Technical Data

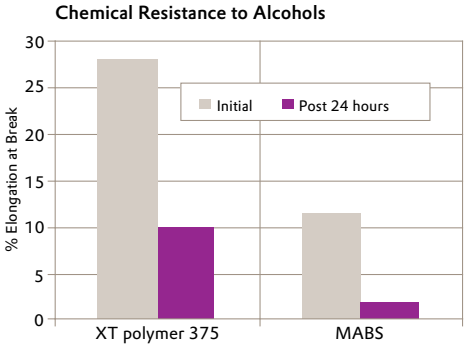
Evonik Cyro acrylic-based polymers versus MABS and SAN

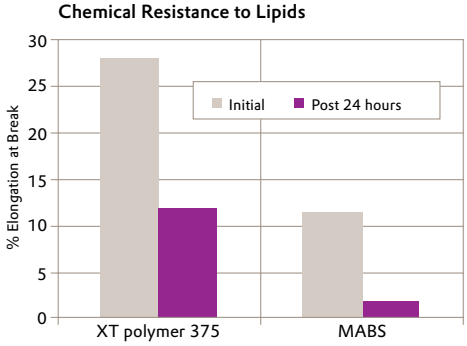
XT® polymer Versus MABS products

XT polymer acrylic-based mutipolymer compound is an MMA/styrene/acrylonitrile terpolymer with an added impact modifier. Customers considering MABS products should also look at XT polymer from Evonik Cyro LLC. XT polymer has similar optical properties to MABS plus offers the following advantages:

Major Advantages of XT polymer versus MABS*

- Better resistance to concentrated stresses at both room temperature & cold temperatures (as indicated by notched izod)
- Better chemical resistance to alcohol, lipids and PVC plasticizers and yet better bonding to PVC tube
- Larger processing window





*XT Polymer and MABS products are considered non-weatherable polymer materials.

ACRYLITE polymer versus SAN
(styrene acrylonitrile)

ACRYLITE H15 acrylic polymer is an amorphous thermoplastic molding and extrusion compound based on polymethyl methacrylate (PMMA). It has excellent weather resistance with no yellowing, high mechanical strength, good melt flow rate, and versatile colorability due to crystal clarity.

Major Advantages of ACRYLITE H15 versus SAN

- Better optics with 92% light transmission versus 87-88% for SAN
- Increased scratch resistance with Rockwell hardness of 95 on the M scale versus SAN with 83
- No yellowing with prolonged use or exposure to UV, visible or infrared light

Applications requiring optical clarity, no yellowing, heat and chemical resistance include:

- Commercial and residential indoor/outdoor lighting
- Food containers
- Window or skylight glazing
- Housewares/appliances
- Sanitaryware
- aircraft windows
- cosmetic packaging
- instrument lenses

Comparison of XT polymer vs MABS and ACRYLITE H15 polymer vs SAN

Technical Data		ASTM Method	XT polymer 375	MABS		ACRYLITE H15 polymer	SAN
Optical Properties	Light Transmission (%)	D-1003	86	89		92	87-88
	Haze (%)	D-1003	2.5	3		<1	0.7
	Refractive Index	D-542	1.515	–		1.49	1.57
Rheological Properties	Average Melt Flow (g/10 min) @230°C	D-1238	2.6 [5.0 kg]	2.5 [5.0 kg]		2.2 [3.8 kg]	7.5 [3.8 kg]
Mechanical Properties	Tensile Strength (psi) [MPa]	D-638	7,000 [48.3]	6950 [48]		9800 [67.6]	10,500 [72]
	Tensile Modulus (1 x 10E+6 psi) [GPa]	D-638	0.37 [2.6]	0.29 [2.0]		0.47 [3.2]	0.475 [3.3]
	Tensile Elongation (%) at yield	D-638	4	4		4 - 6	–
	at break		28	12		4 - 6	–
	Flexural Strength (psi)	D-790	11,000	10,150		17000	16,700
	[MPa]		75.8	72.4		117.2	115
	Flexural Modulus (1 x 10E+6 psi) [GPa]	D-790	0.35 [2.4]	–		0.49 [3.4]	0.50 [3.4]
	Notched Izod (ft.-lb/in.) J/m	D-256					
	73°F [23°C]		2.0 [107] (.250″)	1.3 [69]		0.36 [19] (.250″)	0.4 [21] (0.125″)
	32°F [0°C]		1.6 [85] (.250″)	0.37 [20]		–	–
	Rockwell Hardness	D-785	M45	–		M95	M83
Physical Properties	Deflection Temperature , annealed (°F @ 264 psi) [°C]	D-648	186 [86]	194 [90]		203 [96]	218
	Vicat softening Point (°F) [°C]	D-1525	217 [103]	196 [91]		221 [105]	230 [110]
	Specific Gravity	D-792	1.11	1.08		1.19	1.07
	Water Absorption (% max)	D-570	0.3	0.7		0.3	–
	Mold Shrinkage (in/in & mm/mm)	D-551	0.004-0.007	0.0055		0.004 - 0.007	0.003 - 0.004 (D955 method)
	Coefficient of Linear Expansion	D-696					
	(in/in/°F, 32-212°F)		0.00005	–		0.00004	0.00004
	[mm/mm/°C, 0-100°C]		0.00009	–		0.000072	0.000072

All data from manufacturer's data sheets. All listed technical data are typical values intended for your guidance. They are given without obligation and do not constitute a materials specification.

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