

#### Product description

Ultramid® 2412GHF6 Black-E is a polyamide 66, reinforced with 33% of glass fiber, for injection moulding. This grade offers an excellent combination between thermal & mechanical properties

#### Injection Notes

The material is supplied in airtight bags, ready for use. In case that the virgin material has absorbed moisture, it must be dried with a dehumidified air drying equipment, dew point mini -20°C. Recommended time 2-4h

##### Injection Advice:

- For reinforced polyamides, BASF SE recommends the use of steel with a high content of carbon, and purified for polishing, to avoid or limit the abrasion. For example: X38CrMoV5-1 (EN Norm) - 1.2367 /1.2343 (DIN Norm) or X160CrMoV12 (EN Norm) - 1.2601 /1.2379 (DIN Norm). In the case of high requirements on surface quality a mould temperature of up to 120°C can be considered.
- The processing parameters like processing temperatures are a recommendation and can be adjusted in function of injection machine size, part geometry / design.

#### Disclaimer

The information contained in this document is given in good faith based on our current knowledge. It is only an indication and it is in no way binding. This information must on no account be used as a substitute for necessary prior tests which alone can ensure that a product is suitable for a given use. ANY WARRANTY OF PRODUCT PERFORMANCE, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED. Users are responsible for ensuring compliance with local legislation and for obtaining the necessary certifications and authorizations. Users are requested to check that they are in possession of the latest version of this document, and BASF SE is at their disposal to supply any additional information.

#### Safety Information

Detailed information regarding safety are available on the safety data sheet (MSDS). MSDS is sent with the first material order or available by contacting our customer services

#### Regulations Compliance

This product is not intended to be used for the following regulated market: food contact, drinking water, toys, cosmetics or medical devices.

This grade complies with RoHS Directive 2011/65/EU, 2015/863 and local regulations as amended.

#### Customer Services

Our customer services are not only concerned with manufacturing and supply of Engineering Plastics products. We are available to assist our customers in finding technical solutions that meet their requirements. Specific support is in particular offered on:

- Material selection
- Material testing
- Parts design advice, training for design engineers
- Part testing
- Design simulation
- Processing through different technologies
- Assembly and post-processing technology expertise
- Parts optimization through Computer Aided Design

## Product Information

Typical values for uncoloured product at 23 °C <sup>1)</sup>	Test method	Unit	Values <sup>2)</sup>
<b>General Properties</b>			
Asia Pacific	-	-	+
Processing: Injection moulding (M), Extrusion (E), Blow moulding (B)	-	-	M
Colour: black (bk), uncoloured (un), coloured (co), transparent (tr)	-	-	bk
Pellets	-	-	+
<b>Physical</b>			
Molding shrinkage (parallel)	ISO 294-4	%	0.40
Molding shrinkage (normal)	ISO 294-4	%	1.10
Water absorption, 24 h in water, 23 °C	ISO 62	%	0.8
Water absorption, equilibrium in water at 23°C	similar to ISO 62	%	5.5
Moisture absorption, equilibrium 23°C/50% r.h	similar to ISO 62	%	1.60
Density	ISO 1183	kg/m <sup>3</sup>	1390 / -
Density (ASTM)	ASTM D 792	g/cm <sup>3</sup>	1.39 / -
<b>Mechanical properties</b>			
			dry / cond.
Tensile modulus	ISO 527-1/-2	MPa	9700 / 7450
Yield stress, 50 mm/min	ISO 527-1/-2	MPa	200 / -
Tensile stress at yield, 2 in/min (ASTM)	ASTM D 638	MPa	200 / -
Stress at break	ISO 527-1/-2	MPa	145 / 95
Strain at break	ISO 527-1/-2	%	3 / 5
Tensile elongation at break, 2 in/min (ASTM)	ASTM D 638	%	3 / -
Flexural modulus	ISO 178	MPa	8600 / -
Flexural modulus (ASTM)	ASTM D 790	MPa	8900 / -
Flexural strength	ISO 178	MPa	195 / -
Flexural strength (ASTM)	ASTM D 790	MPa	215 / -
Charpy notched impact strength ISO 179/1eA (23°C)	ISO 179/1eA	kJ/m <sup>2</sup>	10 / -
Charpy impact strength ISO 179-1eU (23°C)	ISO 179/1eU	kJ/m <sup>2</sup>	70 / -
Izod notched impact strength ISO 180/A (23°C)	ISO 180/A	kJ/m <sup>2</sup>	11 / -
Izod notched impact strength ASTM D 256 (23 °C)	ASTM D 256	J/m	130 / -
<b>Thermal properties</b>			
HDT A (1.80 MPa)	ISO 75-1/-2	°C	250
HDT A (1.82 MPa), ASTM	ASTM D 648	°C	250
Melting temperature, DSC (10°C/min)	ISO 11357-1/-3	°C	262
<b>Electrical properties</b>			
			dry / cond.
Surface resistivity	IEC 62631-3-2	Ohm	6E14 / 1E12
Volume resistivity	IEC 62631-3-1	Ohm*m	1E13 / 1E11
Electric strength (d = 2.0 mm)	IEC 60243-1	kV/mm	34 / 29
Comparative tracking index, CTI, test liquid A	IEC 60112	-	450 / 425
Comparative tracking index, CTI M, test liquid B	IEC 60112	-	350 / -
<b>Flammability</b>			
Burning Behav. at thickness 0.8 mm	IEC 60695-11-10	class	HB
Glow Wire Flammability Index (1.6 mm)	IEC 60695-2-12	°C	700
Oxygen index	ISO 4589-1/-2	%	23
<b>Injection</b>			
Pre/Post-processing, Pre-drying, Temperature	-	°C	80
Pre/Post-processing, max. allowed water content	-	%	0.2
Injection molding cylinder temperature 1 (feed zone)	-	°C	270 - 280
Injection molding cylinder temperature 2 (compression)	-	°C	275 - 285
Injection molding cylinder temperature 3 (metering-zone, head room of screw)	-	°C	280 - 290
injection molding, Mold temperature, range	ISO 294	°C	70 - 100

### Footnotes

1) If product name or properties don't state otherwise.

2) The asterisk symbol "\*" signifies inapplicable properties.

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