Korssé Polyethylene Liner

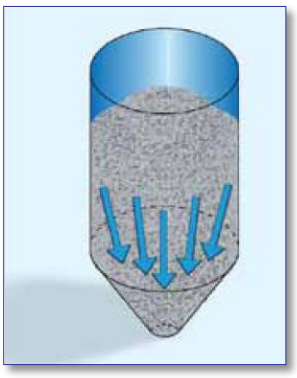
Product Overview

Korssé Polyethylene Liner offers a combination of excellent properties – outstanding abrasion resistance, superior impact resistance, non-sticking and self-lubricating properties and excellent mechanical properties, even in cryogenic conditions. Polyethylene reduces noise from impact & vibration. It is a self-lubricating material that is chemical, corrosion, and wear-resistant. Available in PE 300 and UHMWPE 1000 grades. Standard colours are green, black and white.

Properties

- Non-Toxic, Food-Safe material
- Low coefficient of friction
- Corrosion resistant
- Abrasion and impact resistant
- Wear Resistant
- Great liner material for industrial material handling applications

Lining Overview



Korssé Polyethylene Liner products are used in a wide variety of industries that handle bulk materials from the mining level up to and including the final processing or use of the product. Changes in moisture and particle size affect the product's flow ability. Traditional steel surfaces become rough or corroded, causing the bulk material to stick to the steel.

Korssé™ Polyethylene liner product combines the best surface friction qualities with abrasion resistance, promoting bulk material flow, whilst at the same time withstanding abrasion from these rugged applications. When compared to steel, lining an existing bin with Polyethylene is only a fraction of the cost, lower in weight and the Polyethylene reduces the load on the overall structure.

Apart from material handler lining applications, Korssé™ Polyethylene liner is also suitable to be used as fender and marine liners. Its low coefficient of friction, lightweight and durable properties have made it the perfect impact absorbers in marine docking applications.

Applications Overview

Mining

- Truck bed liners
- Hopper liners
- Scrapers
- Shovel liners

Storage and Handling

- Silos, bins, bunkers
- Dump hoppers
- Skirting

Processing

- Day bins
- Batch hoppers
- Surge bins
- Chutes

Marine

- Fender liners
- Docking
- Impact absorbers

Applications Images

Technical Data for UHMWPE 1000

Property	Units	ASTM Test	Value
Density	gm/cm³	D792	0.94
Tensile strength at yield 73°F	psi	D638	3100
Elongation 73°F	%	D638	350
Relative volumetric abrasion loss	*	*	100
Coefficient of friction 73°F on steel	-	-	Static .15 Dynamic .09
IZOD impact strength 73°F	KJ/m^2	D4020-96	125
Hardness 73°F	-	D785	Shore D 61
Melting point	°F	D789	275°-280°
Coefficient of linear thermal expansion	1/K	D696	1.0×10^{-4}
Continuous service temperature in air (max)	°F	-	180
Volume resistivity	Ohm/cm	D257	$>10^{15}$
Dielectric constant (10^3 Hz)	-	D150	2.3
Dielectric strength	KV/mm	D149	900

Note: The information contained herein are typical values intended for reference and comparison purposes only. All values at 73°F (23°C) unless otherwise noted.

Technical Data for PE300

Properties	Method (ISO/IEC)	Unit	Value
Density	1183	g/cm3	0.96
Water absorption			
after 24h immersion in water of 23℃	62	%	0.01
at saturation in water of 23℃	-	%	0.01
Temperature of deflection under load			
method A: 1.8MPa	75	℃	47
Flammability:			
UL94(3/6mm thickness)	-	-	HB/HB
Mechanical properties			
Tension test			
tensile stress	527	MPa	23
tensile strain at break	527	%	> 600
Compression test:			
compressive stress at 5% strain	604	MPa	29
Izod impact strength - notched	180/2A	kJ/m^2	no break
Rockwell hardness	2039-2	-	R 65
Electrical properties			
Volume resistivity	(60093)	Ω·cm	$> 10^{14}$
Surface resistivity	(60093)	Ω	$> 10^{13}$

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Installation Overview

Liner Fixing: Stud Welding

In order to fix linings in position, the sheet is always pre-drilled at the fixing points using a special drill or CNC Router. The distance between the individual fixing points depends on the geometry, material thickness and the material of the container being lined, the operating conditions and the type of fixing process selected.

When the sheets are bolted into position with studs and hex nuts, we recommend a nominal distance of 250 mm. The distance between the holes and the edge of the sheet should not exceed 50 mm.

When the pre-drilled lining sheet is positioned in the container it is used as a template for welding. For stud welding, stud is welded to match a hole in the sheet to the metal surface below.

A hexagon nut is then screwed onto the stud. For lining purposes, nuts and threaded bolts size M8 have proved to be most suitable.

Advantages

- Easy removal of sheets in case of replacements

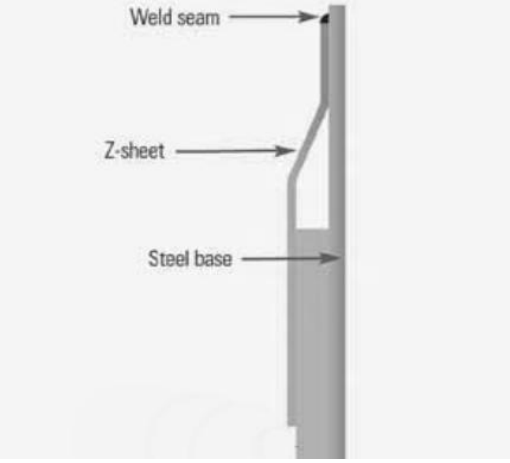
Equipment Required

- Suitable graduated drill
- Stud-welding unit
- Threaded studs (if necessary with pre-determined breaking point)
- Hex nuts
- Fixing tool for tightening the disk nuts.
- A stud-firing tool can also be used to mount the lining sheets

Liner Edges: Protection

When installing all types of lining, the top row of sheets must be protected by a sealing strip to prevent material from working its way under the sheets. The strips may be of aluminum (truck bed) or stainless steel plates.

When fixing the strips, ensure that the material can expand and contract freely due to thermal effects.



Liner Joints: Fusion Welding

A further optional step is to fusion weld the joints between the sheets. If the joints are not welded they will open and close due to thermal expansion and contraction of the liner material. Fusion welding provides a totally sealed liner and eliminates ingress of material behind the liner. Material build up between the joints or behind the liner will result in lifting of the liner, thus exposing the liner to premature wear and a shorter service life.

Material caught between the joints can also cause hang up and interrupted flow, hence defeating the purpose of lining. Joints to be welded are prepared prior to the panels being fastened to the substrate. Welds can be ground, planed or polished flush with liner for fine powder applications.