

HIGH PERFORMANCE XR-5[®] 8130 REINFORCED GEOMEMBRANE

XR-5 [®] 8130 Reinforced	US Units	Metric Units
Base Fabric Type ASTM D3776	Polyester	
Base Fabric Weight (nominal) ASTM D3776	6.5 oz/yd ²	220 g/m ²
Thickness ASTM D751	30.0 mils (min.)	0.76 mm (min.)
Weight ASTM D751	30.0 ± 2 oz/yd ²	1017 ± 70 g/m ²
Tear Strength ASTM D4533, Trapezoid Tear	35/35 lb _f (min.)	155/155 N (min)
Breaking Strength ASTM D751, Grab Tensile	550/550 lb _f (min.)	2447/2447 N (min)
Low Temperature ASTM D2136, 4hr – 1/8" mandrel	Pass @ -30 °F	Pass @ -35 °C
Dimensional Stability ASTM D1204, 212°F / 100°C – 1 hr	1.5% max. each direction	
Adhesion – Heat Sealed Seam ASTM D751, Dielectric Weld	35 lb _f /2 in (min.)	15 daN/5 cm (min.)
Dead Load – Seam Shear Strength ASTM D751	2 in seam, 4 hr, 1 in strip 210 lb _f @ 70°F 105 lb _f @ 160°F	5 cm seam, 4 hr, 2.5 cm strip 934 N @ 21°C 467 N @ 70°C
Bursting Strength ASTM D751 Ball Tip	650 lb _f (min.) 800 lb _f (typical)	2892 N (min.) 3560 N (typical)
Hydrostatic Resistance ASTM D751, Method A	800 psi (min.)	5.51 MPa (min.)
Blocking Resistance ASTM D751 (180°F / 82°C)	#2 Rating (max.)	
Adhesion – Ply ASTM D413	15 lb _f /in (min.) or Film Tearing Bond	13 daN/5cm (min.) or Film Tearing Bond
Bonded Seam Strength ASTM D751 as modified by NSF 54	550 lbf (min.)	2447 N (min.)
Abrasion Resistance ASTM D3389 (H-18 Wheel, 1000 g load)	2,000 cycles (min.) before fabric exposure 50 mg/ 100 cycles max weight loss	
Weathering Resistance ASTM G23 (Carbon-Arc)	8,000 hrs (min.) – No appreciable changes or stiffening or cracking of coating	
Water Absorption ASTM D471, Section 12, 7 days	0.025 kg/m ² (max.) @ 70°F / 21°C 0.14 kg/m ² (max.) @ 212°F / 100°C	
Wicking Shelter-Rite [®] Procedure	1/8 in (max.)	0.3 cm (max.)
Puncture Resistance ASTM D4833	250 lb _f (min.)	1112 N (min.)
Coefficient of Thermal Expansion / Contraction ASTM D696	8 x 10 ⁻⁶ in/in/°F (max.)	1.4 x 10 ⁻⁵ cm/cm/°C (max.)

XR-5® Fluid Resistance Guidelines

The data below is the result of laboratory tests and is intended to serve only as a guide. No performance warranty is intended or implied. The degree of chemical attack on any material is governed by the conditions under which it is exposed. Exposure time, temperature, and size of the area of exposure usually varies considerably in application, therefore, this table is given and accepted at the user's risk. Confirmation of the validity and suitability in specific cases should be obtained.

When considering XR-5 for specific applications, it is suggested that a sample be tested in actual service before specification. Where impractical, tests should be devised which simulate actual service conditions as closely as possible.

Exposure	Resistance
AFFF	A
Acetic Acid (5%)	B
Acetic Acid (50%)	C
Ammonium Phosphate	T
Ammonium Sulfate	T
Antifreeze (ethylene glycol)	A
Animal Oil	A
Aqua Regia	X
ASTM Fuel A (100% Iso-octane)	A
ASTM Oil #2 (Flash pt. 240° C)	A
ASTM Oil #3	A
Benzene	X
Calcium Chloride Solutions	T
Calcium Hydroxide	T
20% Chlorine Solution	A
Clorox	A
Conc. Ammonium Hydroxide	A
Corn Oil	A
Crude Oil	A
Diesel Fuel	A
Ethanol	A
Ethyl Acetate	C
Ethyl Alcohol	A
Fertilizer Solution	A
#2 Fuel Oil	A
#6 Fuel Oil	A
Furfural	X
Gasoline	B
Glycerin	A
Hydraulic Fluid- Petroleum Based	A
Hydraulic Fluid- Phosphate (Ester Based)	C
Hydrocarbon Type II (40% Aromatic)	C
Hydrochloric Acid (50%)	A
Hydrofluoric Acid (5%)	A
Hydrofluoric Acid (50%)	A
Hydrofluosilicic Acid (30%)	A
Isopropyl Alcohol	T
Ivory Soap	A
Jet A	A

Exposure	Resistance
JP-4 Jet Fuel	A
JP-5 Jet Fuel	A
JP-8 Jet Fuel	A
Kerosene	A
Magnesium Chloride	T
Magnesium Hydroxide	T
Methanol	A
Methyl Alcohol	A
Methyl Ethyl Ketone	X
Mineral Spirits	A
Naphtha	A
Nitric Acid (5%)	B
Nitric Acid (50%)	C
Perchloroethylene	C
Phenol	X
Phenol Formaldehyde	B
Phosphoric Acid (50%)	A
Phosphoric Acid (100%)	C
Phthalate Plasticizer	C
Potassium Chloride	T
Potassium Sulphate	T
Raw Linseed Oil	A
SAE-30 Oil	A
Salt Water (25%)	B
Sea Water	A
Sodium Acetate Solutions	T
Sodium Bisulfite Solution	T
Sodium Hydroxide (60%)	A
Sodium Phosphate	T
Sulphuric Acid (50%)	A
Tanic Acid (50%)	A
Toluene	C
Transformer Oil	A
Turpentine	A
Urea Formaldehyde	A
UAN	A
Vegetable Oil	A
Water (200°F)	A
Xylene	X
Zinc Chloride	T

Ratings are based on visual and physical examination of samples after removal from the test chemical after the samples of Black XR-5 were immersed for 28 days at room temperature. Results represent ability of material to retain its performance properties when in contact with the indicated chemical.

Rating Key:

- A** – Fluid has little or no effect
- B** – Fluid has minor to moderate effect
- C** – Fluid has severe effect
- T** – No data - likely to be acceptable
- X** – No data - not likely to be acceptable

Geomembrane Chemical Resistance Comparison

	XR-5®	HDPE	PVC	Hypalon	Polypropylene
Kerosene	A	B	C	C	C
Diesel Fuel	A	A	C	C	C
Acids (General)	A	A	A	B	A
Naphtha	A	A	C	B	C
Jet Fuels	A	A	C	B	C
Saltwater 160°F	A	A	C	B	A
Crude Oil	A	B	C	B	C
Gasoline	B	B	C	C	C

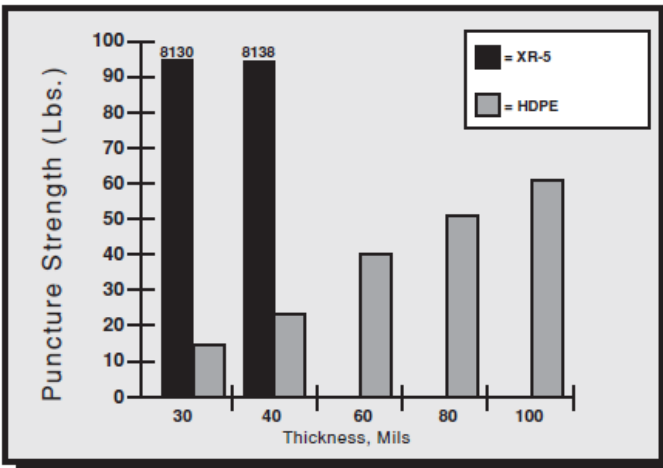
A = Excellent

B = Moderate

C = Poor

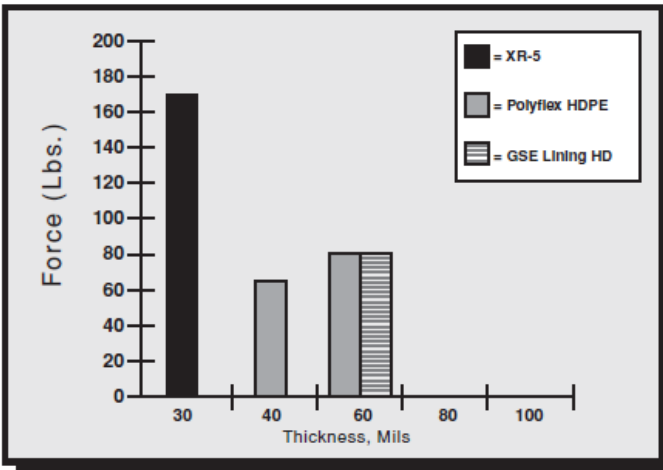
NF = Not Found in Published Chart

XR-5/HDPE Comparative Properties

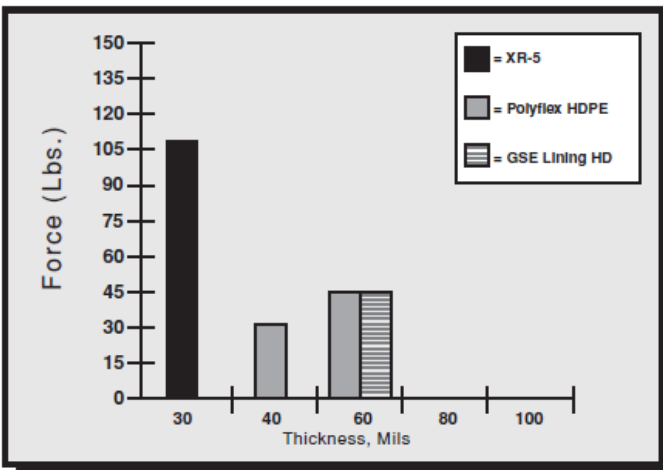


Puncture Resistance

1. ASTM D 751, Screwdriver Tip, 45° Angle (Room Temperature) Puncture Resistance, XR5 vs. HDPE



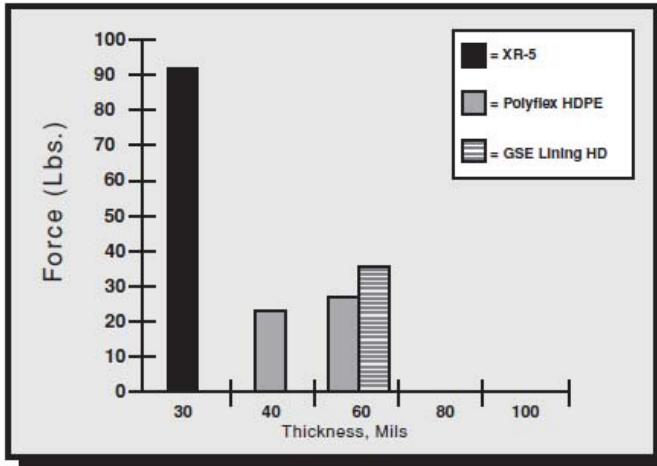
2. FED-STD-101C Method 2065 (Room Temperature)*



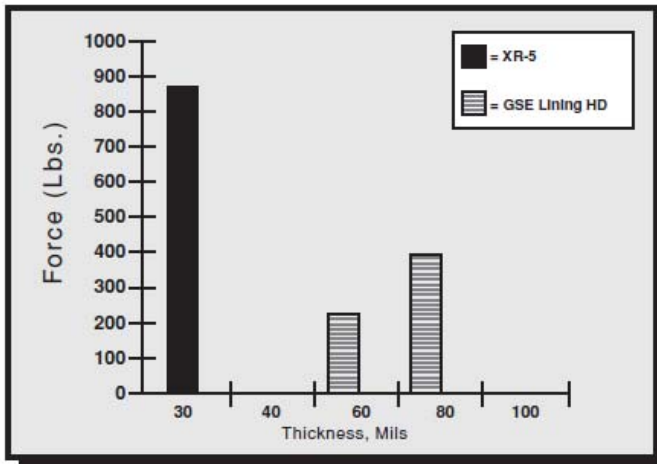
3. FED-STD-101C Method 2065 (70°C)*

* Data provided by E.I. DuPont de Nemours & Co. Wilmington, Delaware

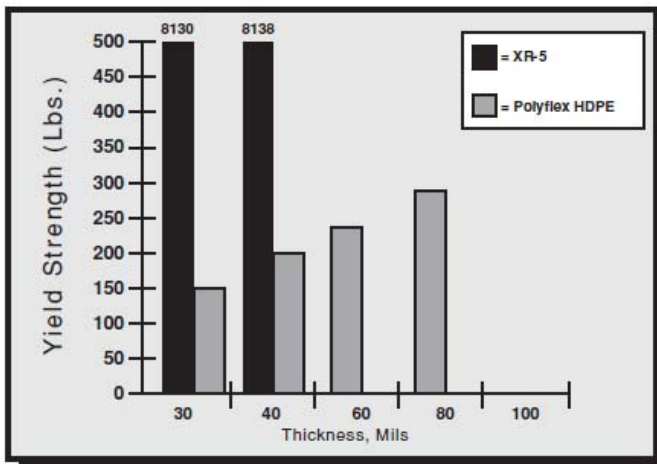
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4. FED-STD-101C Method 2065 (100°C)*



5. ASTM D 751 Ball Burst Puncture



Yield Strength

1. Yield Strength, XR-5 vs. HDPE

Test Method: Grab Tensile, ASTM D 751, 70° C

* Data provided by E.I. DuPont de Nemours & Co. Wilmington, Delaware

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