LAMBERTI’S POLYURETHANE, A GREEN TECHNOLOGY

Lamberti’s waterborne polyurethane dispersions offer high value performance, innovative solutions, as well as reduced environmental impact both in the production processes and in applications. The wide range of polyurethanes is obtained by the principal state of the art technologies: acetone, prepolymer mixing, fusion and urethane acrylics processes.

Thanks to Lamberti’s commitment to excellence and its continuous Investments in innovation and sustainable industrial technology, new Lamberti waterborne polymers have been introduced into the market with an enhanced green profile and low emission of volatile organic compounds (VOC), such as solvent, amine free and formaldehyde-free and high solid waterborne waterborne polyurethane dispersions.

The Lamberti’s polyurethane dispersions (PUD) product range offers complete solutions for customers, from film formers & binders to thickening and crosslinking agents. The product range includes anionic, cationic and non-ionic dispersions, where the main components to produce polyurethanes can be classified into two large families, polyols and polyisocyanates. In the category of polyols Lamberti generally chooses polyethers, polyesters and polycarbonates, while the polyisocyanates category uses both aromatic and aliphatic monomers. Combining a careful choice of components with advanced Industrial processes, lamberti is able to generate polymers with a diverse range of properties.

Lamberti BU Coatings offers water based polyurethane dispersions to produce varnishes for wood, plastic and metal industries, along with a new range of polyurethane based adhesives and thickening agents, which are also available for several Industrial Coatings applications. The solvent based formulations replacement, the product performance improvement and the reduced ecological impact represent the main key factors to be successful in the BU Coatings market, where their main use is the surface protection of wood, glass, metal, plastic and PVC substrates.

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www.lamberti.com

Above data cannot be considered as supply specification. This information is given in good faith and to the best of our knowledge. Every user of our products is responsible as regards the observation of all legal regulations including patent laws. Detailed information on handling, and eventual precautions to be observed in the use of the product can be found in our relevant Health and Safety Information Sheet. REV. 07/2011
ESACOTE - WATER BASED POLYURETHANE DISPERSION FOR INDUSTRIAL COATINGS

<table>
<thead>
<tr>
<th>Application field</th>
<th>Properties</th>
<th>Film</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esacote</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td>Isoyanate</td>
<td>pH</td>
</tr>
<tr>
<td>Wood</td>
<td>Diol</td>
<td>KÖNH hardness (sec)</td>
</tr>
<tr>
<td>Plastic</td>
<td>Co-solvent (%)</td>
<td>SHORE AID hardness (units)</td>
</tr>
<tr>
<td>Flooring</td>
<td>Solid content (%)</td>
<td>Elongation (%)</td>
</tr>
<tr>
<td></td>
<td>Density (g/ml)</td>
<td>Tensile Strength (MPa)</td>
</tr>
</tbody>
</table>

**PU 13**
- SF
- Aliph PE free
- 35
- 1.010
- 8.0-10.0
- 80-100
- D 55-65
- 100-200
- 25-35

**PU 143**
- SF
- Aliph PE free
- 35
- 1.010
- 8.0-10.0
- 90-110
- n.d.
- 120-200
- 20-30

**PU 147**
- B
- Aliph PE < 5
- 35
- 1.040
- 7.5-8.5
- 150-160
- D 50-65
- 150-250
- 35-45

**PU 148**
- C
- Aliph PE < 5
- 35
- 1.040
- 7.0-9.0
- 100-120
- n.d.
- n.d.
- n.d.

**PU 36**
- B
- Aliph PES < 5
- 35
- 1.050
- 7.5-9.5
- n.d.
- D 40-60
- 350-450
- 45-55

**PU 40**
- SF
- Aliph PES free
- 35
- 1.040
- 7.5-9.5
- n.d.
- D 45-55
- 250-400
- 35-50

**PU 41**
- SF
- Aliph PE free
- 35
- 1.050
- 8.0-10.0
- 120-150
- n.d.
- n.d.
- n.d.

**PU 61**
- C
- Aliph PC 8
- 35
- 1.030
- 7.0-9.0
- 140-150
- n.d.
- 8
- 200
- 40

**PU 75**
- SF
- Aliph PC free
- 35
- 1.050
- 7.0-9.0
- 100-140
- D 50-60
- 150-250
- 35-45

**PU 77**
- SF
- Aliph PC free
- 35
- 1.050
- 7.0-9.0
- 100-140
- D 50-60
- 120-220
- 25-45

**PU 186**
- SF
- Aliph PE free
- 37
- 1.040
- 7.0-9.0
- 30-50
- D 25-40
- 450-500
- 20-30

**PU 470**
- B
- Aliph PE 4
- 40
- 1.040
- 7.0-9.0
- 35-45
- D 25-35
- 450-550
- 30-40

**UR 115**
- B
- Aliph FAPE 8
- 32
- 1.040
- 7.5-8.5
- 160-180
- n.d.
- n.a.
- n.a.

**UR 116**
- C
- Aliph FAPE 8
- 32
- 1.040
- 7.5-8.5
- 160-180
- n.d.
- n.a.
- n.a.

**PU 78/N**
- SF
- Soft feel
- Aliph PES free
- 40
- -
- 8.0-10.0
- -
- A 50-60
- 500-800
- 5-15

**PU 811**
- G
- Alcohol resistance
- Aliph AG-PU < 2
- 45
- 1.055
- 6.0-8.0
- -
- n.d.
- n.d.
- n.d.

**PU 921**
- B
- Release effect
- Aliph - < 5
- 25
- 1.035
- 7.0-9.0
- -
- D 25-45
- n.d
- 5-15

**PU 980**
- SF
- Matting agent
- Aliph PE free
- 32
- 1.020
- 8.0-9.0
- -
- D 50-80
- 150-250
- 5-15

**MD 23**
- SF
- Cationic polyurethane
- Aliph CAT free
- 30
- 1.040
- 3.5-5.5
- -
- D 40-50
- 200-250
- 15-35

**Catalyst AT5/N**
- E
- Polyzauridine Crosslinker
- -
- 35
- 65
- 1.050
- -
- Soluble in water, glycol ethers

**Crosslinker 08**
- F
- Polysiocyanate Crosslinker
- Aliph
- -
- 30
- 70
- 1.050
- -
- NCO Content: ca. 11% as supplied

**Crosslinker 013**
- C
- Polysiocyanate Crosslinker
- Aliph
- -
- 30
- 70
- 1.050
- -
- NCO Content: ca. 11% as supplied

**Crosslinker BK9**
- C
- Brocled Polysiocyanate
- Arom.
- -
- < 5
- 25
- 1.030
- 7.0-9.0
- Blocked NCO: activation at temperature >130°C

**Crosslinker BK18**
- -
- Blocked Polysiocyanate
- Aliph
- -
- 40
- 1.030
- 7.0-9.0
- Blocked NCO: activation at temperature >140°C

**Viscolam PS 186**
- G
- Thickening agent
- Aliph
- -
- 24
- 40
- 1.040
- 4.0-6.0
- Pseudoplastic, low-medium shear modifier

**Viscolam PS 187**
- D
- Thickening agent
- Aliph
- -
- 24
- 40
- 1.040
- 4.0-6.0
- Pseudoplastic, low-medium shear modifier

**Viscolam PS 202**
- SF
- Thickening agent
- Aliph
- -
- free
- 20
- 1.040
- 4.0-7.0
- Newtonian, high shear modifier

Acryl PU copol. = Recommended
Polyurethane dispers. = Speciality
Auxiliaries = Rheology modifiers

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<table>
<thead>
<tr>
<th>ESACOTE</th>
<th>PU 40</th>
<th>PU 186</th>
<th>PU 470</th>
<th>PU 921</th>
<th>PU 980</th>
<th>MD 23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elongation</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>+/-</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Properties</td>
<td>Flexible PUD</td>
<td>Flexible PUD</td>
<td>Flexible PUD</td>
<td>Releasing agent</td>
<td>Matting agent</td>
<td>Cationic PUD</td>
</tr>
<tr>
<td>Hardness</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+/-</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>Polyol type</td>
<td>Polyester</td>
<td>Polyether</td>
<td>Polyether</td>
<td>n.d.</td>
<td>Polyether</td>
<td>Polyester</td>
</tr>
<tr>
<td>Co-solvent</td>
<td>free</td>
<td>free</td>
<td>4% NEP</td>
<td>4% NEP</td>
<td>free</td>
<td>free</td>
</tr>
<tr>
<td>Solid content</td>
<td>35%</td>
<td>37%</td>
<td>40%</td>
<td>25%</td>
<td>32%</td>
<td>30%</td>
</tr>
</tbody>
</table>

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ESACOTE PU 40

DESCRIPTION

ESACOTE PU 40 is a solvent free waterborne aliphatic polyurethane dispersion polyester based, which forms very flexible and glossy film with outstanding weathering resistance.

In order to improve specific behaviours, ESACOTE PU 40 can be further crosslinked with water dispersible isocyanates like CROSSLINKER 08, or with polyaziridines like Catalyst AT5/N.

PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>visual translucent liquid</td>
</tr>
<tr>
<td>Solid content</td>
<td>% 35.0 ± 1.0</td>
</tr>
<tr>
<td>Density at 20°C</td>
<td>g/ml 1.040 ± 0.010</td>
</tr>
<tr>
<td>pH (25°C)</td>
<td>- 7.5 – 9.5</td>
</tr>
<tr>
<td>Brookfield Viscosity</td>
<td>20 rpm, sp2- 25°C mPa*s 300 max.</td>
</tr>
</tbody>
</table>

TYPICAL FILM PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFFT</td>
<td>°C ISO 2115 2 – 5°C</td>
</tr>
<tr>
<td>Hardness Shore D</td>
<td>units ASTM D4366 n.d.</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>mPa ASTM D882 45 - 55</td>
</tr>
<tr>
<td>Elongation</td>
<td>% ASTM D882 n.d.</td>
</tr>
</tbody>
</table>

STORAGE

ESACOTE PU 40 can be stored in drums or IBCs at temperatures ranging from +5°C to +35°C. Keep the product away from cold. If stored at the above conditions, ESACOTE PU 39 keeps its stability at least for 6 months.
ESACOTE PU 186

DESCRIPTION

ESACOTE PU 186 is a solvent free water-borne dispersion of an aliphatic polyurethane based on polyether diols, which gives a very flexible film.

It is recommended as filming aid and flexibilising agent for acrylic resins, for example Joinery applications.

PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>visual</td>
<td>opalescent liquid</td>
</tr>
<tr>
<td>Solid content</td>
<td>%</td>
<td>37.0 ± 1.00</td>
</tr>
<tr>
<td>Density at 20°C</td>
<td>g/ml</td>
<td>1.04 ± 0.01</td>
</tr>
<tr>
<td>pH 25°C as supplied</td>
<td>-</td>
<td>7.0 – 9.0</td>
</tr>
<tr>
<td>Brookfield RVT Viscosity</td>
<td>mPa*s</td>
<td>300 max.</td>
</tr>
<tr>
<td>20 rpm - 25°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TYPICAL FILM PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>König hardness</td>
<td>sec</td>
<td>ASTM D4366 30 - 50</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>mPa</td>
<td>ASTM D882 25 ± 5</td>
</tr>
<tr>
<td>Elongation</td>
<td>%</td>
<td>ASTM D882 450 ± 50</td>
</tr>
<tr>
<td>Shore D Hardness</td>
<td>unit</td>
<td>ASTM D2240 25 - 40</td>
</tr>
</tbody>
</table>

STORAGE

ESACOTE PU 186 can be stored in drums or IBCs at temperatures ranging from +5°C to +35°C and we recommend to keep the product away from cold. If stored at the above conditions, Esacote PU 186 is stable at least for 6 months.
ESACOTE PU 470

DESCRIPTION

ESACOTE PU 470 is an aliphatic water-borne PU dispersion based on polyether polyols, which can form a film tough and flexible.

APPLICATION

PU 470 is suitable for interior and exterior application on wood, concrete and (primerized) metal surfaces, generally in combination with acrylic dispersions, to improve gloss, flexibility, abrasion resistance, blocking resistance.

In order to increase, hardness and rigidity ESACOTE PU 470 can be combined with ESACOTE PU 73 or PU 61, or PU 147.

To increase flexibility can be combined with ESACOTE PU 55.

Small quantity of a crosslinking agent, like CATALYST AT5/N, strongly improve solvent resistance. Water dispersible polyisocianates (CROSSLINKER 08) further enhance adhesion and chemical and abrasion resistance.

The addition of a suitable silane considerably improves its wet adhesion on concrete and ceramic/ glass surfaces.

PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>visual opalescent liquid</td>
</tr>
<tr>
<td>Solid content</td>
<td>%</td>
</tr>
<tr>
<td>Density at 20°C</td>
<td>g/ml</td>
</tr>
<tr>
<td>pH (25°C)</td>
<td>-</td>
</tr>
<tr>
<td>Brookfield RVT Viscosity</td>
<td>mPa*s</td>
</tr>
<tr>
<td>50 rpm, sp2- 25°C</td>
<td></td>
</tr>
<tr>
<td>Co-solvent</td>
<td>%</td>
</tr>
</tbody>
</table>
TYPICAL FILM PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Method</th>
<th>Value Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koenig hardness</td>
<td>sec</td>
<td>ASTM D4366</td>
<td>35 ÷ 45</td>
</tr>
<tr>
<td>Hardness Shore D</td>
<td>units</td>
<td>ASTM D2240</td>
<td>30 ± 5</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>mPa</td>
<td>ASTM D882</td>
<td>35 ± 5</td>
</tr>
<tr>
<td>Elongation</td>
<td>%</td>
<td>ASTM D882</td>
<td>500 ± 50</td>
</tr>
<tr>
<td>Abrasion loss (Taber) (CS17, 1 kg, 1000 rev.)</td>
<td>mg</td>
<td>ASTM D4060</td>
<td>40</td>
</tr>
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</table>

STORAGE

ESACOTE PU 470 can be stored in drums or IBCs at temperatures ranging from +5°C to +35°C. Keep the product away from cold. If stored at the above conditions, ESACOTE PU 470 keeps its stability at least for 6 months.

522-Clear Varnish

**Internal Code** 250000.00135-AD

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Esacote PU 470</td>
<td>86,00</td>
<td>PUR Flexible Dispersion</td>
</tr>
<tr>
<td>4 Surfynol 104E</td>
<td>0,50</td>
<td>Surface wetting agent</td>
</tr>
<tr>
<td>8 Water</td>
<td>4,00</td>
<td></td>
</tr>
<tr>
<td>10 Byk 024</td>
<td>0,50</td>
<td>Defoamer</td>
</tr>
<tr>
<td>12 Byk 333</td>
<td>0,20</td>
<td>Slip additive</td>
</tr>
<tr>
<td>13 Water</td>
<td>0,20</td>
<td></td>
</tr>
<tr>
<td>14 Water</td>
<td>7,80</td>
<td></td>
</tr>
<tr>
<td>16 Viscolam PS 166, Sol.10%ws/W-BTC</td>
<td>0,80</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100,00</td>
<td></td>
</tr>
</tbody>
</table>

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W540-Soft feel varnish

**Internal code** 250000.00144-AF

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Esacote PU 470</td>
<td>60,00</td>
<td>PUR Flexible Dispersion</td>
</tr>
<tr>
<td>4</td>
<td>Byk 028</td>
<td>0,60</td>
<td>Defoamer</td>
</tr>
<tr>
<td>6</td>
<td>Viscolam PS 202</td>
<td>1,00</td>
<td>PUR thickener</td>
</tr>
<tr>
<td>7</td>
<td>Viscolam PS 166, 10% s. c. Solut.</td>
<td>1,00</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Rheolate 2001</td>
<td>2,00</td>
<td>anti-settling additive</td>
</tr>
<tr>
<td>10</td>
<td>Adimatt Soft 7</td>
<td>30,00</td>
<td>Filler in water dispersion</td>
</tr>
<tr>
<td>12</td>
<td>Water</td>
<td>5,40</td>
<td></td>
</tr>
</tbody>
</table>

**Total** 100,00

**Manufacturing**

1. Add the components in the order from 2 to 8 under moderate stirring

9. Add 10 and run the dispersion for 10/15' until homogeneity

**Standard Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>Density (23°C)</td>
<td>DIN-EN-ISO 2811</td>
</tr>
<tr>
<td>Gloss 60° (su Leneta)</td>
<td>UNI-EN-ISO 2813</td>
</tr>
<tr>
<td>Visc. Ford cup Nº4</td>
<td>ASTM D1200-94(99)</td>
</tr>
</tbody>
</table>

**Viscolam PS 166, Sol.10% s/W-BTC**

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscolam PS166</td>
<td>25,00</td>
</tr>
<tr>
<td>Water</td>
<td>65,00</td>
</tr>
<tr>
<td>Butylglycol</td>
<td>10,00</td>
</tr>
</tbody>
</table>
ESACOTE PU 921

DESCRIPTION

ESACOTE PU 921 is a waterborne aliphatic polyurethane dispersion, which forms medium glossy film, with releasing properties (tapes applications).

The product has been developed for non adhesives uses and shows a good release property if combined with rubber based, acrylics and hot-melt adhesives.

It has very good adhesion on polyester and polyolefin corona treated.

PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>visual Slightly opalescent liquid</td>
</tr>
<tr>
<td>Solid content</td>
<td>% 25.0 ± / - 1</td>
</tr>
<tr>
<td>pH (25°C)</td>
<td>7.0 – 9.0</td>
</tr>
<tr>
<td>Brookfield Viscosity</td>
<td>mPa*s 200 max.</td>
</tr>
<tr>
<td>Co-solvent</td>
<td>% &lt; 5 (N-Ethyl-Pyrrolidone, NEP)</td>
</tr>
</tbody>
</table>

TYPICAL FILM PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength</td>
<td>MPa ASTM D882 10 ± 5</td>
</tr>
<tr>
<td>Elongation</td>
<td>% ASTM D882 n.d.</td>
</tr>
<tr>
<td>Shore D Hardness</td>
<td>unit ASTM D2240 25 - 45</td>
</tr>
</tbody>
</table>

STORAGE

Suggested storage condition is between +5°C and +35°C. Keep away from cold places. If stored under the above conditions, the product can keep its stability at least for 6 months.
ESACOTE PU 980

DESCRIPTION

ESACOTE PU 980 is a solvent free waterborne polyurethane dispersion based on aliphatic isocyanates and polyether diols.

The product is particularly suitable for low gloss top-coat, free from silica matting agents, with a remarkable soft-feel effect.

APPLICATION

ESACOTE PU 980 is suitable for wood and plastic coating, where soft-feel effect and low gloss are required and can be used alone or in combination with other polyurethane dispersions and/or with acrylic resins.

We recommend however to verify the compatibility of ESACOTE PU 980 with other resins/additives prior to use.

PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>visual</td>
</tr>
<tr>
<td>Solid content</td>
<td>%</td>
</tr>
<tr>
<td>pH (25°C)</td>
<td></td>
</tr>
<tr>
<td>Brookfield RVT Viscosity</td>
<td>mPa*s</td>
</tr>
<tr>
<td>50 rpm, sp3- 25°C</td>
<td></td>
</tr>
</tbody>
</table>

TYPICAL FILM PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shore D hardness</td>
<td>units</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>MPa</td>
</tr>
<tr>
<td>Elongation</td>
<td>%</td>
</tr>
<tr>
<td>Gloss 60° (on glass, 30/35 µ dry)</td>
<td>G.U.</td>
</tr>
</tbody>
</table>

STORAGE

Suggested storage condition is between +5°C and +35°C. Keep away from cold places. If stored under the above conditions, the product can keep its stability at least for 6 months.
ESACOTE MD 23

DESCRIPTION

ESACOTE MD 23 is a waterborne dispersion of a cationic modified polymer, which can be used for the stain and tannin blocking primers application.

ESACOTE MD 23 is solvent and formaldehyde free and therefore is characterized by a low environmental impact.

PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>visual</td>
<td>Milky liquid</td>
</tr>
<tr>
<td>Solid content</td>
<td>%</td>
<td>30 ± 1</td>
</tr>
<tr>
<td>Density</td>
<td>g/ml</td>
<td>1.040 ± 0.01</td>
</tr>
<tr>
<td>pH (25°C)</td>
<td>-</td>
<td>3.5 - 5.5</td>
</tr>
<tr>
<td>Brookfield Viscosity</td>
<td>mPas</td>
<td>200 max</td>
</tr>
<tr>
<td></td>
<td>20 rpm, sp2</td>
<td>25°C</td>
</tr>
</tbody>
</table>

TYPICAL FILM PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shore D Hardness</td>
<td>unit</td>
<td>ASTM D2240</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 - 50</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>MPa</td>
<td>ASTM D882</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 - 35</td>
</tr>
<tr>
<td>Elongation</td>
<td>%</td>
<td>ASTM D882</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 - 250</td>
</tr>
<tr>
<td>M.F.F.T</td>
<td>°C</td>
<td>ISO 2115</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c.a. 20</td>
</tr>
</tbody>
</table>

STORAGE

Suggested storage condition is between +5°C and +35°C. Keep away from cold places. If stored under the above conditions, the product can keep its stability at least for 6 months.
W689-AD- Clear Varnish

**Internal Code** 250000.00689-AD

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount</th>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Esacote MD 23</td>
<td>92,50</td>
<td>Cat. PUR Disp.</td>
<td></td>
</tr>
<tr>
<td>4 Water</td>
<td>3,00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ButylGlycol</td>
<td>3,00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Byk 349 (1:1 water)</td>
<td>0,50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Viscolam PS 202.</td>
<td>1,00</td>
<td>PUR thickener</td>
<td></td>
</tr>
</tbody>
</table>

**Total** 100,00

**Byk 349, 1:1 in water.**

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>50,00</td>
</tr>
<tr>
<td>Byk 349</td>
<td>50,00</td>
</tr>
</tbody>
</table>

Above data cannot be considered as supply specification. This information is given in good faith and to the best of our knowledge. Every user of our products is responsible as regards the observation of all legal regulations including patent laws. Detailed information on handling, and eventual precautions to be observed in the use of the product can be found in our relevant Health and Safety Information Sheet. REV. 07/2011
Lamberti in the world

The Lamberti Group is based in Italy and present worldwide with subsidiaries and production facilities. The Research & Development activities concerning Polyurethane Polymers and the production are mainly concentrated in Italy.

EUROPE

Italy
- Gallarate (Headquarters & Commercial Offices)
- Albizzate (Main production facilities, Technological research center)
- Castelfranco di Sotto
- Gorla Minore
- Fiorano Modenese
- Orbassano
- Trissino
- Viguzzolo
- Zanica
- France
- Liergues
- Germany
- Bammental
- Poland
- Tomaszow Mazowiecki
- Russia
- Moscow
- Spain
- Ondas (Castellón)
- Turkey
- Istanbul

AFRICA

South Africa
- Westmead

ASIA

China
- Beijing
- Hong Kong
- Shanghai
- India
- Rajkot
- Indonesia
- Bekasi
- Korea
- Anyang-City
- United Arab Emirates
- Dubai
- Brazil
- Nova Odessa
- Mexico
- Santa Catarina (Monterrey)
- United States
- Chattanooga
- Conshohocken
- Hungenford