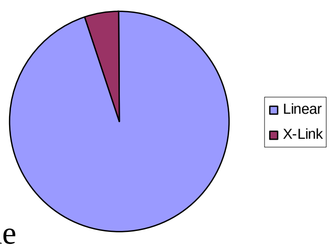
Comparison of Crosslink Polyethylene Resins to New High Density Linear Polyethylene Resins

Linear HDPE has been going through a continuing evolution and improvement while crosslink PE technology has been static. Great advances have been made in the last 20 years.   Back in the 80's crosslink was superior to linear, however, times have changed. New linear HDPE tanks out perform crosslink PE tanks when using aggressive chemicals and Linear HDPE tanks can use long-lasting hi-performance welded fittings and can be repaired by welding where crosslink can not.
Here are some additional facts:



- Over 900 million pounds of all resins were used last year industry-wide
  - Less than 5 % of that was crosslink
  - Half of that 5% was used to molds tank and bladders for oil, hydraulic fluid and gasoline which is the main use for crosslink
- Crosslink resin is declining every year as people switch to linear HDPE.   The expected market for crosslink is mainly in auto and tractor industry to contain petroleum products.
- Chemical storage tanks do not require crosslink and with few exceptions, all chemical tank applications have gone to linear (a more cost-effective material).
- Sulfuric Acid and Sodium Hypochlorite are two of the most commonly stored chemicals in PE tanks. Crosslink tanks lose impact resistance, tensile strength and ductility when used with these chemicals.
- New linear resins have much greater UV resistance than crosslink and the expected life of a linear tank should be much longer than that of a crosslink tank

Chemical Tank Comparison Crosslink vs. Linear		
	Crosslink PE	**New Linear HDPE**
Density, gm/cc, molded part	.945	.942
Yield Stress, psi	2430	2950
Break Stress, psi	1785	1879
Break elongation, %	230	324
Heat Distortion Temp, C°	56	67

See more information about Peabody Linear HDPE tanks at www.etanks.com

ExxonMobil HDPE

HD 8660

Rotational Molding Resin

Description

HD 8660 is a high density hexene copolymer designed to offer superior toughness and stiffness. This resin is ideally suited for applications that require the optimum balance of low temperature toughness, creep resistance, stiffness, ESCR, and tear properties.

Applications

- Large Agricultural Tanks
- Intermediate Bulk Containers
- Industrial Products

Additive Package	Form	Stabilizer
HD 8660.29	Pellet	Long Term UV 8 Stabilization
HDP8660.29	35 US Mesh Powder	Long Term UV 8 Stabilization

Resin Properties	Test Based On[3]	Typical Value	Unit
Melt Index	ASTM D 1238	2	g/10 min
Density	ASTM D 4883	0.942	g/cm^3
Melting Point	ASTM D 3418	129 (264)	°C (°F)

Molded Properties[1]			
Tensile Strength at Yield[2]	ASTM D 638	20.3 (2,950)	MPa (psi)
Tensile Elongation at Yield	ASTM D 638	16.2	%
Flexural Modulus 1% Secant	ASTM D 790 Procedure B	888 (129,000)	MPa (psi)
Impact Strength @ - 40°C	ARM		
1/8" (3.17 mm) thickness		108 (80)	J (ft-lbs$_f$)
1/4" (6.35 mm) thickness		244 (180)	J (ft-lbs$_f$)
Environmental Stress Crack Resistance, F_{50}	ASTM D 1693 Condition. A		
	100% Igepal	550	hr
	10% Igepal	48	hr
Deflection Temperature	ASTM D 648		
@ 66 psi (455 Kpa)		67 (153)	°C (°F)
@ 264 psi (1820 Kpa)		41 (106)	°C (°F)

1. All physical properties were measured on 3 mm. rotomolded samples unless a different value is shown, except for ESCR, which was measured on compression molded samples.
2. Tensile testing was conducted at a crosshead speed of 50 mm/min. The tensile strength reported refers to the maximum stress reached during the test.
3. Test procedures may be modified to accommodate operating conditions or facility limitations.

HD 8660 grade can - in principle - be used in food contact applications in the USA (FDA) and in Canada (HPB). Migration or use limitations may apply. Please contact your ExxonMobil Chemical representative for more detailed information and/or actual compliance certification documents for the specific grade of interest.

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