

产品比较

Technical Data

Product Description					
Tritan™ TX1001		Eastman Tritan™ TX1001 is an amorphous copolyester with excellent appearance and clarity. EastmanTritan™ 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

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General	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010
搜索 UL 黄卡	• •				
Availability	• 北美洲 • 非洲和中东 • 拉丁美洲 • 欧洲 • 亚太地区	• 北美洲 • 非洲和中东 • 拉丁美洲 • 欧洲 • 亚太地区	• 北美洲 • 非洲和中东 • 拉丁美洲 • 欧洲 • 亚太地区	• 北美洲	• 北美洲 • 欧洲 • 亚太地区
Additive	• 脱模	• 脱模	• 脱模	--	--
Features	• 高抗撞击性 • 共聚物 • 快的成型周期 • 良好的加工性能 • 耐化学品性能，良好 • 耐热性，高 • 耐用性 • 清晰度，高 • 韧性良好 • 食品接触的合规性 • 水解稳定 • 脱模性能良好 • 外观良好 • 无定形的	• 低粘度 • 高抗撞击性 • 快的成型周期 • 良好的加工性能 • 流动性高 • 耐化学品性能，良好 • 耐热性，高 • 耐用性 • 清晰度，高 • 韧性良好 • 食品接触的合规性 • 水解稳定 • 脱模性能良好 • 无定形的	• 高抗撞击性 • 共聚物 • 快的成型周期 • 良好的加工性能 • 耐化学品性能，良好 • 耐热性，高 • 耐用性 • 清晰度，高 • 韧性良好 • 食品接触的合规性 • 水解稳定 • 脱模性能良好 • 外观良好 • 无定形的	• 高粘度 • 耐化学品性能，良好 • 阻燃性	• Good ESCR (Stress Crack Resist.) • 高粘度 • 耐化学品性能，良好 • 韧性良好
Uses	• 大型家用电器和小型家用电器 • 电器用具 • 家用货品 • 消费品应用领域	• 电器用具 • 家用货品 • 消费品应用领域	• 大型家用电器和小型家用电器 • 电器用具 • 家用货品 • 消费品应用领域	--	• 家用货品 • 实验室器具
Agency Ratings	• FDA 食品接触, 未评级 • NSF 51 • NSF 61	• FDA 食品接触, 未评级 • NSF 51 • NSF 61	• FDA 食品接触, 未评级 • NSF 51 • NSF 61	• EC 1907/2006 (REACH)	• EC 1907/2006 (REACH)
RoHS Compliance	--	--	--	• RoHS 合规	• RoHS 合规
Forms	--	--	--	• 粒子	• 粒子
Processing Method	• 注射成型	• 注射成型	• 注射成型	• 注射成型	• 注射成型
Multi-Point Data	--	--	--	--	• Shear Modulus vs. Temperature (ISO 11403-1) • Specific Volume vs Temperature (ISO 11403-2) • Viscosity vs. Shear Rate (ISO 11403-2)

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Physical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	单位制	测试方法
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							
流动	0.50 到 0.70	0.50 到 0.70	0.50 到 0.70	--	--	%	ASTM D955
垂直	--	--	--	1.0	0.74	%	ISO 294-4
流动	--	--	--	0.90	0.70	%	ISO 294-4
Water Absorption							ISO 62
饱和, 23°C	--	--	--	1.2	0.80	%	
平衡, 23°C, 50% RH	--	--	--	0.60	0.30	%	
Mechanical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	单位制	测试方法
Tensile Modulus							
23°C	1550	1580	1590	--	--	MPa	ASTM D638
23°C	1550	1600	1620	2270	2550	MPa	ISO 527-2
Tensile Strength							
屈服, 23°C	43.0	43.0	44.0	--	--	MPa	ASTM D638
屈服, 23°C	43.0	44.0	45.0	74.0	75.0	MPa	ISO 527-2
断裂, 23°C	53.0	52.0	53.0	--	--	MPa	ASTM D638
断裂, 23°C	58.0	49.0	49.0	--	--	MPa	ISO 527-2
Tensile Elongation							
屈服, 23°C	6.0	7.0	7.0	--	--	%	ASTM D638
屈服, 23°C	7.0	7.0	7.0	7.8	6.0	%	ISO 527-2
断裂, 23°C	210	210	140	--	--	%	ASTM D638
断裂, 23°C	190	150	130	--	--	%	ISO 527-2
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
屈服, 23°C	62.0	64.0	66.0	--	--	MPa	ASTM D790

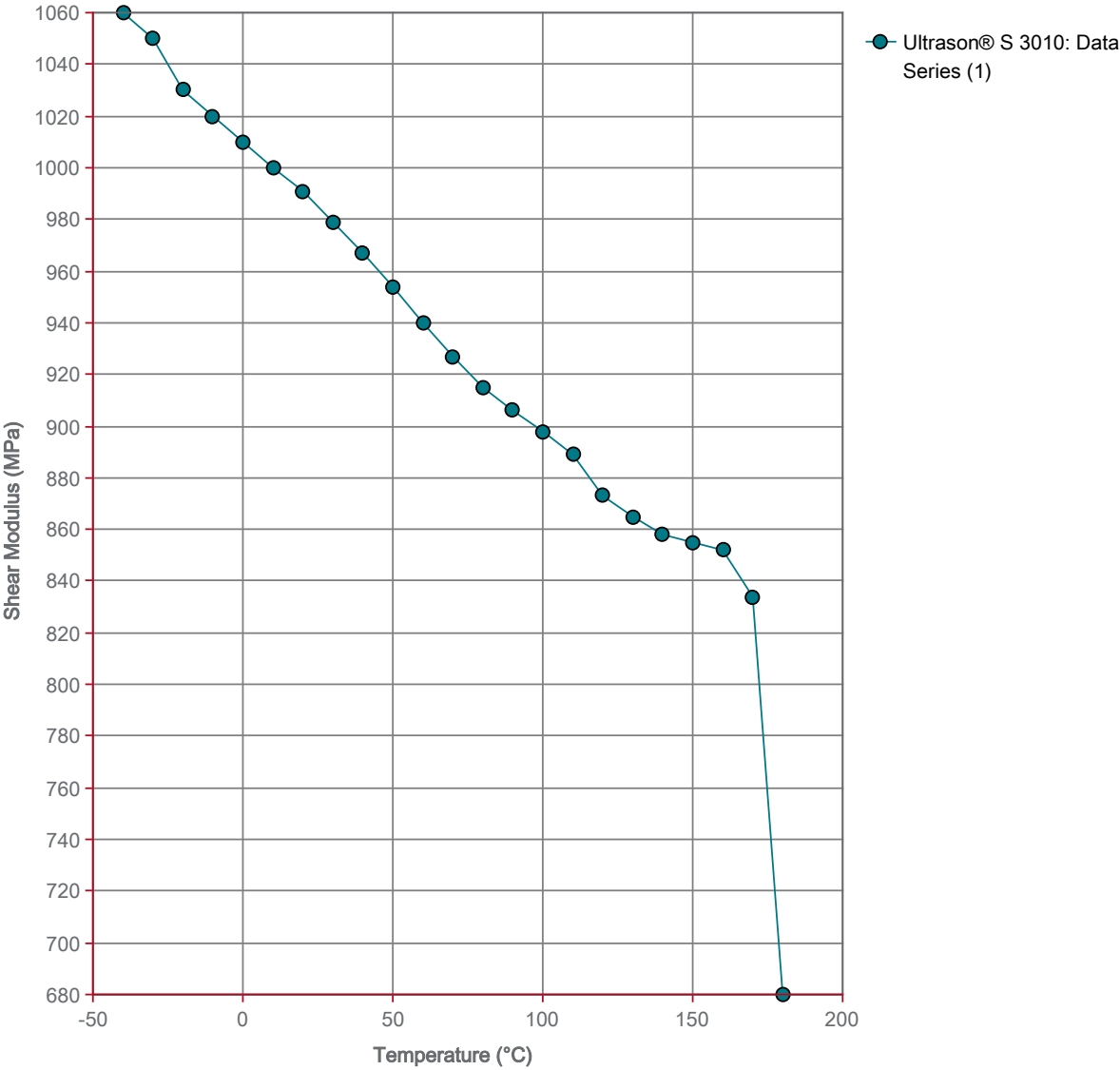
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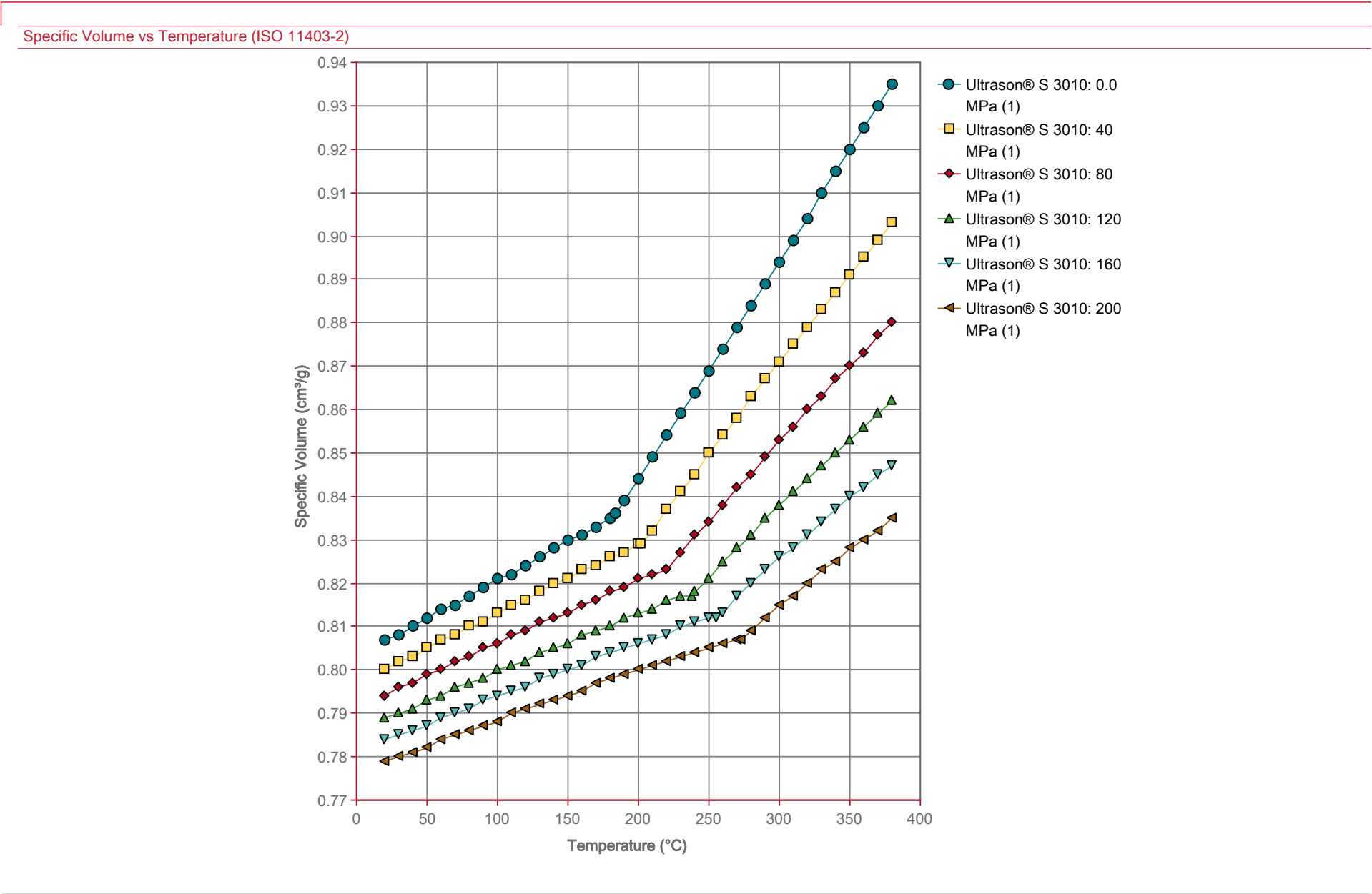
Impact	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	单位制	测试方法
Charpy Notched Impact Strength							ISO 179
-30°C	--	--	--	25	6.0	kJ/m²	
23°C	--	--	--	75	5.5	kJ/m²	
Charpy Unnotched Impact Strength							ISO 179
-30°C	--	--	--	无断裂	无断裂		
23°C	--	--	--	无断裂	无断裂		
Notched Izod Impact							
23°C	980	860	650	--	--	J/m	ASTM D256
-40°C	20	11	14	--	--	kJ/m²	ISO 180
-30°C	--	--	--	25	6.0	kJ/m²	ISO 180
23°C	93	83	66	55	5.5	kJ/m²	ISO 180
Unnotched Izod Impact (23°C)	无断裂	无断裂	无断裂	--	--		ASTM D4812
Hardness	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	单位制	测试方法
Rockwell Hardness (R 级, 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	单位制	测试方法
Deflection Temperature Under Load							
0.45 MPa, 未退火	99.0	94.0	109	--	--	°C	ASTM D648
1.8 MPa, 未退火	85.0	81.0	92.0	--	--	°C	ASTM D648
1.8 MPa, 未退火	--	--	--	198	177	°C	ISO 75-2/A
CLTE - 流动	--	--	--	5.5E-5	5.3E-5	cm/cm/°C	No Standard
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	
RTI Str							UL 746
1.6 mm	--	--	--	--	155	°C	
3.0 mm	--	--	--	--	155	°C	

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Electrical	Tritan™ TX1001	Tritan™ TX1501HF	Tritan™ TX2001	Ultrason® P 3010	Ultrason® S 3010	单位制	测试方法
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	单位制	测试方法
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	单位制	测试方法
Light Transmittance (总计)	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	单位制	
Drying Temperature	88	88	88	--	130 到 150	°C	
Drying Time	4.0 到 6.0	4.0 到 6.0	4.0 到 6.0	--	4.0	hr	
Suggested Max Moisture	--	--	--	--	0.020	%	
Processing (Melt) Temp	260 到 282	260 到 282	260 到 282	--	340 到 390	°C	
Mold Temperature	38 到 66	38 到 66	38 到 66	--	140 到 180	°C	
Injection Pressure	--	--	--	--	3.50 到 12.5	MPa	
Injection Rate	--	--	--	--	快速		

Shear Modulus vs. Temperature (ISO 11403-1)





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Viscosity vs. Shear Rate (ISO 11403-2)

