

DESCRIPTION

Apex Polymer Solutions Thermoplastic Polyurethane (TPU) has excellent abrasion and impact properties at a wide range of temperatures. It has very good chemical resistance, and has good elasticity in a large temperature window. It has good resistance to weathering and high radiant energy. It has outstanding abrasion resistant qualities and has excellent welding and bonding properties.

APPLICATIONS

Wear linings, belting, conveyors, chutes, cyclones, mills, magnetic separators, cones, hoppers, crushers, feeders, sorters, screens, skip, bins, slurry channels and launders to name a few.

KEY FEATURES

Certification/Approvals

The certification is available on request and must be specified during ordering

Coating and Metalizing

Both coating and metalizing is possible. Further technical data is required.

Printing/Painting

Hot embossing / Hot stamping, Ink jet printing and pad printing is all effective. Laser printing is not effective.

Machining

Sawing, drilling, turning, milling, planing, punching, thread cutting and grinding.

Conversion

Glueing: Cyano-acrylate-based gluing systems. Welding preferred option. Polyurethane adhesives take longer to cure but are flexible and elastic. Apex Polymer Solutions YouTube page has a gluing guide.

Welding: Hot air and nitrogen, hot plate, heated tool and heat impulse, high frequency, friction, vibration and ultrasonic welding. Welding rod is available on request for extrusion welding as well. Currently only stock X8100 welding rod. Apex Polymer Solutions YouTube page has a welding guide.

PRODUCT SPECIFICATIONS

Colour

Standard Royal Blue (Pantone 294C) 5mm - 10mm
Standard Red (RAL3013), 1.5mm - 5mm
Other colours available on request (MOQ 5 tons)

Thickness

2mm to 10mm

Grades

x8400 is an Ester grade.

Finish

Gloss as standard and Sand grain.

Sheet Size Specifications

Gauge	Width
Available on request	1500 mm

NB: Available sizes vary depending on gauge, colours, and order size, please ask confirmation to sales department.

TYPICAL PHYSICAL PROPERTIES*

Properties	Unit	Standard	Method	Value
Density #	g/cm ³	ISO 1183		~1.18-1.22
Stress at Maximum Load	MPa	ASTM D638		~48-54
Strain at Maximum Load	%	ASTM D638		~900-1050%
Stress at 100% Elongation	MPa	ASTM D638		~4.2-4.5
Stiffness	N/m	ISO 178		~4040-4260
Young's Modulus	MPa	ASTM D638		~9.8-10.3
Shore A		ISO 868	DIN Method	87
Shore D		ISO 868		~36
Compression set		ASTM D395-03	Method B	~1.0%
Abrasion resistance	mm ³	DIN ISO4649	Method A	96.3
Abrasion Scuff mass loss	%	Sutherland Rub test		~0.018
Abrasion Scuff mass loss	grams	Sutherland Rub test		~0.0044
Tear resistance	N/mm thickness	ASTM D1004-2009		~175-196
Vicat softening point	°C	ISO 306		~93-97

#The density quoted should only be used as a guide. This value can change depending upon the type and quantity of pigments or additives used. Values marked with '~' are estimated based on virgin TPU properties and are provided for guidance only.

PRODUCT AVAILABILITY

Fabrication

TPU can be fabricated in a number of ways. It is possible to bond the materials with adhesives, weld the product together and printing is possible. TPU can also be coated and metallized if required. It is also possible to machine the product with a variety of wood-working and metal cutting tools.

Adhesives: TPU can be glued and has similar bonding application compared to other products like rubber. It bonds very well to both metal and rubber. The ideal glue system to use is a Cyano-acrylate-based system. Polyurethane adhesives take longer to cure but, like TPU they are flexible and elastic. They are ideal for long-lasting bonded joints. When bonding to metals, the metal surface must first be treated with adhesion promoters. This is normally applied as a solution by spraying, coating or immersion. Please see our detailed gluing video on the Apex Polymer Solutions YouTube page.

[CLICK HERE](#)

Welding: It is possible to weld TPU sheet together. There is a wide variety of different welding options that are available. Suitable methods include Hot air and nitrogen welding, hot plate welding, heated tool and heat impulse welding, high-frequency welding, friction welding and vibration welding. In all cases, an efficient extractor must be provided for any carbonization gases. Extrusion welding is possible, and welding rod is available on certain grades ex stock. Apex Polymer Solutions YouTube page has a welding guide.

Cleaning and Maintenance

Typical detergents and soaps dissolved in warm water can be used to effectively clean contamination from the surface. For the more stubborn marks organic solvents such as isopropyl alcohol and n-heptane will be more effective.

Machining

Sharp cutting tools are needed. TPU is tough and elastic and this needs to be taken into consideration when machining the material. Excessive heat generation should be avoided and efficient removal of the shavings must be ensured. The tools must cut and not exert pressure. It is possible to machine TPU in the following way: Sawing, drilling, turning, milling, planing, punching, thread cutting and grinding.

#Please contact the sales office to discuss any further requirements.

CHEMICAL RESISTANCE

Chemical resistance is influenced by many factors, including concentration, temperature, exposure time and material stress. Therefore the data below should only be used as a guide. Please request any further information if required.

Reagent	Chemical Resistance	Reagent	Chemical Resistance
Ketones	Poor	Weak bases	Moderate
Weak Acid	Excellent	Strong bases	Poor
Strong acids	Poor	Sea Water	Excellent
Alcohol	Excellent	Water	Excellent
Esters	Moderate	Chlorinated solvents	Poor
Polar aprotic solvents	Poor	Hydrocarbons	Moderate/ Poor
Ammonia	Excellent	Vapours/ incidental solvent	Excellent
Mineral Oil	Excellent	Lubricating oils/grease	Excellent

Excellent → negligible effect

Moderate → minor swelling/softening; short-term safe

Poor → significant attack; not recommended

***NOTE** Information is based on current knowledge and experience. It is for guidance only and does not guarantee product properties, availability, or suitability. Users should perform their own tests and observe any applicable patents.

ADDITIONAL INFORMATION

Apex® Polymer Solutions (Pty) Ltd*

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