Elastollan® 1185A10FHF

Technical Bulletin

Polyether Type

Elastollan[®] 1185A10FHF is a polyether-based thermoplastic polyurethane (TPU) containing a non-halogenated fire retardant. It is specifically formulated for wire and cable jacketing, extruded profile, sheet and film applications. It exhibits excellent abrasion resistance, toughness, low temperature properties, hydrolytic stability and fungus resistance. Elastollan[®] 1185A10FHF is formulated to exhibit the flame retardancy characteristics as described in the table below. As with all TPU products, Elastollan[®] 1185A10FHF must be dried before processing. The drying step is required to maintain a low moisture content until the product enters the processing equipment. The water content must be less than 0.03% before and during processing. The typical drying conditions should be 2-4 hours @ 175^o-195^oF (80^o-90^oC). Elastollan[®] 1185A10FHF can be stored for up to 1 year in its original container. Containers should be stored in a cool and dry area.

Physical English Si Specific Gravity gr./cm³ ASTM D-792 1.23 1.23 Hardness Shore A ASTM D-2240 88A 88A Flame Rating UL-94 V0120", V0- 3mm, LOI % ASTM D-2863 25% 25% Mechanical ************************************	Properties		Test Method	Typical Value		
Physical Specific Gravity gr./cm ³ ASTM D-792 1.23 1.23 Hardness Shore A ASTM D-2240 88A 88A Flame Rating UL-94 V0120", V0 - 3mm, V2060" V2 - 1.5mm LOI % ASTM D-2863 25% 25% Mechanical				English	SI	
Specific Gravity gr,/cm ³ ASTM D-792 1.23 1.23 Hardness Shore A ASTM D-2240 88A 88A Flame Rating UL-94 V0120", V2060" V2 - 1.5mm LOI % ASTM D-2863 25% 25% Mechanical	Physical					
Hardness Shore A ASTM D-2240 88A 88A Flame Rating UL-94 V0120", V03mm, V2060" V21.5mm LOI % ASTM D-2863 25% 25% Mechanical	Specific Gravity	gr./cm ³	ASTM D-792	1.23	1.23	
Flame Rating UL-94 V0120", V2060" V0 - 3mm, V2060" LOI % ASTM D-2863 25% 25% Mechanical	Hardness	Shore A	ASTM D-2240	88A	88A	
LOI % ASTM D-2863 25% 25% Mechanical	Flame Rating		UL-94	V0120", V2060"	V0– 3mm, V2– 1.5mm	
Mechanical Tensile Strength (Ultimate) psi / MPa ASTM D-412 5300 psi 36 MPa Tensile Stress @100% Elong. ASTM D-412 1550 psi 11 MPa Tensile Stress @300% Elong. ASTM D-412 2600 psi 18 MPa Elongation at Break % ASTM D-412 500% 500% Compression Set, % 22 hrs @ 23°C ASTM D-395 (B) 25% 25% Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength Ib./in. N/mm ASTM D-1024 100 mg 100 mg DIN Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm ³ loss DIN 53516 35 35 35 °F/°C <	LOI	%	ASTM D-2863	25%	25%	
Mechanical Tensile Strength (Ultimate) psi / MPa ASTM D-412 5300 psi 36 MPa Tensile Stress @100% Elong. ASTM D-412 1550 psi 11 MPa Tensile Stress @300% Elong. ASTM D-412 2600 psi 18 MPa Elongation at Break % ASTM D-412 500% 500% Compression Set, % 22 hrs @ 23°C ASTM D-395 (B) 25% 25% Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength Ib./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Stremgth Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>						
Tensile Strength (Ultimate) psi / MPa ASTM D-412 5300 psi 36 MPa Tensile Stress @100% Elong. ASTM D-412 1550 psi 11 MPa Tensile Stress @300% Elong. ASTM D-412 1550 psi 18 MPa Elongation at Break % ASTM D-412 500% 500% Compression Set, % 22 hrs @ 23°C ASTM D-395 (B) 25% 25% Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Tear Strength Ib./in. N/mm ASTM D-624, Die C 550 Ib./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Stremgth Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature	Mechanical					
Tensile Stress @100% Elong. ASTM D-412 1550 psi 11 MPa Tensile Stress @300% Elong. ASTM D-412 2600 psi 18 MPa Elongation at Break % ASTM D-412 500% 500% Compression Set, % 22 hrs @ 23°C ASTM D-395 (B) 25% 25% Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength Ib./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Conditions Failer Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C	Tensile Strength (Ultimate)	psi / MPa	ASTM D-412	5300 psi	36 MPa	
Tensile Stress @300% Elong. ASTM D-412 2600 psi 18 MPa Elongation at Break % ASTM D-412 500% 500% Compression Set, % 22 hrs @ 23°C ASTM D-395 (B) 25% 25% Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength Ib./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Strength Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C	Tensile Stress	@100% Elong.	ASTM D-412	1550 psi	11 MPa	
Elongation at Break % ASTM D-412 500% 500% Compression Set, % 22 hrs @ 23°C ASTM D-395 (B) 25% 25% Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength lb./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Stremgth Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Stop Conditions, Extrusion	Tensile Stress	@300% Elong.	ASTM D-412	2600 psi	18 MPa	
Compression Set, % 22 hrs @ 23°C ASTM D-395 (B) 25% 25% Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength lb./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Thermal Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C	Elongation at Break	%	ASTM D-412	500%	500%	
Compression Set, % 22 hrs @ 70°C ASTM D-395 (B) 45% 45% E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength Ib./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Thermal Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion	Compression Set, %	22 hrs @ 23ºC	ASTM D-395 (B)	25%	25%	
E-Modulus psi / MPa ASTM D-412 3800 psi 26 MPa Flexural Modulus psi / MPa ASTM D-790 7000 psi 48 MPa Tear Strength lb./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Thermal Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion	Compression Set, %	22 hrs @ 70ºC	ASTM D-395 (B)	45%	45%	
Flexural Moduluspsi / MPaASTM D-7907000 psi48 MPaTear StrengthIb./in. N/mmASTM D-624, Die C550 lb./in.96 N/mmTaber Abrasion Resistance / mg loss1000 gr./H-18ASTM D-1044100 mg100 mgDIN Abrasion Resistancemm³ lossDIN 535163535ThermalVicat Softening Point°F/°CASTM D-1525162°F72°CGlass Transition Temperature°F/°CDSC-40°F-40°CProcessing Conditions, Extrusion°E/°C	E-Modulus	psi / MPa	ASTM D-412	3800 psi	26 MPa	
Tear Strength Ib./in. N/mm ASTM D-624, Die C 550 lb./in. 96 N/mm Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm ³ loss DIN 53516 35 35 Thermal Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion	Flexural Modulus	psi / MPa	ASTM D-790	7000 psi	48 MPa	
Taber Abrasion Resistance / mg loss 1000 gr./H-18 ASTM D-1044 100 mg 100 mg DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Thermal Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion °E/°C 360 - 400°E 180 - 205°C	Tear Strength	lb./in. N/mm	ASTM D-624, Die C	550 lb./in.	96 N/mm	
DIN Abrasion Resistance mm³ loss DIN 53516 35 35 Thermal	Taber Abrasion Resistance / mg loss	1000 gr./H-18	ASTM D-1044	100 mg	100 mg	
Thermal Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion °F/°C 360 - 400°F 180 - 205°C	DIN Abrasion Resistance	mm ³ loss	DIN 53516	35	35	
Thermal Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion °F/°C 360 - 400°F 180 - 205°C						
Vicat Softening Point °F/°C ASTM D-1525 162°F 72°C Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion °E/°C 360 - 400°E 180 - 205°C	Thermal					
Glass Transition Temperature °F/°C DSC -40°F -40°C Processing Conditions, Extrusion °F/°C 360 - 400°F 180 - 205°C	Vicat Softening Point	°F/°C	ASTM D-1525	162°F	72°C	
Processing Conditions, Extrusion ${}^{\circ}\text{E}{}^{\circ}\text{C}$ 360 - 400°E 180 - 205°C	Glass Transition Temperature	°F/°C	DSC	-40°F	-40°C	
Processing Conditions, Extrusion ${}^{\circ}\text{E}{}^{0}\text{C}$ 360 - 400°E 180 - 205°C						
	Processing Conditions, Extrusion	°F/°C		360 - 400°F	180 - 205°C	
Processing Conditions, Inj. Molding °F/°C 360 - 400°F - 205°C	Processing Conditions, Inj. Molding	°F/°C		360 - 400°F	- 205°C	

The above values are shown as typical values and should not be used as specifications. Molded plaques 0.080" thick were cured 20 hours at 100 °C before testing





