Stanyl® TW271F6

Polyamide 46

DSM Engineering Materials

PROSPECTOR®
www.ulprospector.com

Technical Data

Product Description

30% Glass Reinforced, Heat Stabilized, Wear and Friction Modified

Stanyl® TW271F6 is a friction-modified high heat polyamide that offers excellent creep resistance, strength, stiffness and fatigue resistance especially at high temperatures in combination with cycle-time advantages and excellent flow. TW271F6 has an excellent track-record in gear applications.

General

Material Status	• Commercial: Active		
Literature [1]	• Processing (English) • Technical Datasheet (English) • White Paper - Delivering high-performance gears for compact electric engine actuators (English) • White Paper - Delivering high-performance gears for compact electric engine actuators (English) • White Paper - Leveraging safe, high-performance materials for kitchen utensils (English) • White Paper - Meeting food contact safety standards in the kitchen (English) • White Paper - Optimizing gear performance in small appliances (English) • White Paper - Optimizing gears for electric brake actuators (English)		
UL Yellow Card [2]	• E47960-101378889		
Search for UL Yellow Card	• DSM Engineering Materials • Stanyl®		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Filler / Reinforcement	• Glass Fiber, 30% Filler by Weight		
Additive	• Heat Stabilizer	• PTFE Lubricant	
Features	• Heat Stabilized	• Lubricated	• Wear Resistant
Processing Method	• Injection Molding		
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1)	• Specific Volume vs Temperature (ISO 11403-2)	• Viscosity vs. Shear Rate (ISO 11403-2)
Resin ID	• (PA46+PTFE)-GF30		

Physical	Dry	Conditioned	Unit	Test Method
Density	1.53	--	g/cm³	ISO 1183
Spiral Flow				
-- [4]	10.5	--	cm	
-- [5]	11.5	--	cm	
-- [6]	12.5	--	cm	
Molding Shrinkage				ISO 294-4
Across Flow	1.3	--	%	
Flow	0.50	--	%	
Water Absorption				ISO 62
24 hr, 23°C	2.1	--	%	
Saturation, 23°C	7.4	--	%	
Equilibrium, 23°C, 50% RH	2.2	--	%	
Viscosity Number	145	--	cm³/g	ISO 307

Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus				ISO 527-1
--	10500	6600	MPa	
-40°C	11000	12000	MPa	
120°C	5250	--	MPa	
160°C	4750	--	MPa	
180°C	4500	--	MPa	
200°C	4250	--	MPa	

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Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Stress				ISO 527-2
Break	200	130	MPa	
Break, -40°C	250	235	MPa	
Break, 120°C	100	--	MPa	
Break, 160°C	85.0	--	MPa	
Break, 180°C	80.0	--	MPa	
Break, 200°C	75.0	--	MPa	
Tensile Strain				ISO 527-2
Break	3.4	6.0	%	
Break, -40°C	3.3	3.2	%	
Break, 120°C	6.5	--	%	
Break, 160°C	6.5	--	%	
Break, 180°C	6.5	--	%	
Break, 200°C	6.5	--	%	
Flexural Modulus				ISO 178
--	9000	6000	MPa	
120°C	5400	--	MPa	
160°C	5000	--	MPa	
Flexural Stress				ISO 178
--	280	150	MPa	
120°C	135	--	MPa	
160°C	120	--	MPa	
Weldline Strain (4.00 mm)	1.0	1.5	%	ISO 527-2
Weldline Strength (4.00 mm)	78.0	47.0	MPa	ISO 527-2
Impact	**Dry**	**Conditioned**	**Unit**	**Test Method**
Charpy Notched Impact Strength				ISO 179/1eA
-30°C	11	11	kJ/m²	
23°C	13	17	kJ/m²	
Charpy Unnotched Impact Strength				ISO 179/1eU
-30°C	65	70	kJ/m²	
23°C	85	90	kJ/m²	
Notched Izod Impact Strength				ISO 180/1A
-40°C	11	11	kJ/m²	
23°C	13	17	kJ/m²	
Thermal	**Dry**	**Conditioned**	**Unit**	**Test Method**
Deflection Temperature Under Load				
0.45 MPa, Unannealed	290	--	°C	ISO 75-2/B
1.8 MPa, Unannealed	290	--	°C	ISO 75-2/A
Glass Transition Temperature [7]	75.0	--	°C	ISO 11357-2
Vicat Softening Temperature	290	--	°C	ISO 306/B50
Melting Temperature [7]	295	--	°C	ISO 11357-3
CLTE				ISO 11359-2
Flow	2.5E-5	--	cm/cm/°C	
Transverse	6.0E-5	--	cm/cm/°C	
Effective Thermal Diffusivity	1.26E-7	--	m²/s	
Thermal Index				IEC 60216
10000 hrs	164	--	°C	
20000 hrs	153	--	°C	
2500 hrs	190	--	°C	
5000 hrs	177	--	°C	

Electrical	Dry	Conditioned	Unit	Test Method
Surface Resistivity	--	1.0E+13	ohms	IEC 62631-3-2
Volume Resistivity	1.0E+12	1.0E+7	ohms·m	IEC 62631-3-1
Comparative Tracking Index	400	--	V	IEC 60112
Flammability	**Dry**	**Conditioned**	**Unit**	**Test Method**
Flame Rating (3.0 mm)	HB	--		UL 94 IEC 60695-11-10, -20
Fill Analysis	**Dry**	**Conditioned**	**Unit**	**Test Method**
Melt Density	1.32	--	g/cm³	
Melt Specific Heat	1890	--	J/kg/°C	
Melt Thermal Conductivity	0.32	--	W/m/K	ASTM E1461

Notes

[1] These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

[2] A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

[3] Typical properties: these are not to be construed as specifications.

[4] Injection Pressure: 800 bar, 1.00 mm

[5] Injection Pressure: 900 bar, 1.00 mm

[6] Injection Pressure: 1.00E+3 bar, 1.00 mm

[7] 10°C/min

Where to Buy

Supplier

DSM Engineering Materials
Web: http://www.dsm.com/contactdep

Distributor

3Polymer (Guangzhou) Chemical Technology Co., Ltd.
Telephone: +86-20-3466-7988
Web: http://3polymer.com
Availability: China

Channel Prime Alliance
Telephone: 800-247-8038
Web: http://www.channelpa.com/
Availability: North America

Nexeo Plastics
Nexeo Plastics is leading global resin distributor with the technical resources you need to overcome material challenges. Visit us on the web at www.nexeoplastics.com.
Telephone: 833-446-3936
Web: https://www.nexeoplastics.com/
Availability: North America

Nexeo Plastics - Europe
Nexeo Plastics is a Pan European distribution company. Contact Nexeo for availability of individual products by country.
Telephone: +34-93-480-9125
Web: https://www.nexeoplastics.com/
Availability: Belgium, Denmark, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Russian Federation, Spain, Sweden, United Kingdom

RESINEX Group
RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.
Telephone: +32-14-672511
Web: http://www.resinex.com/
Availability: Europe

TER HELL Plastic GmbH
TER HELL Plastic is a Pan European distribution company. Contact TER HELL Plastic for availability of individual products by country.
Telephone: +49-2366-5661-0
Web: https://www.terplastics.com/
Availability: Austria, Bulgaria, Czech Republic, France, Germany, Hungary, Poland, Romania, Slovakia, Slovenia, Switzerland