

Product Comparison

Technical Data

Product Description

Tritan™ TX1001	Eastman Tritan™ TX1001 is an amorphous copolyester with excellent appearance and clarity. Eastman Tritan™ TX1001 contains a mold release derived from vegetable based sources. Its most outstanding features are excellent toughness, hydrolytic stability, and heat and chemical resistance. This new-generation copolyester can also be molded into various applications without incorporating high levels of residual stress. Combined with Tritan™ copolyester's outstanding chemical resistance and hydrolytic stability, these features give molded products enhanced durability in the dishwasher environment, which can expose products to high heat, humidity and aggressive cleaning detergents. Tritan™ TX1001 copolyester may be used in repeated use food contact articles under United States Food and Drug Administration (FDA) regulations. Tritan™ TX1001 copolyester is certified to NSF/ANSI Standard 51 for Food Equipment Materials and is also certified to NSF/ANSI Standard 61 - Drinking Water System Components-Health Effects.				
Tritan™ TX1501HF	Eastman Tritan™ copolyester TX1501HF is a high flow grade of Eastman Tritan™. Eastman Tritan™ copolyester TX1501HF has viscosity reductions of 40-50% relative to Eastman Tritan™ copolyester TX1001. Eastman Tritan™ copolyester TX1501HF contains a mold release derived from vegetable based sources. Other outstanding features include good toughness, hydrolytic stability, and heat and chemical resistance. Eastman Tritan™ copolyester TX1501HF may be used in repeated use food contact articles under United States Food and Drug Administration (FDA) regulations. Eastman Tritan™ copolyester TX1501HF is certified to NSF/ANSI Standard 51 for Food Equipment Materials and is also certified to NSF/ANSI Standard 61 - Drinking Water System Components-Health Effects.				
Tritan™ TX2001	Eastman Tritan™ TX2001 is an amorphous copolyester with excellent appearance and clarity. Tritan™ TX2001 contains a mold release derived from vegetable based sources. Its most outstanding features are excellent toughness, hydrolytic stability, and heat and chemical resistance. This new-generation copolyester can also be molded into various applications without incorporating high levels of residual stress. Combined with Tritan™ copolyester's outstanding chemical resistance and hydrolytic stability, these features give molded products enhanced durability in the dishwasher environment, which can expose products to high heat, humidity, and aggressive cleaning agents. Tritan™ TX2001 copolyester may be used in repeated use food contact articles under United States Food and Drug Administration (FDA) regulations. Tritan™ TX2001 copolyester is certified to NSF/ANSI Standard 51 for Food Equipment Materials and is also certified to NSF/ANSI Standard 61 - Drinking Water System Components-Health Effects.				
Ultrason® P 3010	Ultrason P 3010 is an unreinforced, flame retardant, higher viscosity injection molding PPSU grade, with improved chemical resistance.				
Ultrason® S 3010	Ultrason S 3010 is medium viscosity injection molding grade with improved toughness and chemical resistance (stress crack resistance). Applications Typical applications include laboratory accessories and household parts.				
General	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010

Product Comparison

	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010
General					
Search for UL Yellow Card	<ul style="list-style-type: none"> • • 				
Availability	<ul style="list-style-type: none"> • Africa & Middle East • Asia Pacific • Europe • Latin America • North America 	<ul style="list-style-type: none"> • Africa & Middle East • Asia Pacific • Europe • Latin America • North America 	<ul style="list-style-type: none"> • Africa & Middle East • Asia Pacific • Europe • Latin America • North America 	<ul style="list-style-type: none"> • North America 	<ul style="list-style-type: none"> • Asia Pacific • Europe • North America
Additive	<ul style="list-style-type: none"> • Mold Release 	<ul style="list-style-type: none"> • Mold Release 	<ul style="list-style-type: none"> • Mold Release 	--	--
Features	<ul style="list-style-type: none"> • Amorphous • Chemical Resistant • Copolymer • Durable • Fast Molding Cycle • Food Contact Acceptable • Good Mold Release • Good Processability • Good Toughness • High Clarity • High Heat Resistance • High Impact Resistance • Hydrolytically Stable • Pleasing Surface Appearance 	<ul style="list-style-type: none"> • Amorphous • Chemical Resistant • Durable • Fast Molding Cycle • Food Contact Acceptable • Good Mold Release • Good Processability • Good Toughness • High Clarity • High Flow • High Heat Resistance • High Impact Resistance • Hydrolytically Stable • Low Viscosity 	<ul style="list-style-type: none"> • Amorphous • Chemical Resistant • Copolymer • Durable • Fast Molding Cycle • Food Contact Acceptable • Good Mold Release • Good Processability • Good Toughness • High Clarity • High Heat Resistance • High Impact Resistance • Hydrolytically Stable • Pleasing Surface Appearance 	<ul style="list-style-type: none"> • Chemical Resistant • Flame Retardant • High Viscosity 	<ul style="list-style-type: none"> • Chemical Resistant • Good ESCR (Stress Crack Resist.) • Good Toughness • High Viscosity
Uses	<ul style="list-style-type: none"> • Appliances • Consumer Applications • Household Goods • White Goods & Small Appliances 	<ul style="list-style-type: none"> • Appliances • Consumer Applications • Household Goods 	<ul style="list-style-type: none"> • Appliances • Consumer Applications • Household Goods • White Goods & Small Appliances 	--	<ul style="list-style-type: none"> • Household Goods • Labware
Agency Ratings	<ul style="list-style-type: none"> • FDA Food Contact, Unspecified Rating • NSF STD-51 • NSF STD-61 	<ul style="list-style-type: none"> • FDA Food Contact, Unspecified Rating • NSF STD-51 • NSF STD-61 	<ul style="list-style-type: none"> • FDA Food Contact, Unspecified Rating • NSF STD-51 • NSF STD-61 	<ul style="list-style-type: none"> • EC 1907/2006 (REACH) • EC 1907/2006 (REACH) 	
RoHS Compliance	--	--	--	<ul style="list-style-type: none"> • RoHS Compliant 	<ul style="list-style-type: none"> • RoHS Compliant
Forms	--	--	--	<ul style="list-style-type: none"> • Pellets 	<ul style="list-style-type: none"> • Pellets
Processing Method	<ul style="list-style-type: none"> • Injection Molding 	<ul style="list-style-type: none"> • Injection Molding 	<ul style="list-style-type: none"> • Injection Molding 	<ul style="list-style-type: none"> • Injection Molding 	<ul style="list-style-type: none"> • Injection Molding

Product Comparison

General	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010		
Multi-Point Data	--	--	--	--	--	<ul style="list-style-type: none"> Shear Modulus vs. Temperature (ISO 11403-1) Specific Volume vs Temperature (ISO 11403-2) Viscosity vs. Shear Rate (ISO 11403-2) 	
Physical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Density / Specific Gravity							
--	1.18	1.18	1.17	--	--	g/cm³	ASTM D792
--	--	--	--	1.29	1.23	g/cm³	ISO 1183
Melt Volume-Flow Rate (MVR) (360°C/10.0 kg)	--	--	--	35	40	cm³/10min	ISO 1133
Molding Shrinkage							
Flow	0.50 to 0.70	0.50 to 0.70	0.50 to 0.70	--	--	%	ASTM D955
Across Flow	--	--	--	1.0	0.74	%	ISO 294-4
Flow	--	--	--	0.90	0.70	%	ISO 294-4
Water Absorption							ISO 62
Saturation, 23°C	--	--	--	1.2	0.80	%	
Equilibrium, 23°C, 50% RH	--	--	--	0.60	0.30	%	
Mechanical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Tensile Modulus							
23°C	1550	1580	1590	--	--	MPa	ASTM D638
23°C	1550	1600	1620	2270	2550	MPa	ISO 527-2
Tensile Strength							
Yield, 23°C	43.0	43.0	44.0	--	--	MPa	ASTM D638
Yield, 23°C	43.0	44.0	45.0	74.0	75.0	MPa	ISO 527-2
Break, 23°C	53.0	52.0	53.0	--	--	MPa	ASTM D638
Break, 23°C	58.0	49.0	49.0	--	--	MPa	ISO 527-2
Tensile Elongation							
Yield, 23°C	6.0	7.0	7.0	--	--	%	ASTM D638
Yield, 23°C	7.0	7.0	7.0	7.8	6.0	%	ISO 527-2
Break, 23°C	210	210	140	--	--	%	ASTM D638
Break, 23°C	190	150	130	--	--	%	ISO 527-2

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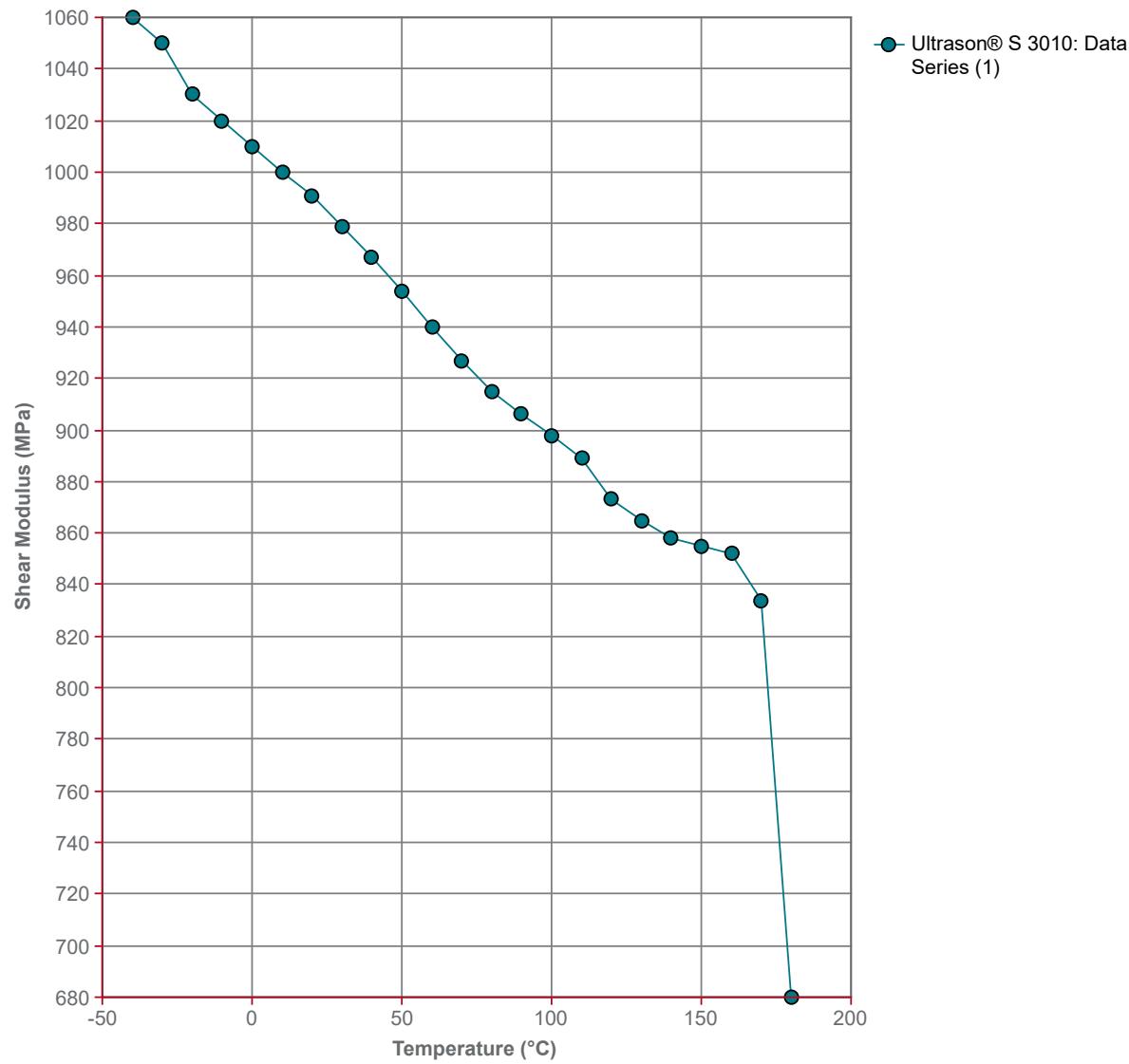
Mechanical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Flexural Modulus							
23°C	1550	1580	1590	--	--	MPa	ASTM D790
23°C	1500	1500	1530	--	--	MPa	ISO 178
Flexural Stress							
23°C	59.0	60.0	--	--	--	MPa	ISO 178
Yield, 23°C	62.0	64.0	66.0	--	--	MPa	ASTM D790
Impact	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Charpy Notched Impact Strength							ISO 179
-30°C	--	--	--	25	6.0	kJ/m ²	
23°C	--	--	--	75	5.5	kJ/m ²	
Charpy Unnotched Impact Strength							ISO 179
-30°C	--	--	--	No Break	No Break		
23°C	--	--	--	No Break	No Break		
Notched Izod Impact							
23°C	980	860	650	--	--	J/m	ASTM D256
-40°C	20	11	14	--	--	kJ/m ²	ISO 180
-30°C	--	--	--	25	6.0	kJ/m ²	ISO 180
23°C	93	83	66	55	5.5	kJ/m ²	ISO 180
Unnotched Izod Impact (23°C)	No Break	No Break	No Break	--	--		ASTM D4812
Hardness	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Rockwell Hardness (R-Scale, 23°C)	112	111	115	--	--		ASTM D785
Ball Indentation Hardness	--	--	--	124	135	MPa	ISO 2039-1
Thermal	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Deflection Temperature Under Load							
0.45 MPa, Unannealed	99.0	94.0	109	--	--	°C	ASTM D648
1.8 MPa, Unannealed	85.0	81.0	92.0	--	--	°C	ASTM D648
1.8 MPa, Unannealed	--	--	--	198	177	°C	ISO 75-2/A
CLTE - Flow	--	--	--	5.5E-5	5.3E-5	cm/cm/°C	
RTI Elec							UL 746
1.6 mm	--	--	--	--	155	°C	
3.0 mm	--	--	--	--	155	°C	
RTI Imp							UL 746
1.6 mm	--	--	--	--	130	°C	
3.0 mm	--	--	--	--	130	°C	

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Thermal							
RTI Str							UL 746
1.6 mm	--	--	--	--	155	°C	
3.0 mm	--	--	--	--	155	°C	
Electrical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Surface Resistivity	--	--	--	> 1.0E+15	> 1.0E+15	ohms	IEC 60093
Volume Resistivity	--	--	--	> 1.0E+15	> 1.0E+15	ohms·cm	IEC 60093
Electric Strength	--	--	--	44	37	kV/mm	IEC 60243-1
Dielectric Constant							IEC 60250
100 Hz	--	--	--	3.80	3.10		
1 MHz	--	--	--	3.70	3.10		
Dissipation Factor							IEC 60250
100 Hz	--	--	--	1.7E-3	8.0E-4		
1 MHz	--	--	--	8.9E-3	6.4E-3		
Comparative Tracking Index	--	--	--	150	125	V	IEC 60112
Flammability	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Flame Rating							UL 94
1.6 mm	--	--	--	V-0	HB		
3.0 mm	--	--	--	V-0	HB		
Optical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	Test Method
Light Transmittance (Total)	90.0	91.0	92.0	--	--	%	ASTM D1003
Haze	< 1.00	< 1.00	< 1.00	--	--	%	ASTM D1003
Injection	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	Unit	
Drying Temperature	88	88	88	--	130 to 150	°C	
Drying Time	4.0 to 6.0	4.0 to 6.0	4.0 to 6.0	--	4.0	hr	
Suggested Max Moisture	--	--	--	--	0.020	%	
Processing (Melt) Temp	260 to 282	260 to 282	260 to 282	--	340 to 390	°C	
Mold Temperature	38 to 66	38 to 66	38 to 66	--	140 to 180	°C	
Injection Pressure	--	--	--	--	3.50 to 12.5	MPa	
Injection Rate	--	--	--	--	Fast		

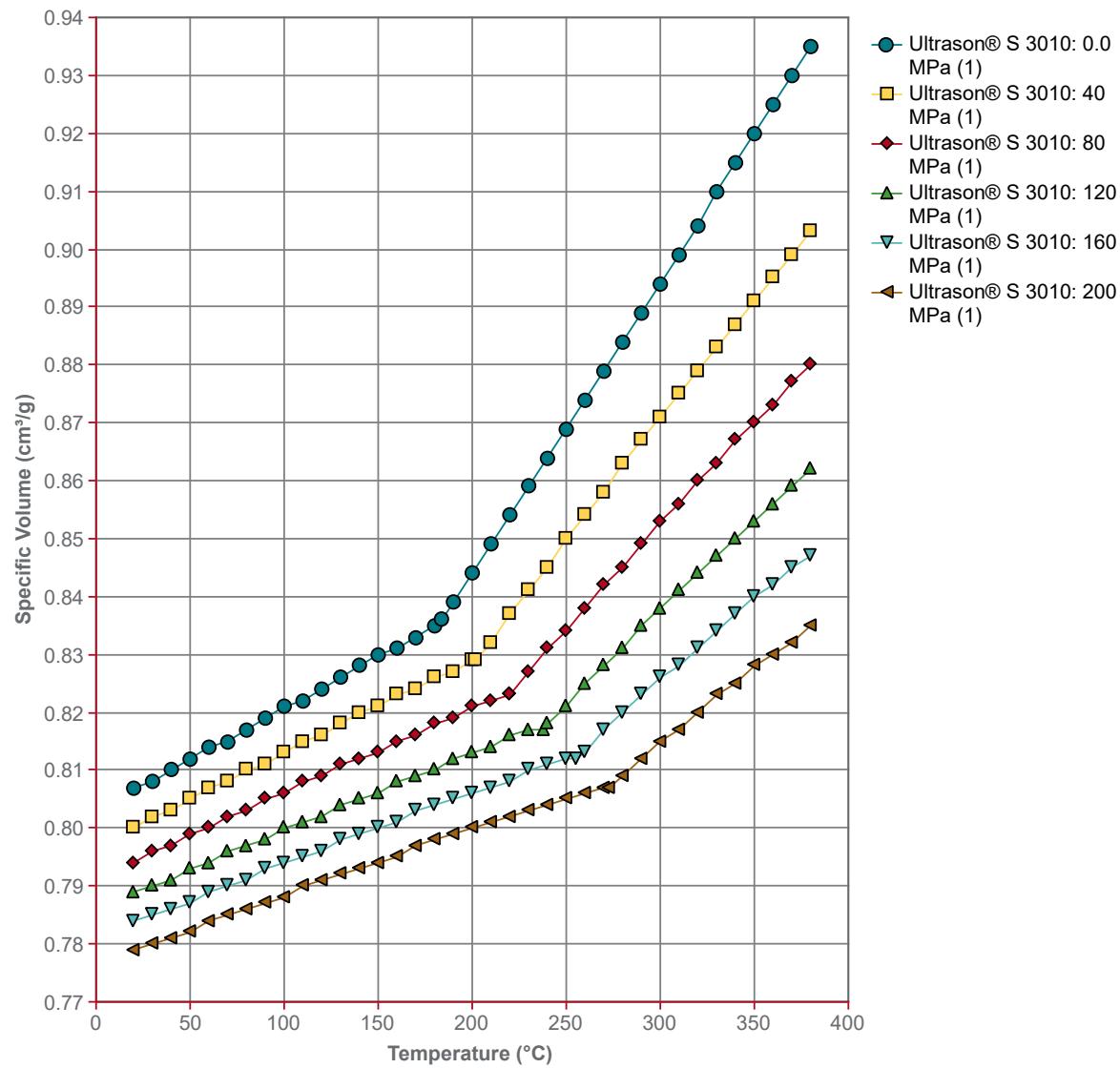
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Shear Modulus vs. Temperature (ISO 11403-1)



Product Comparison

Specific Volume vs Temperature (ISO 11403-2)



Product Comparison

Viscosity vs. Shear Rate (ISO 11403-2)

