

# ForTii® F11

DSM Engineering Plastics - Polyphthalamide

Tuesday, January 21, 2020

## General Information

### Product Description

30% Glass Reinforced, PA4T, Flame Retardant, Halogen free and free of red phosphorous

### General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Filler / Reinforcement	• Glass Fiber, 30% Filler by Weight		
Additive	• Flame Retardant		
Features	• Flame Retardant	• Halogen Free	• Low (to None) Phosphorus Content
Processing Method	• Injection Molding		
Resin ID (ISO 1043)	• PPA-GF30 FR(40)		

## ASTM & ISO Properties <sup>1</sup>

Physical	Dry	Conditioned	Unit	Test Method
Density	1.46	--	g/cm <sup>3</sup>	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow	1.2	--	%	
Flow	0.30	--	%	
Water Absorption				ISO 62
Equilibrium, 23°C, 50% RH	1.5	--	%	
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus				ISO 527-2
--	12000	12000	MPa	
-40°C	12500	--	MPa	
80°C	11000	--	MPa	
100°C	10000	--	MPa	
120°C	7500	--	MPa	
140°C	5700	--	MPa	
160°C	5000	--	MPa	
Tensile Stress				ISO 527-2
Break	155	155	MPa	
Break, -40°C	180	--	MPa	
Break, 80°C	125	--	MPa	
Break, 100°C	115	--	MPa	
Break, 120°C	100	--	MPa	
Break, 140°C	80.0	--	MPa	
Break, 160°C	70.0	--	MPa	

UL and the UL logo are trademarks of UL LLC © 2020. All Rights Reserved.

The information presented here was acquired by UL from the producer of the product or material or original information provider. However, UL assumes no responsibility or liability for the accuracy of the information contained on this website and strongly encourages that upon final product or material selection information is validated with the manufacturer. This website provides links to other websites owned by third parties. The content of such third party sites is not within our control, and we cannot and will not take responsibility for the information or content.

# ForTii® F11

## DSM Engineering Plastics - Polyphthalamide

<b>Mechanical</b>	<b>Dry</b>	<b>Conditioned</b>	<b>Unit</b>	<b>Test Method</b>
Tensile Strain				ISO 527-2
Break	2.0	2.0	%	
Break, -40°C	2.2	--	%	
Break, 80°C	2.0	--	%	
Break, 100°C	2.0	--	%	
Break, 120°C	2.8	--	%	
Break, 140°C	3.6	--	%	
Break, 160°C	3.8	--	%	
Flexural Modulus	11500	11500	MPa	ISO 178
Flexural Stress	245	230	MPa	ISO 178
<b>Impact</b>	<b>Dry</b>	<b>Conditioned</b>	<b>Unit</b>	<b>Test Method</b>
Charpy Notched Impact Strength				ISO 179/1eA
23°C	10	10	kJ/m <sup>2</sup>	
Charpy Unnotched Impact Strength				ISO 179/1eU
23°C	50	50	kJ/m <sup>2</sup>	
<b>Thermal</b>	<b>Dry</b>	<b>Conditioned</b>	<b>Unit</b>	<b>Test Method</b>
Heat Deflection Temperature				ISO 75-2/A
1.8 MPa, Unannealed	305	--	°C	
Melting Temperature <sup>2</sup>	325	--	°C	ISO 11357-3
CLTE - Flow	3.0E-5	--	cm/cm/°C	ASTM D696
CLTE - Flow	2.0E-5	--	cm/cm/°C	ISO 11359-2
CLTE - Transverse	3.5E-5	--	cm/cm/°C	ASTM D696
CLTE - Transverse	6.5E-5	--	cm/cm/°C	ISO 11359-2
RTI Elec (0.35 mm)	140	--	°C	UL 746
Thermal Index - 5000 hr	163	--	°C	IEC 60216
<b>Electrical</b>	<b>Dry</b>	<b>Conditioned</b>	<b>Unit</b>	<b>Test Method</b>
Volume Resistivity	> 1.0E+15	> 1.0E+15	ohms-cm	IEC 60093
Electric Strength	33	33	kV/mm	IEC 60243-1
Relative Permittivity				IEC 60250
100 Hz	4.20	4.20		
1 MHz	3.90	3.90		
1.00 GHz	3.90	3.90		
10.0 GHz	3.90	3.80		
Comparative Tracking Index	600	--	V	IEC 60112
<b>Flammability</b>	<b>Dry</b>	<b>Conditioned</b>	<b>Unit</b>	<b>Test Method</b>
Flammability Classification				IEC 60695-11-10,
0.200 mm	V-0	--		-20
1.5 mm	V-0	--		

### Notes

<sup>1</sup> Typical properties: these are not to be construed as specifications.

<sup>2</sup> 10°C/min