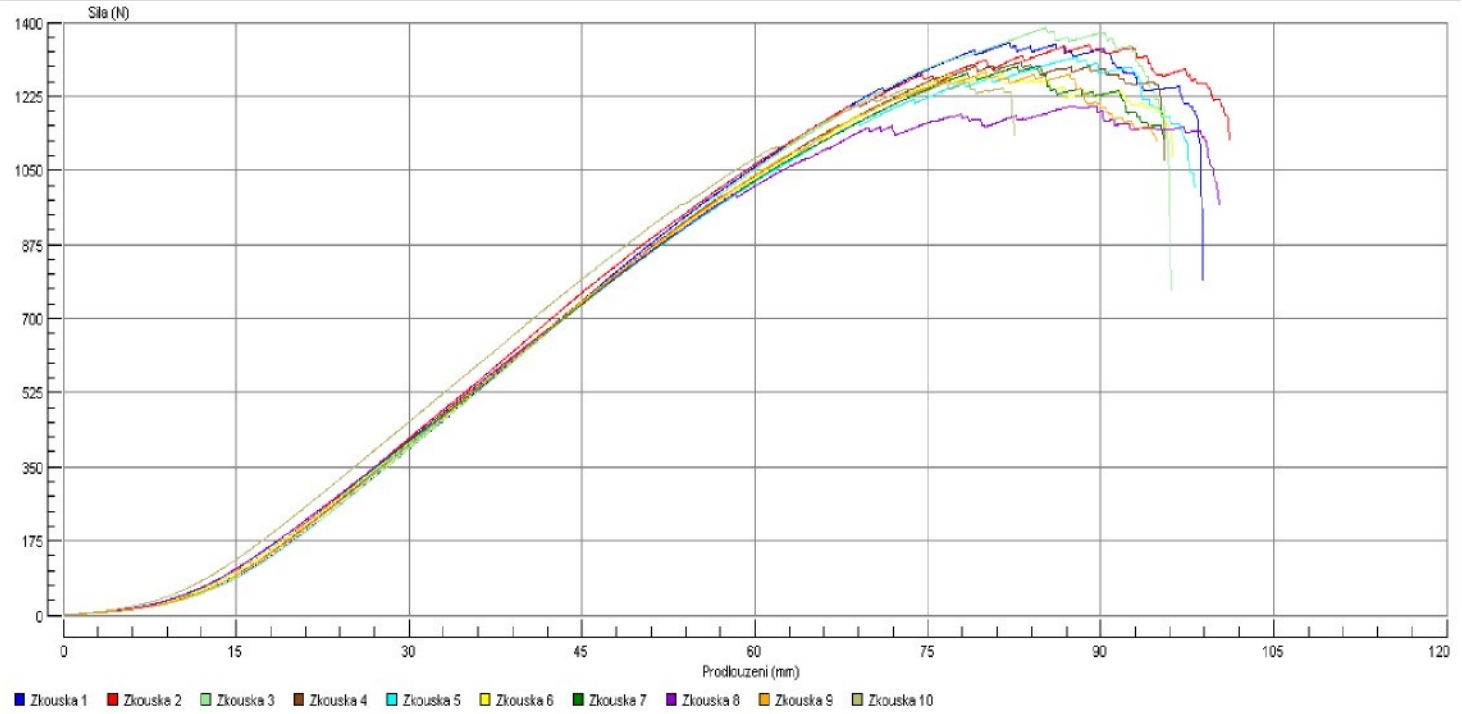
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100pop
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 10:20
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	98.888	790.700	59.400	74757.605	49.444	53127.204	82.084	41.042	1352.100
2	101.146	1123.600	60.759	78525.322	50.573	62899.604	89.012	44.506	1346.300
3	96.107	768.700	57.732	71542.393	48.054	57276.040	85.280	42.640	1386.800
4	95.564	1076.000	57.405	69713.104	47.782	53742.281	83.030	41.515	1305.600
5	98.120	1011.000	58.942	72015.826	49.060	59436.161	87.914	43.957	1317.200
6	96.245	1081.500	57.817	69816.331	48.123	51741.780	81.529	40.764	1277.800
7	95.378	1125.600	57.293	68635.403	47.689	55657.114	84.709	42.354	1297.500
8	100.225	969.000	60.205	72214.825	50.112	57657.040	87.579	43.790	1201.600
9	94.830	1119.900	56.964	67755.881	47.415	49635.285	80.062	40.031	1283.000
10	82.515	1133.900	49.575	55462.710	41.257	48232.057	76.681	38.340	1258.100
Stred	95.902	1019.990	57.609	70043.940	47.951	54940.457	83.788	41.894	1302.600



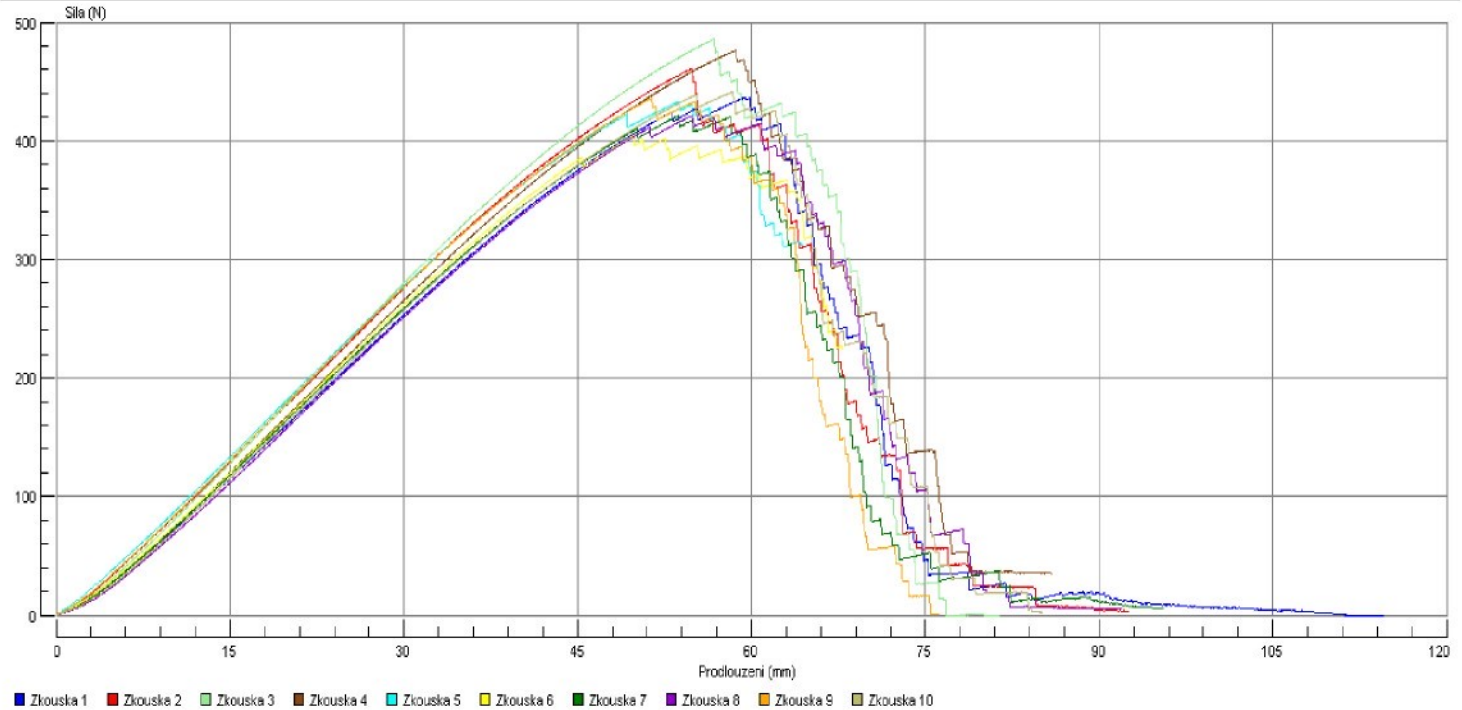
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100pop
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Platno
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 4. 3. 2010 10:35
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	114.518	-1.290	68.796	18804.382	57.259	14217.159	59.424	29.712	436.450
2	92.519	3.300	55.591	19288.387	46.259	13353.455	54.912	27.456	460.880
3	81.392	-0.670	48.913	20170.126	40.696	14490.346	56.804	28.402	485.980
4	85.864	35.180	51.580	20269.985	42.932	14683.990	58.668	29.334	476.290
5	64.397	311.470	38.693	16810.545	32.199	12784.078	53.743	26.872	432.940
6	67.837	225.050	40.754	16942.798	33.918	10416.762	49.768	24.884	404.150
7	95.562	5.360	57.417	17856.344	47.781	11929.415	53.685	26.843	421.280
8	91.944	5.070	55.247	18786.520	45.972	12137.350	54.917	27.458	421.420
9	76.214	0.840	45.802	17900.404	38.107	11732.635	51.361	25.681	435.750
10	85.146	2.290	51.167	18930.602	42.573	13967.387	58.443	29.222	441.340
Stred	85.539	58.660	51.396	18576.009	42.770	12971.258	55.173	27.586	441.648



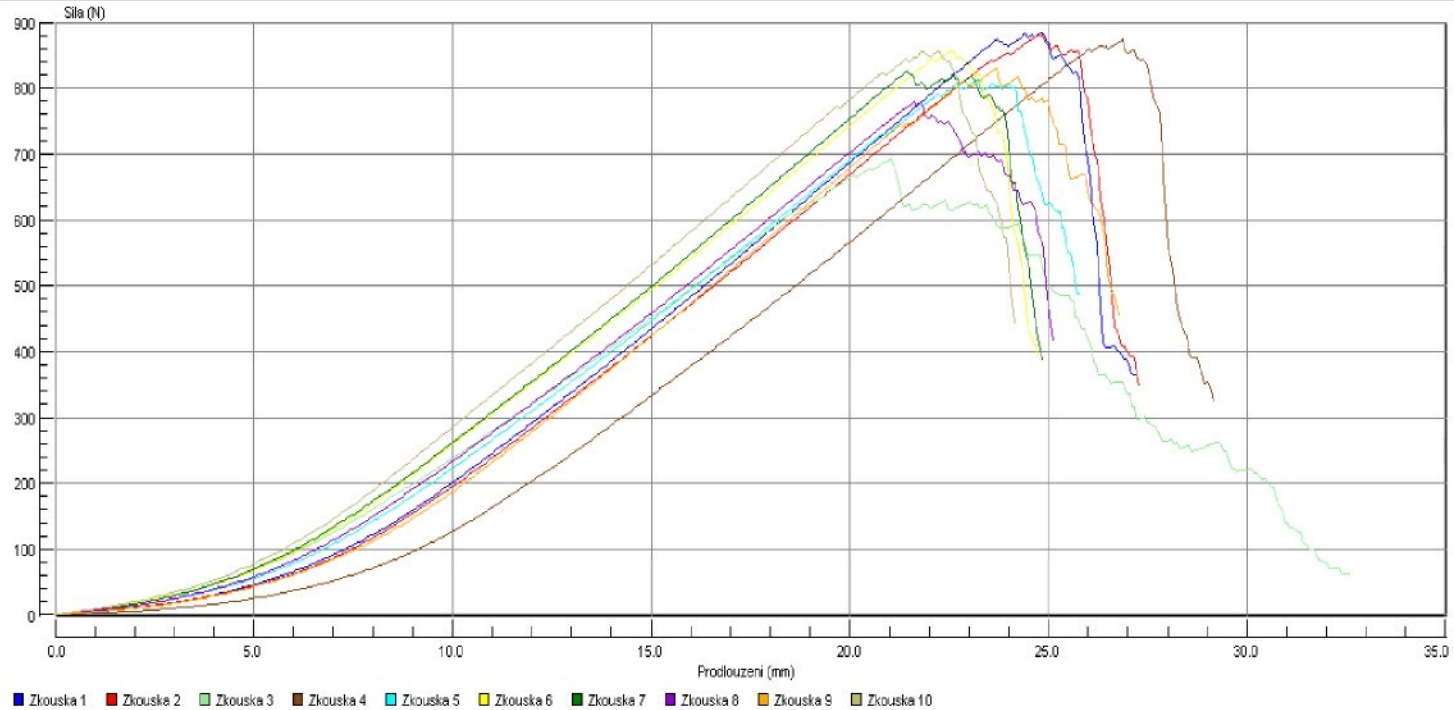
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 35_pop_65co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 10:55
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	27.233	363.700	16.384	10427.012	13.616	8930.325	24.853	12.427	884.500
2	27.280	348.480	16.413	10342.226	13.640	8615.290	24.750	12.375	881.900
3	32.575	61.860	19.609	10458.934	16.288	6091.346	21.033	10.517	693.800
4	29.151	324.960	17.536	10176.262	14.576	8798.940	26.881	13.441	874.900
5	25.786	488.820	15.515	9502.268	12.893	7720.422	23.230	11.615	813.500
6	24.746	395.600	14.893	9458.007	12.373	7933.577	22.559	11.280	857.500
7	24.848	387.610	14.953	9598.526	12.424	7086.371	21.441	10.720	826.500
8	25.122	416.180	15.118	9005.160	12.561	6619.768	21.619	10.809	780.200
9	26.770	456.530	16.109	9852.862	13.385	7695.767	23.710	11.855	831.300
10	24.161	442.740	14.539	9549.523	12.081	8210.668	22.244	11.122	856.700
Stred	26.767	368.648	16.107	9837.078	13.384	7770.247	23.232	11.616	830.080



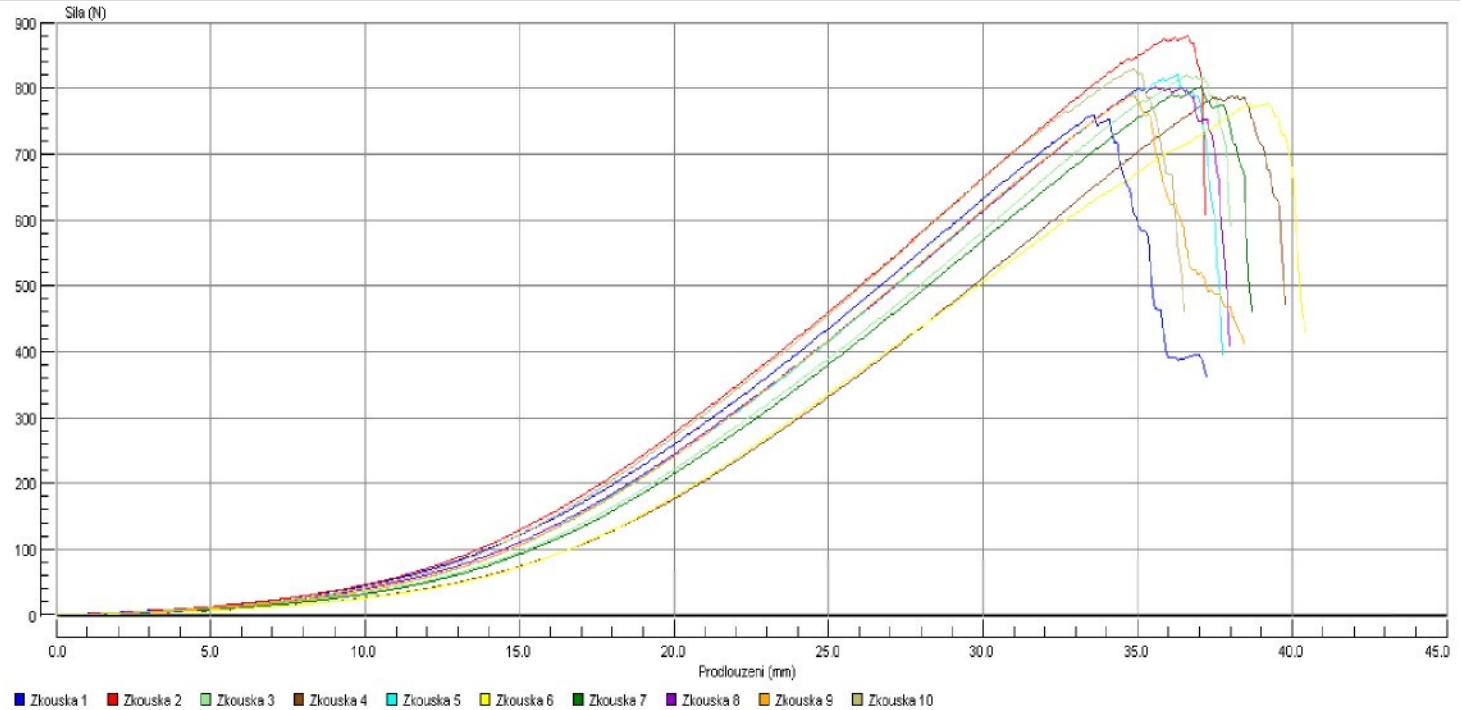
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 35_pop_65co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 11:03
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	37.215	361.940	22.376	10346.251	18.608	8344.877	33.538	16.769	759.700
2	37.175	606.700	22.353	11887.473	18.587	11432.332	36.627	18.313	879.500
3	38.013	590.500	22.857	10908.382	19.007	9810.867	36.598	18.299	820.300
4	39.781	472.150	23.917	10843.615	19.891	9768.625	38.237	19.118	787.900
5	37.743	394.280	22.695	11130.263	18.872	10115.859	36.313	18.156	820.000
6	40.441	429.720	24.313	11165.001	20.221	9899.586	38.636	19.318	776.000
7	38.684	460.670	23.260	11087.267	19.342	9899.912	37.038	18.519	802.600
8	37.972	409.020	22.832	11359.251	18.986	9573.080	35.557	17.778	802.000
9	38.446	412.320	23.117	11046.576	19.223	8917.929	34.806	17.403	789.600
10	36.517	460.570	21.960	10913.736	18.258	9706.424	34.821	17.410	829.700
Stred	38.199	459.787	22.968	11068.781	19.099	9746.949	36.217	18.109	806.730



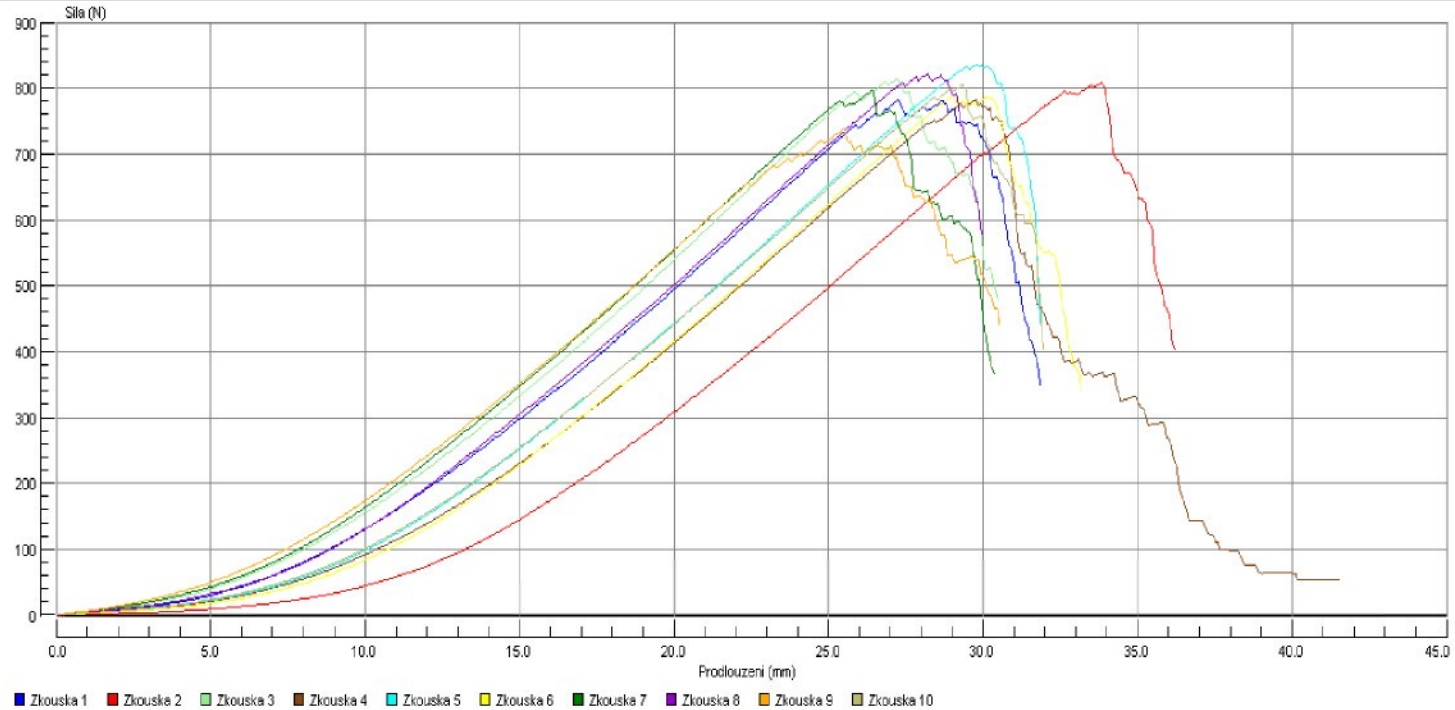
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 50_pop_50co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 10:17
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	31.842	349.520	19.152	11241.345	15.921	8139.877	27.253	13.627	781.800
2	36.208	403.500	21.773	11089.917	18.104	9625.215	33.836	16.918	808.800
3	30.466	479.250	18.328	11134.177	15.233	8887.811	27.180	13.590	813.300
4	41.498	54.500	24.965	12016.325	20.749	8640.373	29.776	14.888	783.600
5	31.851	442.880	19.159	10770.243	15.925	9224.937	29.777	14.889	836.000
6	33.161	340.460	19.944	10713.988	16.580	8056.221	29.016	14.508	789.900
7	30.388	366.590	18.277	10988.053	15.194	8473.678	26.391	13.196	796.000
8	29.946	578.300	18.015	10349.536	14.973	9043.112	28.213	14.106	822.200
9	30.537	440.790	18.369	10926.047	15.269	7797.000	25.489	12.745	738.800
10	31.957	403.360	19.222	10566.352	15.979	8837.378	29.341	14.670	805.600
Stred	32.785	385.915	19.720	10979.598	16.393	8672.560	28.627	14.314	797.600



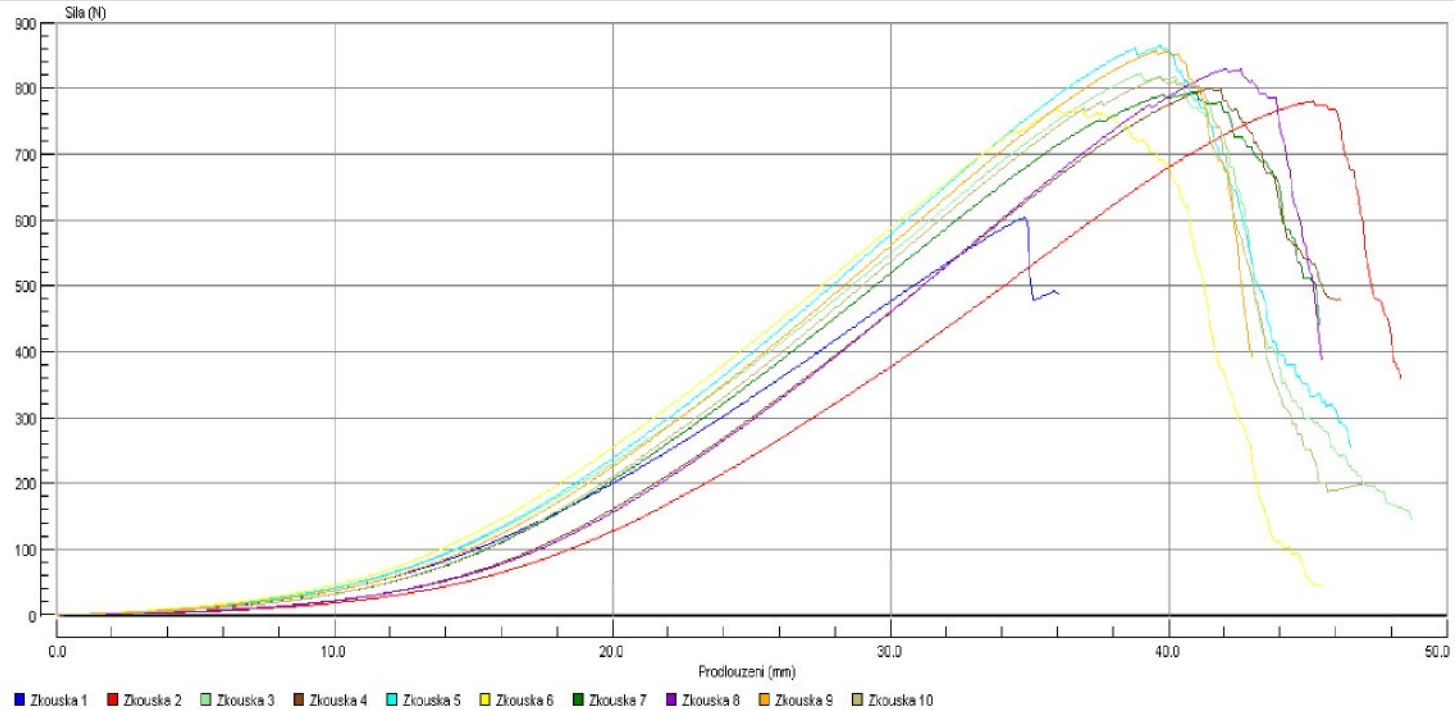
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 50_pop_50co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 10:25
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	36.028	487.560	21.666	7739.710	18.014	7113.624	34.788	17.394	603.400
2	48.344	360.500	29.058	14159.107	24.172	12233.405	45.196	22.598	780.100
3	48.716	145.750	29.300	16021.280	24.358	11462.641	39.017	19.508	822.300
4	46.172	478.320	27.754	14296.383	23.086	11317.615	41.518	20.759	800.100
5	46.558	255.770	27.985	16340.337	23.279	12598.736	39.716	19.858	863.700
6	45.500	45.490	27.367	14368.261	22.750	9745.110	35.984	17.992	769.100
7	45.406	441.440	27.293	15169.889	22.703	12190.229	40.971	20.486	793.800
8	45.519	389.750	27.362	14241.811	22.760	11809.830	42.080	21.040	829.900
9	43.038	391.560	25.872	14558.838	21.519	12040.513	39.545	19.772	856.600
10	46.970	199.050	28.249	15062.864	23.485	11506.445	39.648	19.824	816.000
Stred	45.225	319.519	27.191	14195.848	22.613	11201.815	39.846	19.923	793.500



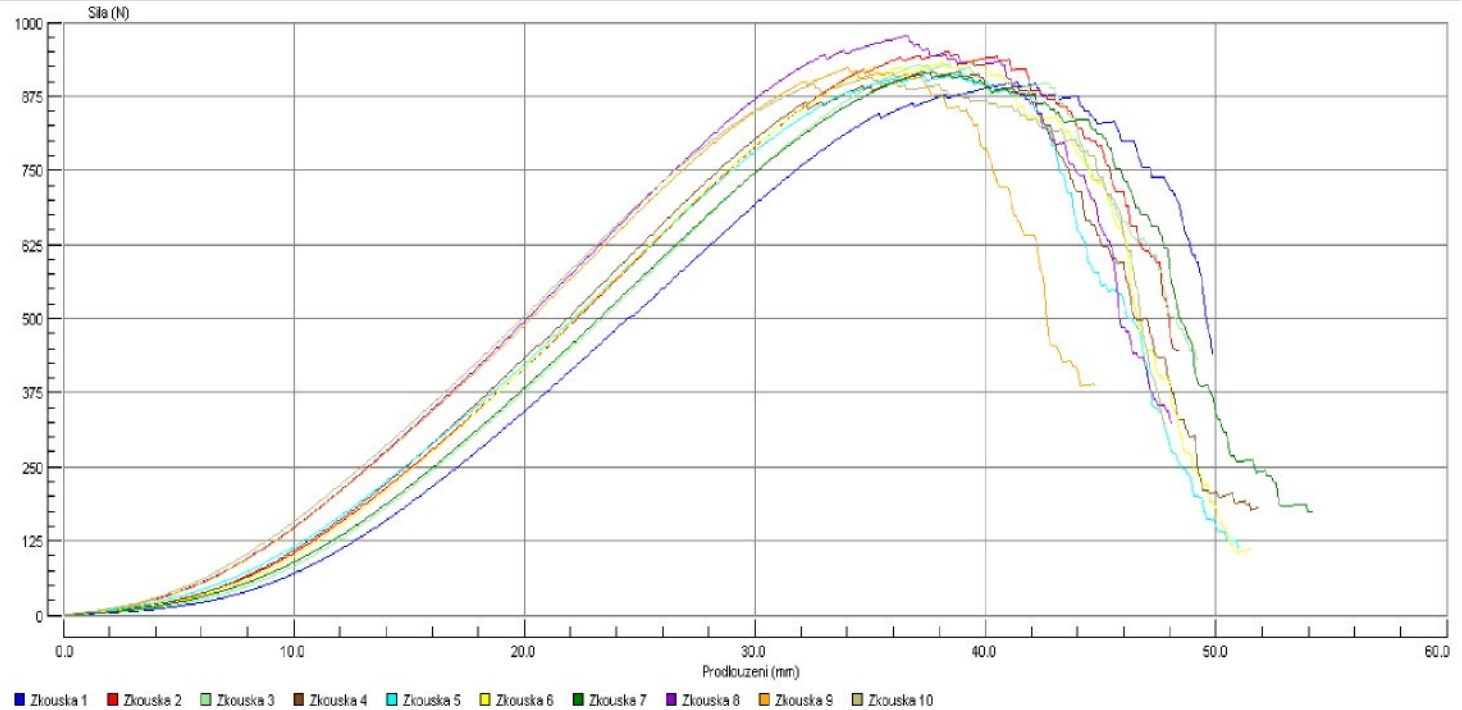
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 65_pop_35co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 10:34
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	49.824	441.650	29.947	23349.470	24.912	16709.925	41.356	20.678	899.100
2	48.359	446.930	29.068	24426.062	24.180	16413.876	38.405	19.202	950.400
3	49.195	431.980	29.569	23509.146	24.597	15290.952	38.407	19.204	930.400
4	51.782	180.430	31.140	24494.526	25.891	16935.934	38.857	19.428	916.000
5	50.951	113.770	30.638	23660.640	25.476	16918.682	39.012	19.506	913.200
6	51.479	110.710	30.958	24314.154	25.740	17366.137	39.546	19.773	932.700
7	54.150	173.100	32.561	25067.754	27.075	14390.861	37.350	18.675	917.200
8	48.081	324.820	28.900	25493.674	24.041	16729.641	36.591	18.295	977.800
9	44.722	388.840	26.885	21943.635	22.361	13975.506	34.010	17.005	922.900
10	47.793	322.970	28.724	25208.378	23.896	15183.095	35.082	17.541	907.300
Stred	49.634	293.520	29.839	24146.744	24.817	15991.461	37.862	18.931	926.700



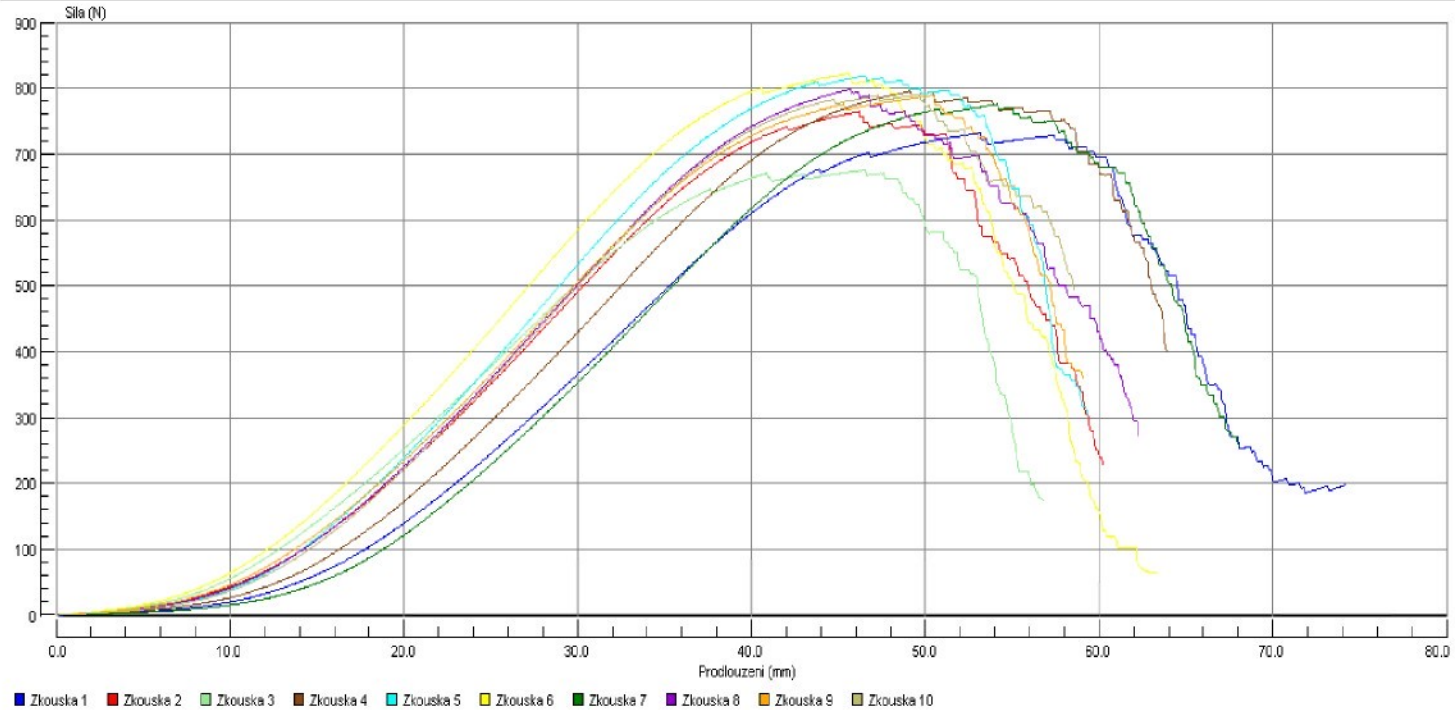
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 65_pop_35co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 10:44
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	74.136	197.250	44.555	27358.472	37.068	17192.861	53.158	26.579	731.800
2	60.221	227.930	36.186	23800.699	30.111	15657.467	46.193	23.097	764.500
3	56.818	174.200	34.142	20813.029	28.409	15768.353	46.550	23.275	675.500
4	63.877	399.350	38.383	26982.470	31.938	16383.135	49.030	24.515	795.000
5	59.377	305.410	35.679	25694.512	29.688	17071.110	46.547	23.274	818.900
6	63.369	62.590	38.095	26519.706	31.684	17813.279	45.643	22.822	822.300
7	68.019	257.920	40.887	26292.809	34.009	18008.847	54.126	27.063	775.300
8	62.252	271.780	37.407	25871.153	31.126	15615.902	45.595	22.798	798.100
9	59.049	360.740	35.484	24713.720	29.524	19393.209	50.430	25.215	789.000
10	58.529	493.660	35.173	24538.683	29.264	18580.303	49.612	24.806	790.100
Stred	62.565	275.083	37.599	25258.525	31.282	17148.447	48.688	24.344	776.050



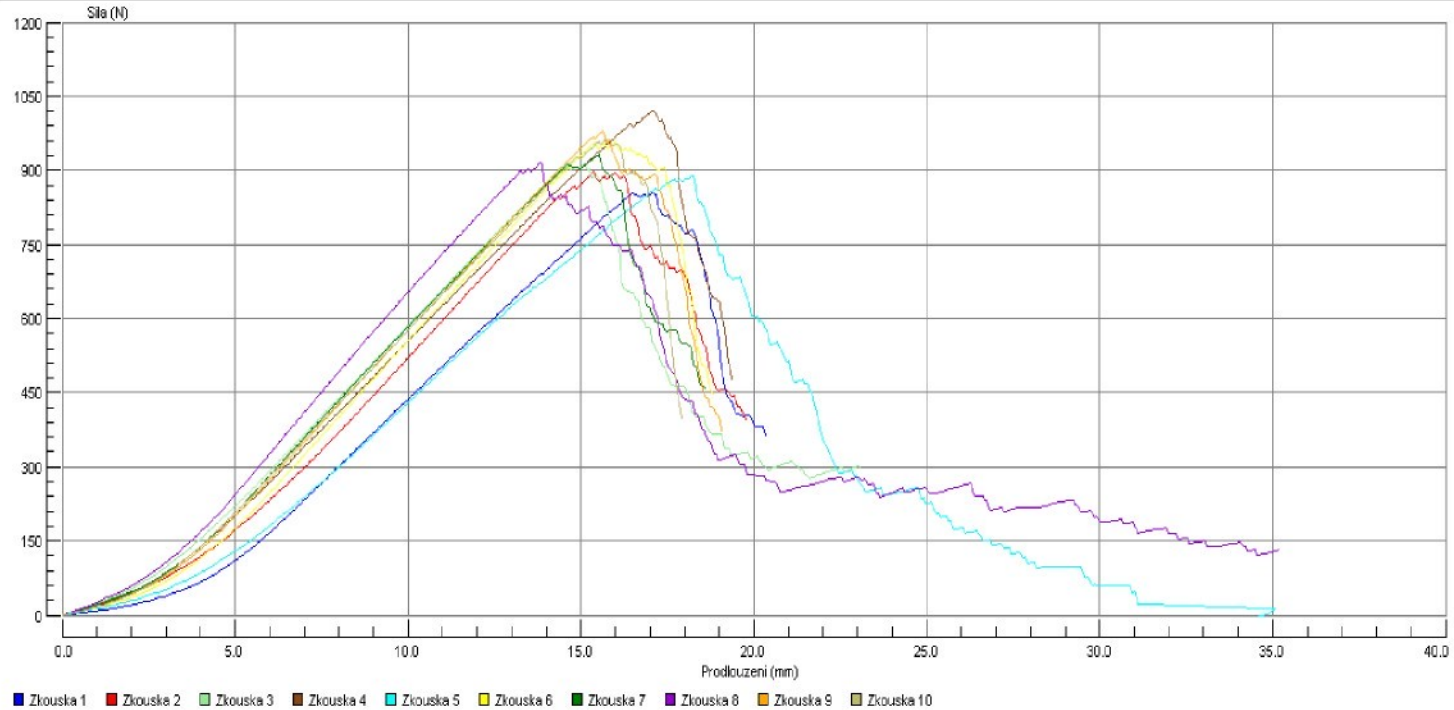
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100_co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 9:27
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	20.326	363.860	12.238	8246.310	10.163	6250.400	17.078	8.539	856.200
2	19.748	396.620	11.892	8879.918	9.874	5893.160	15.358	7.679	897.000
3	23.046	298.300	13.868	9916.090	11.523	6350.695	15.081	7.541	912.900
4	19.355	476.000	11.656	9728.681	9.677	7971.407	17.108	8.554	1020.800
5	35.082	13.450	21.112	11144.552	17.541	7242.892	18.242	9.121	889.900
6	18.833	449.300	11.345	9070.650	9.417	6805.897	15.987	7.994	957.900
7	18.575	459.920	11.188	8708.475	9.288	6657.147	15.510	7.755	933.300
8	35.168	131.730	21.167	12764.387	17.584	5766.793	13.813	6.906	915.500
9	19.069	373.130	11.486	9305.033	9.535	6719.158	15.617	7.808	980.000
10	17.923	398.170	10.796	8570.772	8.962	6821.140	15.727	7.864	960.600
Stred	22.713	336.048	13.675	9633.487	11.356	6647.869	15.952	7.976	932.410



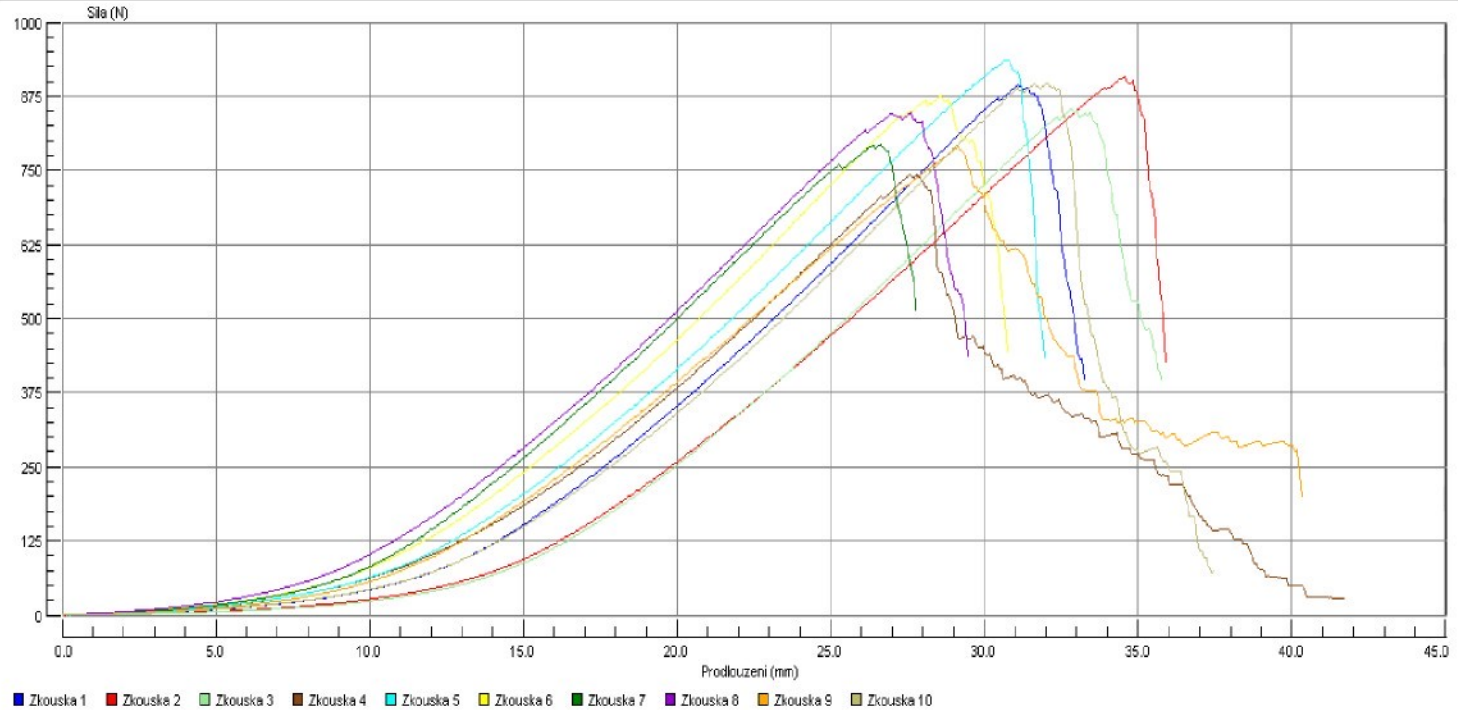
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100_co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 9:37
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	33.264	398.170	20.003	10284.389	16.632	8724.545	31.078	15.539	894.400
2	35.884	427.810	21.579	10687.811	17.942	9685.491	34.563	17.281	908.100
3	35.763	397.410	21.506	10139.813	17.882	8176.219	32.804	16.402	852.700
4	41.698	28.180	25.086	10459.116	20.849	6464.840	27.580	13.790	743.000
5	31.979	433.190	19.233	10616.736	15.990	9651.065	30.711	15.356	935.800
6	30.767	444.090	18.506	10259.401	15.384	8638.089	28.588	14.294	877.700
7	27.763	515.500	16.706	8143.341	13.882	7352.726	26.617	13.309	794.300
8	29.451	437.640	17.716	9808.913	14.726	8533.019	27.595	13.797	846.900
9	40.315	200.030	26.224	12219.648	20.157	7664.969	29.162	14.581	790.400
10	37.448	73.040	22.536	11513.515	18.724	9020.475	31.628	15.814	897.700
Stred	34.433	335.506	20.910	10413.268	17.217	8391.144	30.033	15.016	854.100



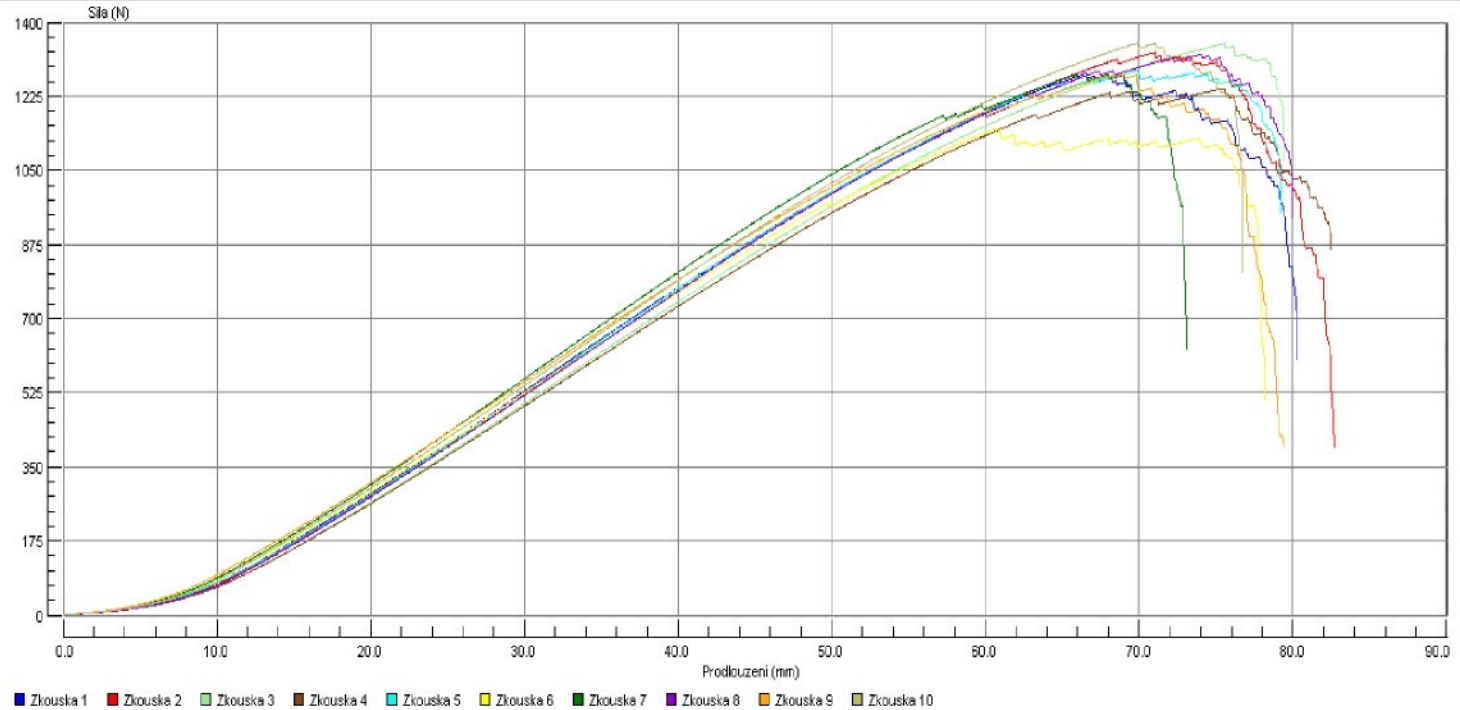
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100pop
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 9:45
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	80.311	604.300	48.248	56419.908	40.155	40504.863	66.563	33.282	1279.500
2	82.659	396.510	49.659	59351.549	41.329	46140.899	71.004	35.502	1329.100
3	79.432	1074.000	47.722	55716.578	39.716	50599.108	75.503	37.751	1349.000
4	82.500	864.400	49.563	56805.324	41.250	49205.478	75.489	37.744	1243.300
5	79.241	947.400	47.609	56270.567	39.620	44711.530	69.925	34.963	1286.800
6	78.179	509.000	46.964	51795.782	39.090	32674.787	60.650	30.325	1148.400
7	73.104	629.400	43.924	49913.350	36.552	41340.130	65.941	32.971	1276.400
8	79.995	937.100	48.059	57177.725	39.998	49843.462	74.043	37.021	1323.600
9	79.423	396.030	47.715	55786.357	39.711	44536.817	68.991	34.495	1276.600
10	76.737	810.200	46.103	54799.766	38.368	45940.028	69.843	34.922	1350.200
Stred	79.158	716.834	47.557	55403.691	39.579	44549.710	69.795	34.898	1286.290



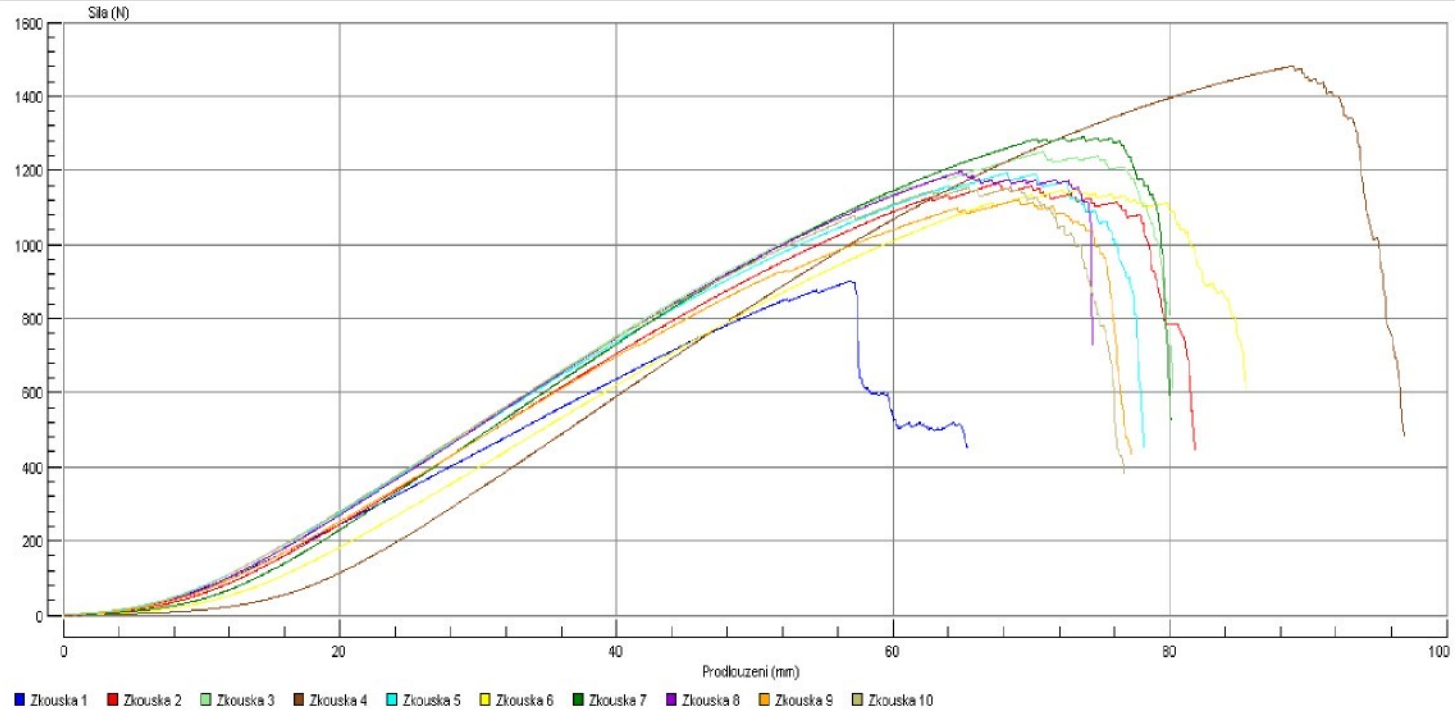
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 100pop
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : atlas
Jemnost (tex) : 45
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 12. 3. 2010 10:01
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	65.406	454.380	39.317	28601.662	32.703	23879.619	56.946	28.473	902.300
2	81.786	444.120	49.132	52653.962	40.893	38002.541	67.698	33.849	1167.000
3	80.229	614.600	48.200	55110.954	40.114	44291.914	70.861	35.431	1250.600
4	96.948	484.740	58.235	71546.204	48.474	61968.402	88.948	44.474	1481.800
5	78.114	451.810	46.930	50913.038	39.057	40309.279	68.226	34.113	1193.400
6	85.456	609.000	51.336	52621.437	42.728	40375.765	73.520	36.760	1148.200
7	80.094	526.700	48.118	54491.880	40.047	46998.779	73.716	36.858	1288.900
8	74.386	729.300	44.690	47856.166	37.193	36857.799	64.918	32.459	1197.200
9	77.191	435.680	46.375	46705.249	38.596	38775.658	69.097	34.549	1121.400
10	76.697	384.030	46.080	48657.030	38.348	37429.764	65.497	32.749	1154.100
Stred	79.631	513.436	47.841	50915.758	39.815	40888.952	69.943	34.971	1190.490



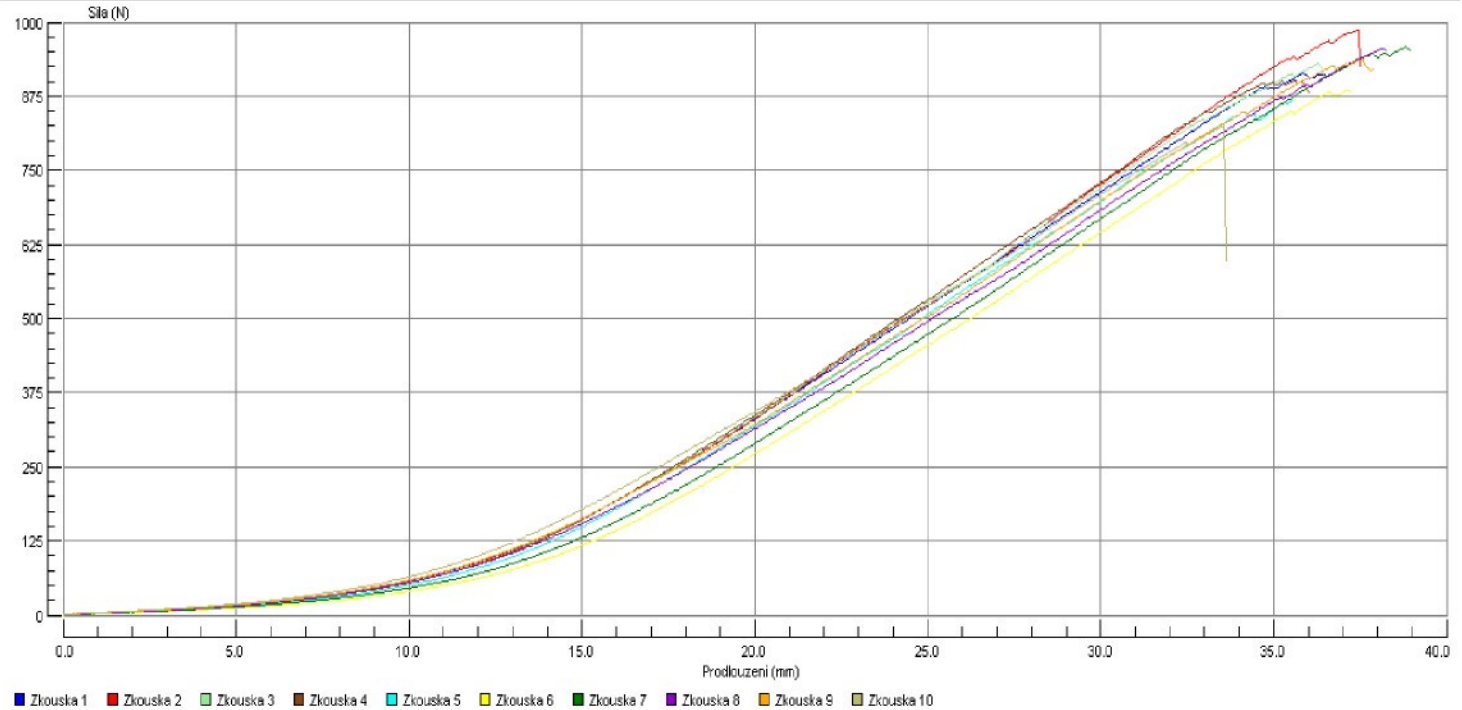
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 35_pop_65co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Kepr1_2_DU16.5
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 25. 2. 2010 12:33
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	36.471	912.000	21.934	12533.652	18.236	11984.261	35.867	17.934	914.600
2	37.509	926.400	22.550	13736.868	18.754	13630.971	37.400	18.700	987.500
3	36.517	907.000	21.958	12663.880	18.258	12461.804	36.297	18.149	930.900
4	36.014	882.800	21.656	12294.381	18.007	11902.955	35.577	17.788	901.700
5	35.533	866.700	21.363	11279.037	17.767	11279.037	35.533	17.767	866.700
6	37.218	883.100	22.380	11650.462	18.609	11602.685	37.164	18.582	886.500
7	38.928	952.300	23.409	13789.123	19.464	13687.838	38.822	19.411	959.400
8	38.225	951.500	22.985	13630.892	19.112	13580.345	38.172	19.086	956.000
9	37.849	920.000	22.762	13563.962	18.924	13313.295	37.578	18.789	936.800
10	33.610	596.500	20.216	10122.736	16.805	10077.915	33.547	16.774	826.400
Stred	36.787	879.830	22.121	12526.499	18.394	12352.111	36.596	18.298	916.650



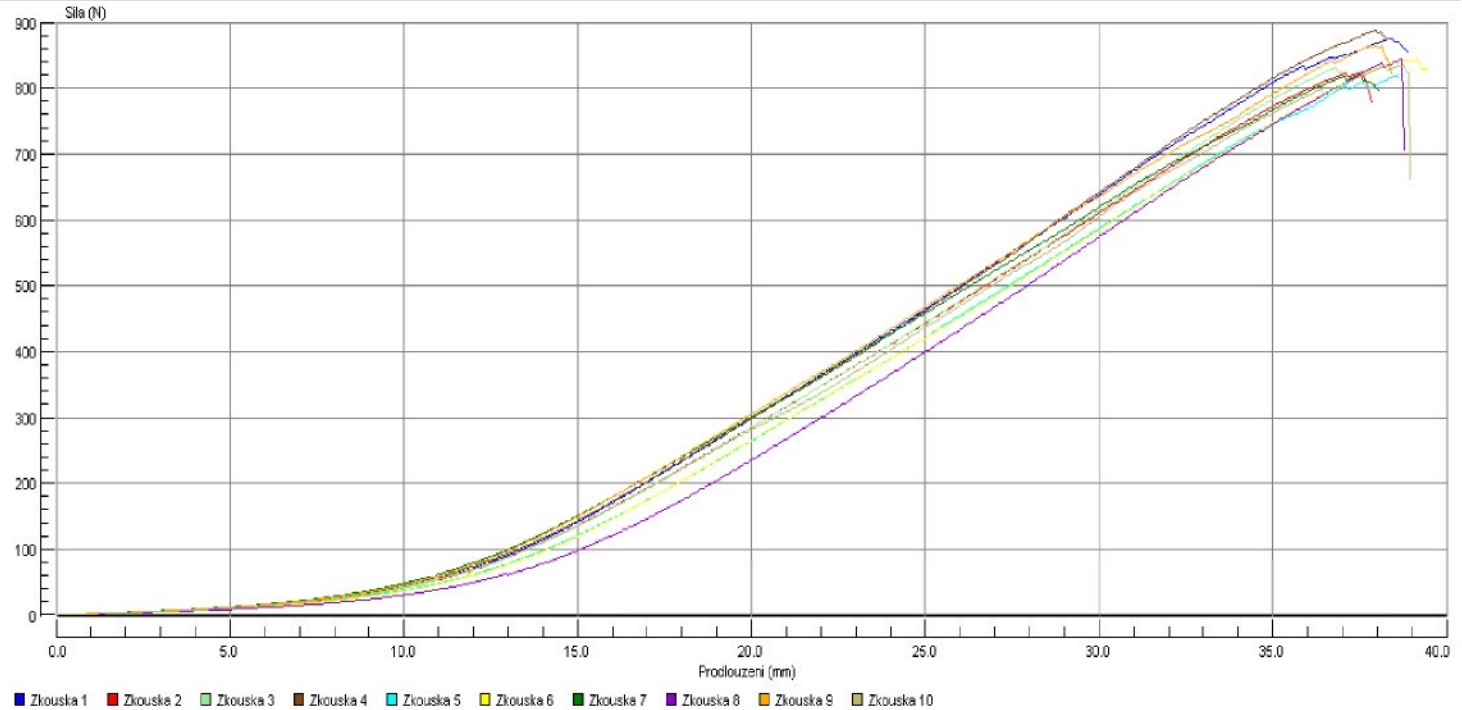
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 35_pop_65co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Kepr1_2_DU16.5
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 26. 2. 2010 8:23
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	38.874	854.400	23.373	13234.305	19.437	12812.166	38.387	19.194	875.600
2	37.855	778.400	22.762	11806.511	18.927	11589.048	37.584	18.792	824.300
3	36.995	825.100	22.246	11183.050	18.497	11003.620	36.778	18.389	830.200
4	38.343	874.400	23.058	12855.541	19.171	12470.279	37.906	18.953	887.300
5	38.622	815.200	23.225	11881.894	19.311	11837.767	38.568	19.284	819.100
6	39.437	828.100	23.713	12571.302	19.719	12299.598	39.111	19.556	843.400
7	38.040	795.800	22.873	12255.302	19.020	11771.878	37.443	18.722	820.100
8	38.768	705.400	23.309	11550.360	19.384	11502.331	38.706	19.353	843.900
9	38.406	822.300	23.093	12850.283	19.203	12479.154	37.970	18.985	864.500
10	38.958	662.300	23.424	12575.874	19.479	12396.985	38.736	19.368	834.600
Stred	38.430	796.140	23.108	12276.442	19.215	12016.283	38.119	19.059	844.300



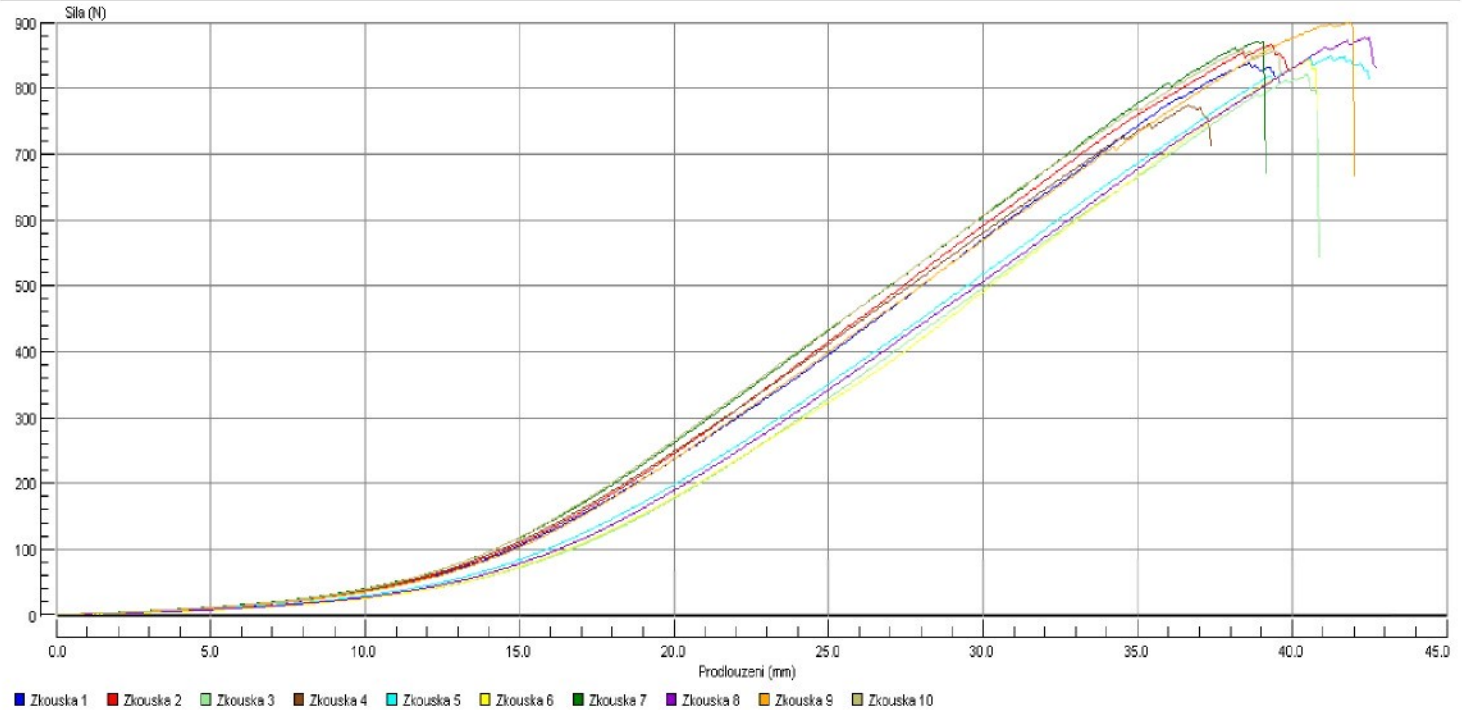
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 50_pop_50co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Kepr1_2_DU13.4
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 25. 2. 2010 11:21
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	39.613	806.500	23.817	12264.900	19.806	11417.170	38.588	19.294	837.200
2	39.877	829.300	23.978	12884.716	19.938	12424.706	39.335	19.667	866.000
3	40.873	544.800	24.571	11577.430	20.437	11277.132	40.488	20.244	820.300
4	37.372	713.300	22.470	10591.307	18.686	10050.092	36.662	18.331	774.700
5	42.500	814.100	25.551	13517.611	21.250	12476.970	41.259	20.629	848.200
6	40.808	766.800	24.534	11537.230	20.404	11310.592	40.534	20.267	842.900
7	39.142	670.100	23.533	12661.193	19.571	12424.680	38.863	19.431	871.000
8	42.714	831.300	25.681	13496.211	21.357	13169.752	42.334	21.167	876.900
9	42.017	666.800	25.275	14382.354	21.008	14235.418	41.845	20.923	900.000
10	39.616	820.900	23.817	13050.739	19.808	11991.267	38.371	19.185	858.600
Stred	40.453	746.390	24.323	12596.369	20.227	12077.778	39.828	19.914	849.580



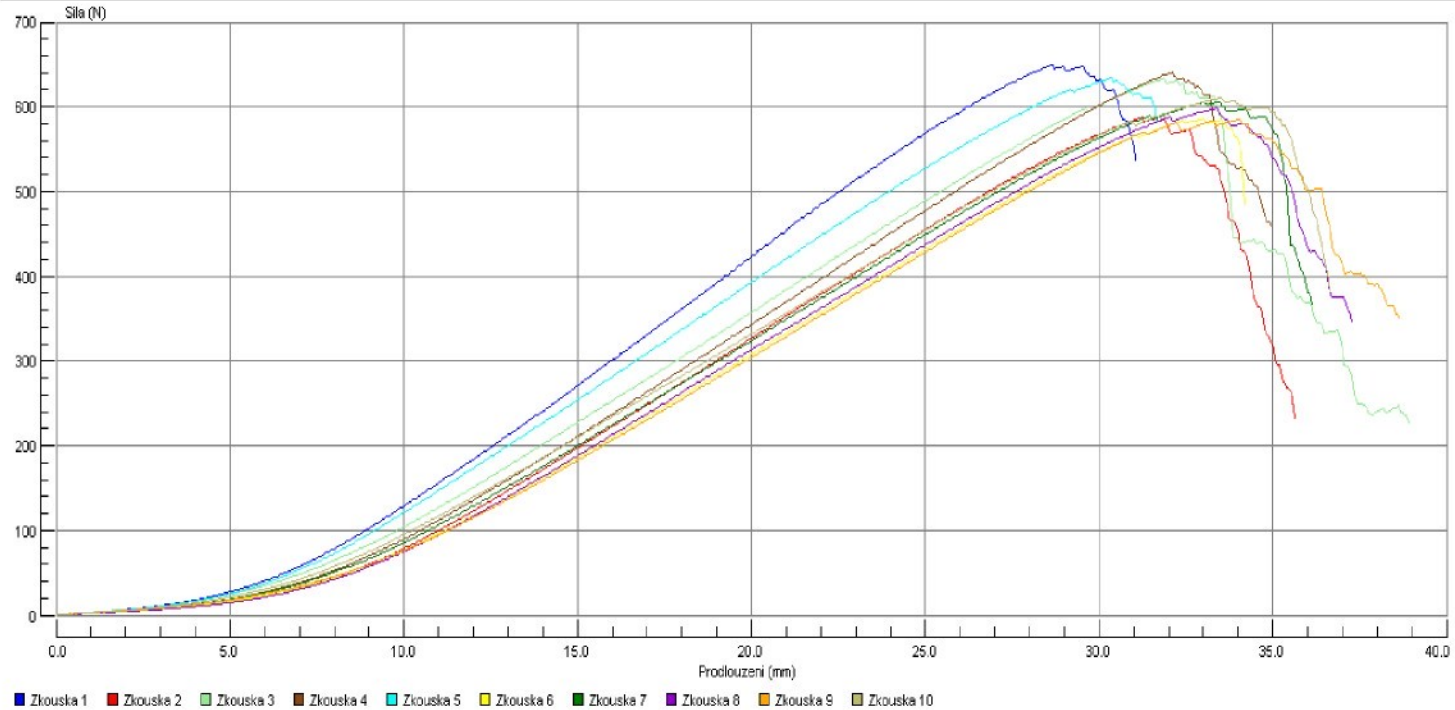
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 50_pop_50co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Kepr1_2_DU13.4
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 25. 2. 2010 11:34
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	31.051	537.700	18.676	9365.833	15.526	7873.172	28.659	14.330	650.100
2	35.633	233.330	21.427	9544.270	17.816	7474.902	31.235	15.618	587.600
3	38.901	226.930	23.388	11568.781	19.451	8635.894	31.842	15.921	633.800
4	34.951	458.470	21.018	10084.528	17.476	8481.045	32.104	16.052	640.600
5	31.663	581.100	19.045	9197.975	15.832	8397.970	30.366	15.183	634.600
6	34.201	484.830	20.566	8825.732	17.101	8143.171	33.004	16.502	586.500
7	36.122	366.510	21.723	10233.436	18.061	8822.134	33.493	16.747	606.200
8	37.273	346.030	22.414	10375.633	18.636	8431.449	33.353	16.677	598.600
9	38.653	349.860	23.240	10876.498	19.326	8670.163	34.014	17.007	585.400
10	36.651	380.190	22.038	10768.110	18.326	9035.785	33.529	16.764	610.700
Stred	35.510	396.495	21.353	10084.080	17.755	8396.568	32.160	16.080	613.410



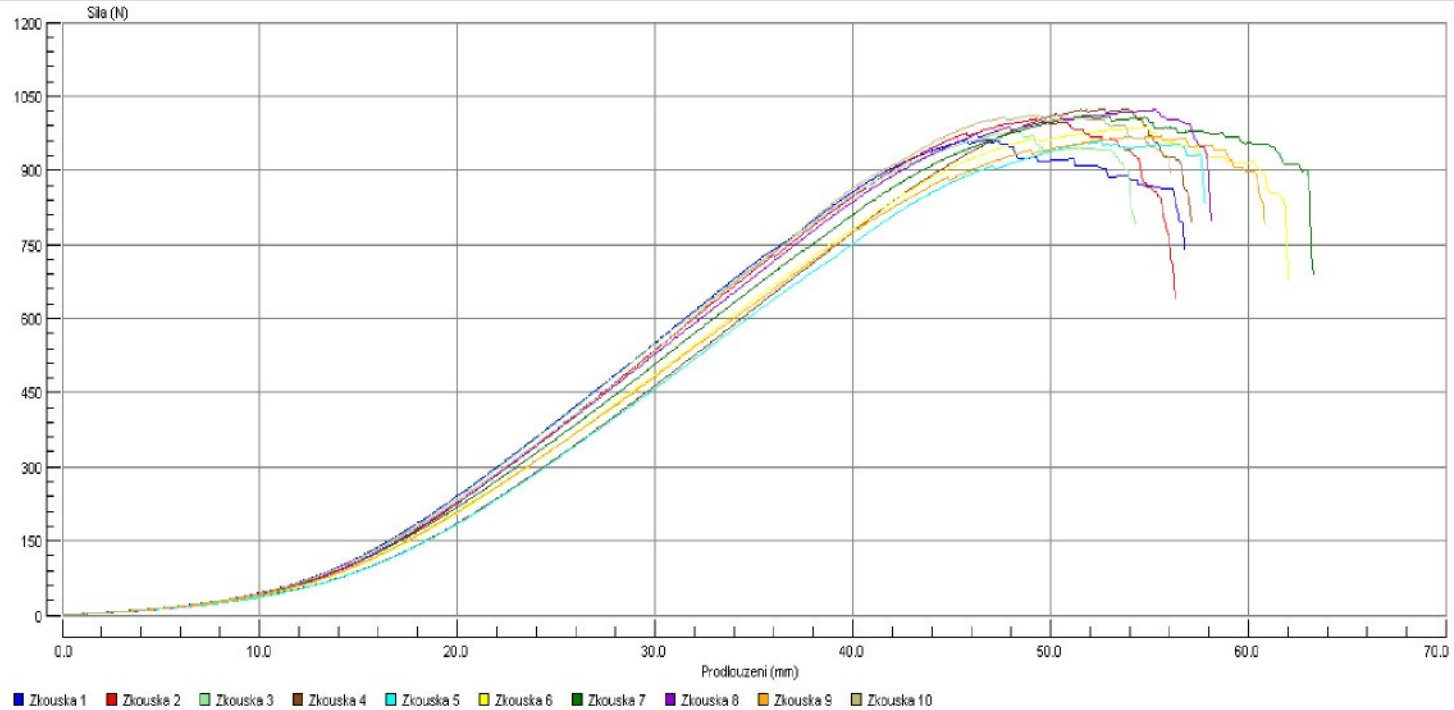
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 65_pop_35co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Kepr1_2_DU13.5
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 26. 2. 2010 8:37
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	56.795	741.100	34.130	27732.977	28.398	18844.545	46.934	23.467	962.900
2	56.333	640.600	33.853	27406.112	28.167	20838.298	49.299	24.649	1004.500
3	54.317	791.800	32.645	25680.291	27.159	19972.225	48.228	24.114	980.600
4	57.126	795.900	34.332	26624.611	28.563	22377.929	52.737	26.368	1024.600
5	57.865	832.700	34.774	26420.045	28.933	21455.173	52.601	26.301	958.900
6	62.051	677.500	37.286	31341.567	31.025	24696.641	54.832	27.416	988.000
7	63.309	691.300	38.041	33695.830	31.654	22762.984	52.010	26.005	1013.000
8	58.122	797.200	34.929	29439.189	29.061	26589.999	55.219	27.610	1022.000
9	60.867	792.700	36.575	30024.864	30.434	25134.284	55.612	27.806	969.600
10	56.098	893.500	33.714	27796.065	28.049	20965.760	49.163	24.581	1012.400
Stred	58.288	765.430	35.028	28616.155	29.144	22363.784	51.664	25.832	993.650



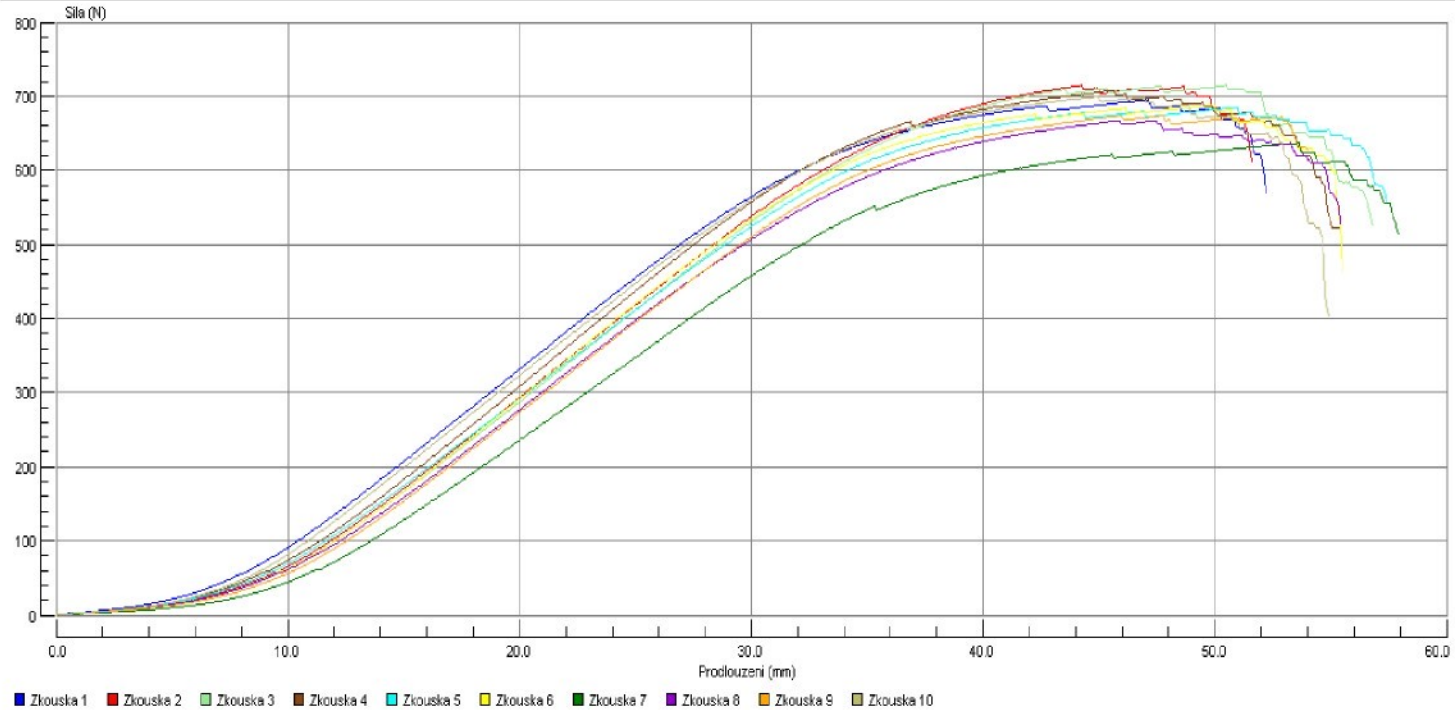
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : 65_pop_35co
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Kepr1_2_DU13.5
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 26. 2. 2010 8:50
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	52.199	569.100	31.370	21517.168	26.100	18044.723	47.016	23.508	695.000
2	51.567	612.600	30.988	20490.674	25.784	15360.969	44.225	22.113	715.200
3	56.835	526.300	34.165	23710.292	28.417	19578.740	50.438	25.219	714.400
4	55.340	522.000	33.257	23175.470	27.670	16718.639	45.617	22.809	708.500
5	57.400	557.700	34.492	23713.195	28.700	19423.786	50.806	25.403	685.100
6	55.519	463.810	33.365	22531.128	27.760	18922.338	49.904	24.952	688.200
7	57.911	515.500	34.799	21291.864	28.955	18752.657	53.627	26.813	636.900
8	55.403	528.500	33.293	21569.000	27.701	15430.048	45.803	22.902	667.100
9	53.976	627.300	32.436	20901.325	26.988	16782.696	47.776	23.888	674.100
10	54.884	404.000	32.982	22937.051	27.442	16484.784	44.980	22.490	699.400
Stred	55.103	532.681	33.115	22183.717	27.552	17549.938	48.019	24.010	688.390



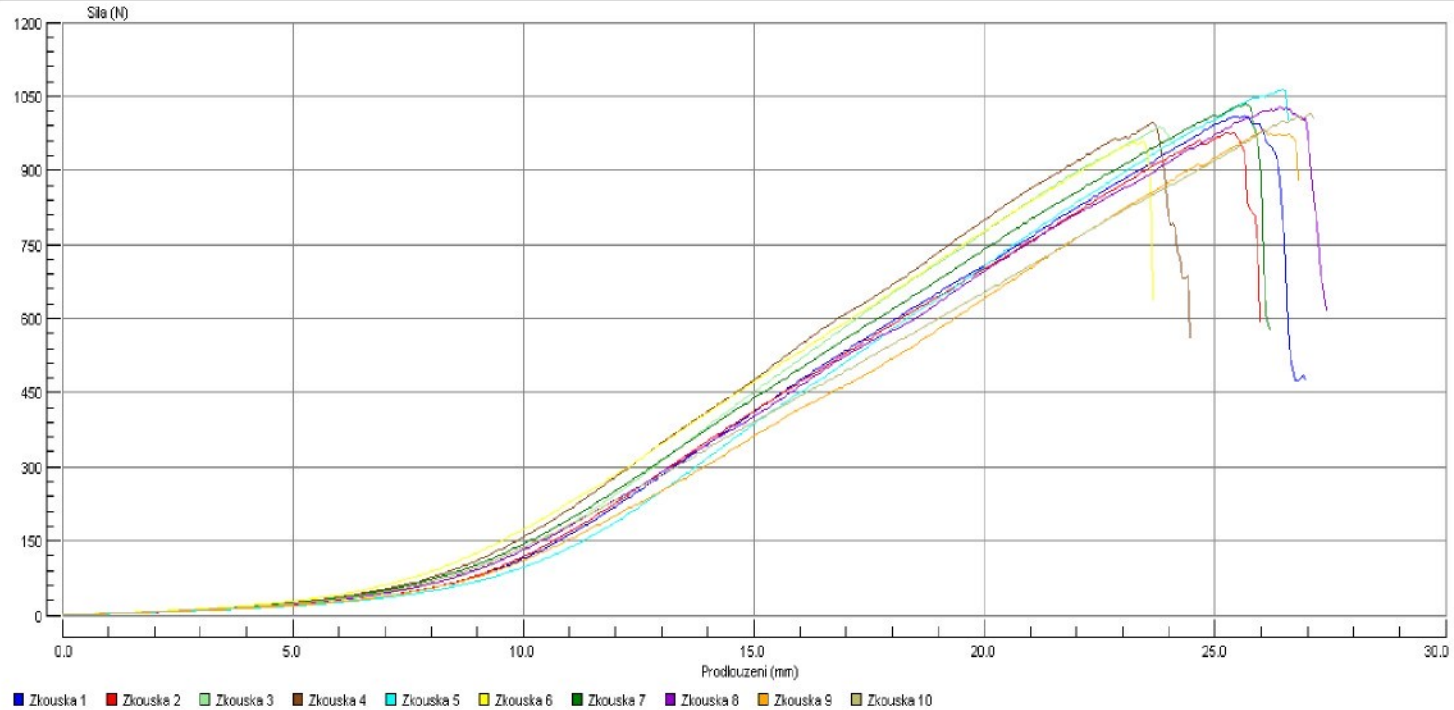
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : Co_100
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Kepr1_2_DU16
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 25. 2. 2010 10:58
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	26.968	476.350	16.225	10369.127	13.484	9300.234	25.638	12.819	1010.400
2	25.980	593.200	15.631	9507.914	12.990	9034.464	25.430	12.715	977.900
3	24.168	936.900	14.545	8573.628	12.084	8203.469	23.786	11.893	987.600
4	24.463	562.800	14.722	9153.893	12.231	8485.311	23.642	11.821	996.500
5	26.581	1004.200	15.992	10095.050	13.290	9974.667	26.466	13.233	1062.800
6	23.650	637.500	14.235	8386.627	11.825	8187.811	23.427	11.714	960.300
7	26.210	577.700	15.779	10325.443	13.105	9850.745	25.658	12.829	1034.300
8	27.402	617.500	16.484	10932.720	13.701	10022.645	26.417	13.208	1028.200
9	26.811	880.800	16.132	9621.235	13.406	8880.797	26.046	13.023	981.200
10	27.133	1006.500	16.328	10304.811	13.566	10248.187	27.077	13.538	1015.800
Stred	25.937	729.345	15.607	9727.045	12.968	9218.833	25.359	12.679	1005.500



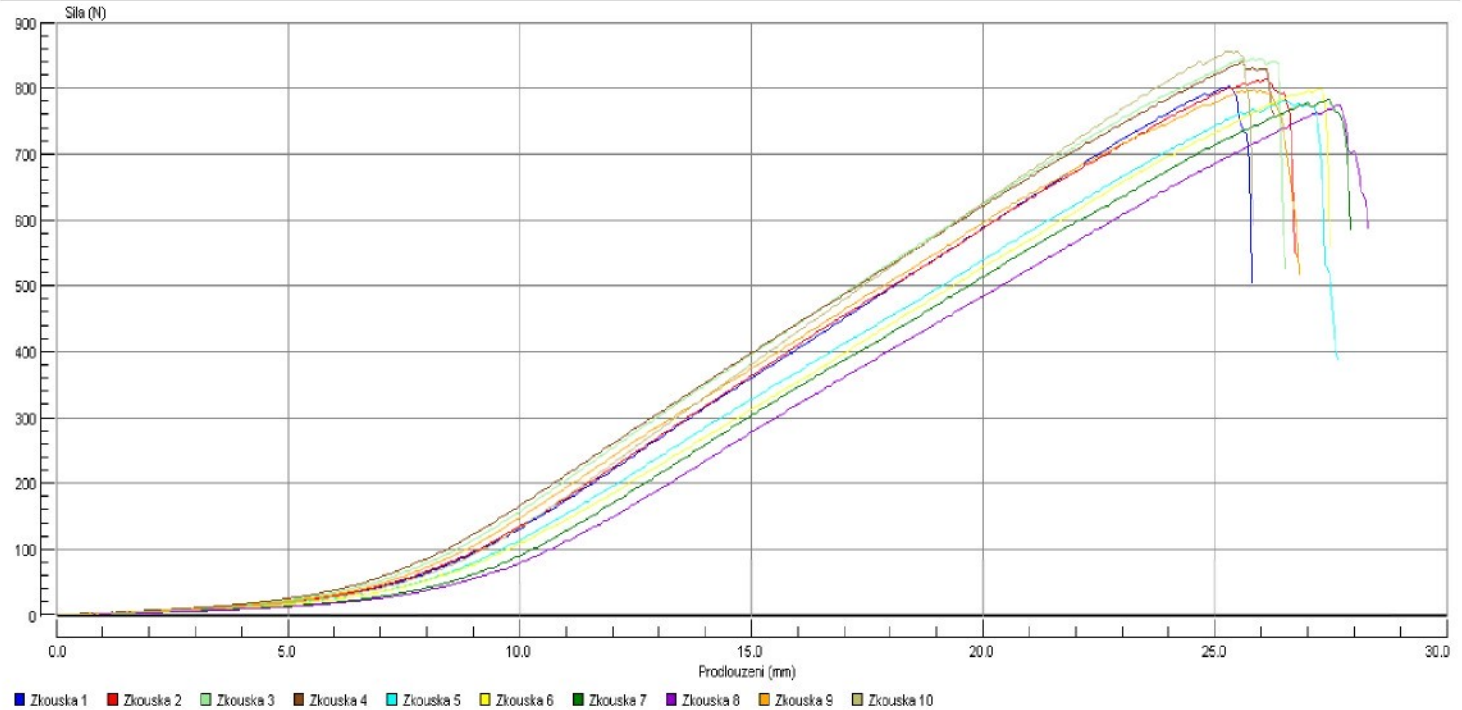
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : Co_100
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Kepr1_2_DU16
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 25. 2. 2010 11:10
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	25.806	503.900	15.527	8039.403	12.903	7669.193	25.306	12.653	802.200
2	26.835	532.000	16.147	8863.194	13.417	8340.740	26.124	13.062	814.400
3	26.530	526.800	15.964	9266.283	13.265	8698.925	25.821	12.910	846.200
4	26.275	761.100	15.811	9088.620	13.137	8513.174	25.574	12.787	839.400
5	27.659	388.710	16.642	8710.781	13.830	7881.469	26.455	13.227	779.900
6	27.487	558.900	16.538	8498.317	13.743	8335.411	27.268	13.634	798.900
7	27.920	585.400	16.799	8509.938	13.960	8184.660	27.481	13.741	783.700
8	28.314	587.900	17.040	8319.375	14.157	7900.411	27.707	13.854	775.000
9	26.831	517.800	16.143	8981.678	13.416	8261.133	25.848	12.924	797.200
10	25.829	592.900	15.542	8535.031	12.915	8272.693	25.499	12.750	855.200
Stred	26.949	555.541	16.215	8681.262	13.474	8205.781	26.308	13.154	809.210



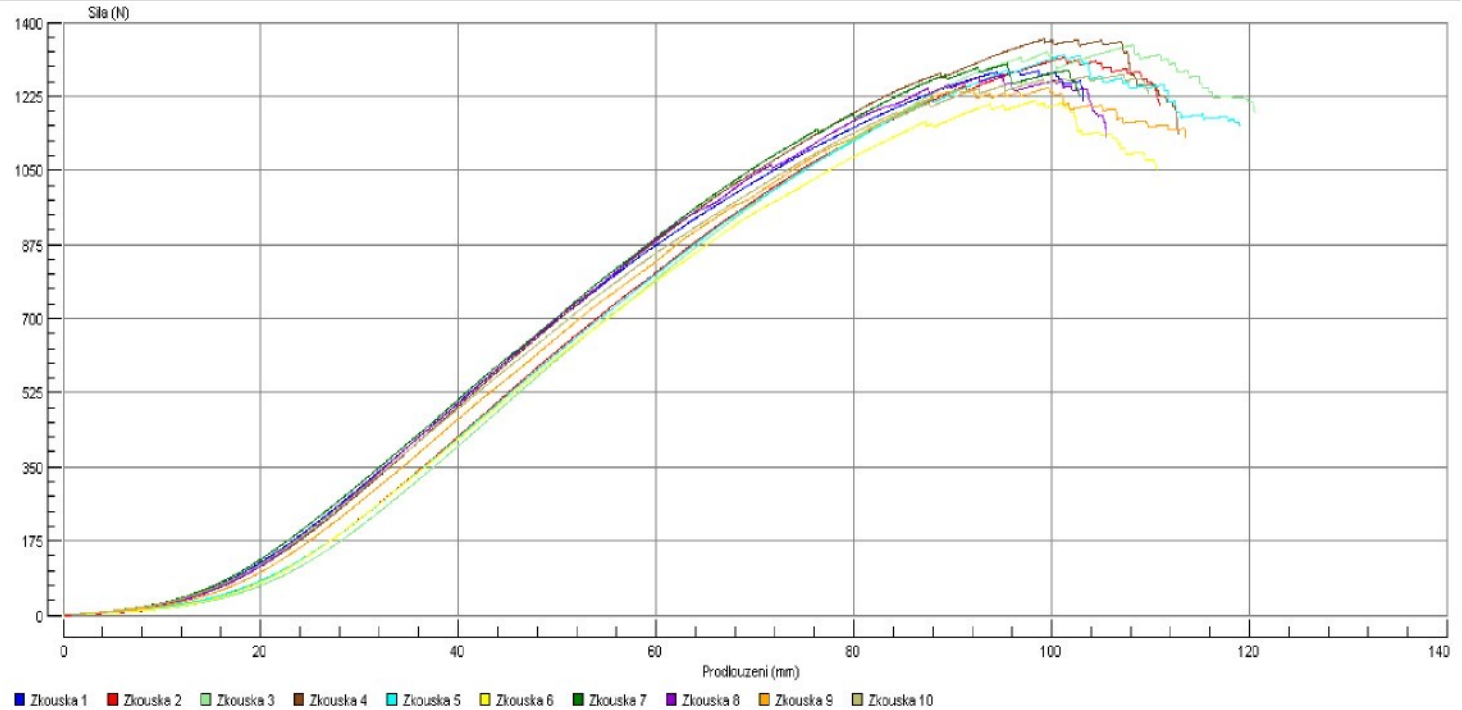
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : POP
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : warp
Technologie : Kepr1_2_DU13.4
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 25. 2. 2010 10:08
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	103.220	1213.200	62.000	69986.496	51.610	61813.224	96.785	48.393	1285.300
2	110.994	1205.300	66.667	75795.649	55.497	63471.973	101.413	50.707	1317.500
3	120.624	1187.900	72.450	87595.002	60.312	71985.075	108.305	54.153	1346.200
4	112.811	1136.900	67.753	83720.387	56.405	66021.272	99.289	49.645	1360.000
5	119.059	1155.300	71.504	85123.348	59.529	63285.946	101.336	50.668	1322.900
6	110.710	1049.900	66.498	71565.340	55.355	57606.936	98.481	49.241	1215.000
7	102.838	1225.100	61.774	70861.788	51.419	61552.387	95.508	47.754	1301.800
8	105.558	1129.300	63.407	72845.935	52.779	59804.508	95.025	47.513	1276.400
9	113.582	1127.700	68.217	79213.030	56.791	62821.008	99.709	49.854	1246.000
10	109.849	1230.500	65.981	77011.749	54.924	73764.140	107.275	53.638	1276.100
Stred	110.924	1166.110	66.625	77371.872	55.462	64212.647	100.313	50.156	1294.720



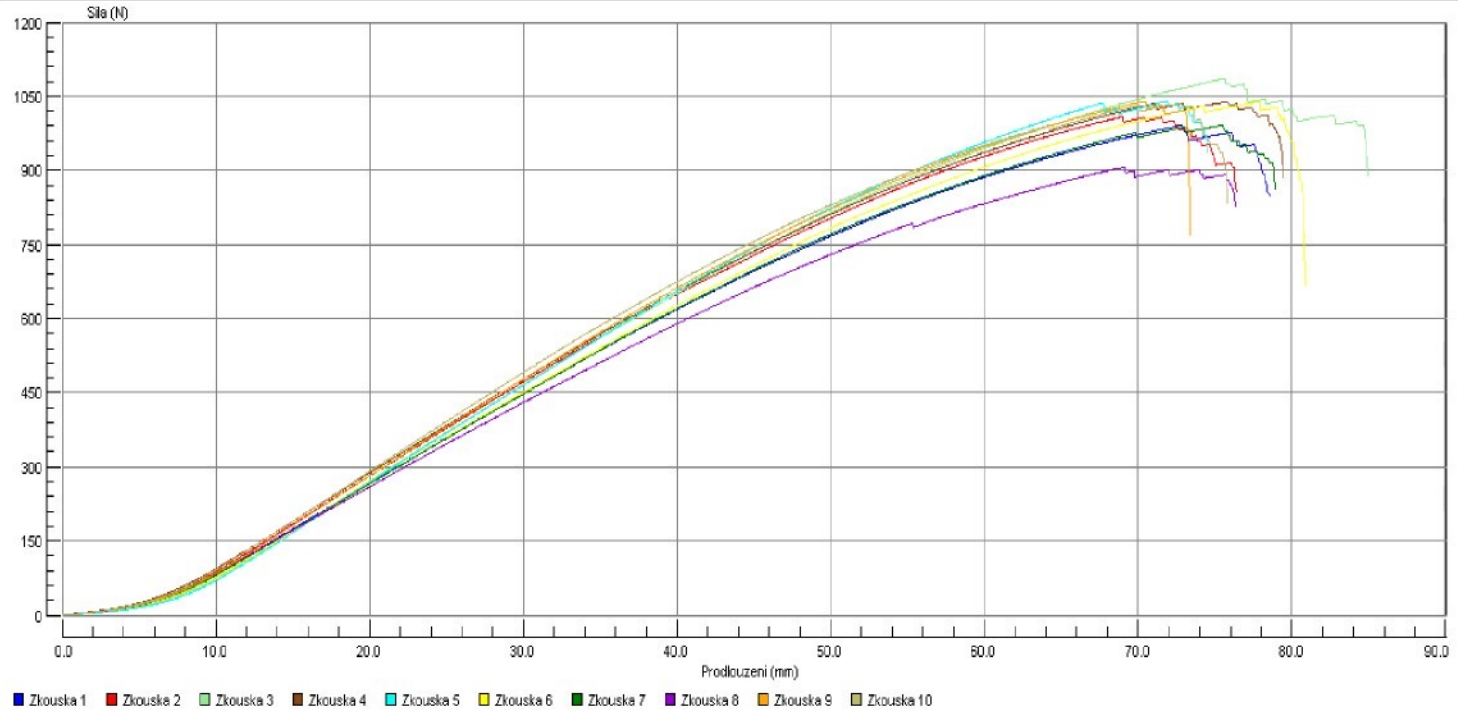
Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk

Oznaceni (kod) : 4_23_008
Material : POP
Meril : Chantal
Firma : Spolsin
Smer (osnova/utek) : weft
Technologie : Kepr1_2_DU13.4
Jemnost (tex) : 45tex
Poznamka : 100mm_min
Dostava osnovy (1/cm) :
Dostava utku (1/cm) :

Nazev zkousky : Tkanina
Druh zkousky : Tah
Datum zkousky : 25. 2. 2010 10:36
Rychlost zkousky : 100.000 mm/min
Predpeti : Vypnuto
Sirka : 50.000 mm
Delka vzorku : 200.000 mm

Zkouska c.	Prodl. pri pretrhu (mm)	Síla pri pretrhu (N)	Doba pro dosazeni prasknuti (Secs)	Prace pri pretrhu (N.mm)	Taznost pri pretrhu (%)	Prace pri nejvyssi sile (N.mm)	Prodlouzeni pri nejv. Pevnosti (mm)	Taznost pri nejvyssi pevnosti (%)	Nejvyssi pevnost (N)
1	78.574	847.300	47.203	43782.320	39.287	38300.409	72.827	36.414	991.000
2	76.393	855.500	45.897	43426.175	38.196	36206.610	68.965	34.482	1008.500
3	84.956	887.600	51.037	52902.364	42.478	43366.770	75.627	37.813	1085.400
4	79.461	887.000	47.739	47367.698	39.730	43711.830	75.835	37.917	1038.900
5	74.546	936.300	44.788	42213.217	37.273	39496.315	71.862	35.931	1039.500
6	80.857	668.400	48.575	46996.855	40.429	44064.504	77.849	38.924	1038.400
7	78.923	861.400	47.416	44207.342	39.461	40992.431	75.514	37.757	991.600
8	76.307	829.000	45.845	39387.103	38.153	32985.195	69.125	34.563	907.000
9	73.405	768.800	44.097	41366.529	36.702	38349.232	70.438	35.219	1039.400
10	75.787	833.000	45.529	44186.224	37.894	41235.126	72.774	36.387	1034.700
Stred	77.921	837.430	46.813	44583.583	38.960	39870.842	73.082	36.541	1017.440



Unit 1 Lincoln Business Park Lincoln Close,
Rochdale, Lancashire, England OL11 1NR

Tel: (44) (0)1706 654039 Fax: (44) (0)1706 646089
Email: info@testometric.co.uk website: www.testometric.co.uk