

# Product Comparison

## Technical Data

### Product Description

AKROMID®  
A3 ICF 15 black (5056)  
(Dry)

AKROMID® A3 ICF 15 black (5056) is a 15% carbon fibre reinforced polyamide 6.6 with high flexural strength and good sliding properties  
Mechanically high stressed parts in all industries

Generic  
Nylon 66 - Carbon Fiber

This data represents typical values that have been calculated from all products classified as: Generic Nylon 66 - Carbon Fiber  
This information is provided for comparative purposes only.

General	AKROMID® A3 ICF 15 black (5056) (Dry)	Generic Nylon 66 - Carbon Fiber
Manufacturer / Supplier	<ul style="list-style-type: none"> <li>AKRO-PLASTIC GmbH</li> </ul>	<ul style="list-style-type: none"> <li>Generic</li> </ul>
Generic Symbol	<ul style="list-style-type: none"> <li>Nylon 66</li> </ul>	<ul style="list-style-type: none"> <li>Nylon 66</li> </ul>
Material Status	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>
Search for UL Yellow Card	<ul style="list-style-type: none"> <li>AKRO-PLASTIC GmbH</li> <li>AKROMID®</li> </ul>	--
Availability	<ul style="list-style-type: none"> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>	<ul style="list-style-type: none"> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>
Filler / Reinforcement	<ul style="list-style-type: none"> <li>Carbon Fiber, 15% Filler by Weight</li> </ul>	<ul style="list-style-type: none"> <li>Carbon Fiber</li> </ul>
Features	<ul style="list-style-type: none"> <li>High Strength</li> <li>Low Friction</li> </ul>	--
Uses	<ul style="list-style-type: none"> <li>Machine/Mechanical Parts</li> </ul>	--
Appearance	<ul style="list-style-type: none"> <li>Black</li> </ul>	--
Resin ID	<ul style="list-style-type: none"> <li>PA66 CF15</li> </ul>	--
Also Available In	--	<ul style="list-style-type: none"> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>



Physical	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
Density / Specific Gravity					
--	--	--	1.15 to 1.50	g/cm³	ASTM D792
--	--	--	1.16 to 1.39	g/cm³	ISO 1183
23°C	1.20	--	--	g/cm³	ISO 1183
Spiral Flow <sup>2</sup>	46.0	--	--	cm	Internal Method
Molding Shrinkage					
Flow	--	--	0.040 to 0.66	%	ASTM D955
Across Flow	--	--	0.36 to 2.0	%	ASTM D955
--	--	--	0.12 to 0.71	%	ISO 294-4
Across Flow	0.70 to 0.90	--	--	%	ISO 294-4
Flow	0.20 to 0.40	--	--	%	ISO 294-4
Water Absorption					
24 hr	--	--	0.43 to 1.0	%	ASTM D570
24 hr, 23°C	--	--	0.99 to 1.0	%	ISO 62
Saturation, 23°C	--	--	2.0 to 6.6	%	ISO 62
Equilibrium, 23°C, 50% RH	--	--	0.79 to 2.5	%	ISO 62
Viscosity Number	--	--	140 to 152	cm³/g	ISO 307
Humidity Absorption - 62% RH (70°C)	2.6	--	--	%	ISO 1110

Mechanical	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
Tensile Modulus					
--	--	--	7360 to 30000	MPa	ASTM D638
--	--	--	4740 to 28100	MPa	ISO 527-1
--	12000	7400	--	MPa	ISO 527-1/1



Mechanical	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
<b>Tensile Strength</b>					
Yield	--	--	105 to 290	MPa	ASTM D638
Yield	--	--	130 to 243	MPa	ISO 527-2
Break	--	--	150 to 268	MPa	ASTM D638
Break	--	--	106 to 269	MPa	ISO 527-2
Break	170	110	--	MPa	ISO 527-2/5
--	--	--	127 to 253	MPa	ASTM D638
--	--	--	144 to 241	MPa	ISO 527-2
<b>Tensile Elongation</b>					
Yield	--	--	1.5 to 3.6	%	ASTM D638
Yield	--	--	1.4 to 7.7	%	ISO 527-2
Break	--	--	0.97 to 4.0	%	ASTM D638
Break	--	--	0.93 to 3.0	%	ISO 527-2
Break	3.0	5.0	--	%	ISO 527-2/5
<b>Flexural Modulus</b>					
--	--	--	6860 to 25200	MPa	ASTM D790
--	--	--	6770 to 23400	MPa	ISO 178
-- <sup>3</sup>	10400	7000	--	MPa	ISO 178
<b>Flexural Strength</b>					
--	--	--	179 to 376	MPa	ASTM D790
--	--	--	178 to 406	MPa	ISO 178
-- <sup>3</sup>	250	170	--	MPa	ISO 178
Break	--	--	237 to 388	MPa	ASTM D790
Flexural Strain at Break <sup>4</sup>	3.0	5.0	--	%	ISO 178
Coefficient of Friction	--	--	0.090 to 0.37		ASTM D1894
Wear Factor	--	--	0.0 to 43	10 <sup>-8</sup> mm <sup>3</sup> /N·m	ASTM D3702



Impact	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
Charpy Notched Impact Strength					
--	--	--	3.0 to 12	kJ/m <sup>2</sup>	ISO 179
-30°C	4.0	--	--	kJ/m <sup>2</sup>	ISO 179/1eA
23°C	5.0	6.0	--	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy Unnotched Impact Strength					
--	--	--	29 to 67	kJ/m <sup>2</sup>	ISO 179
-30°C	35	--	--	kJ/m <sup>2</sup>	ISO 179/1eU
23°C	45	65	--	kJ/m <sup>2</sup>	ISO 179/1eU
Notched Izod Impact					
--	--	--	41 to 110	J/m	ASTM D256
--	--	--	3.9 to 12	kJ/m <sup>2</sup>	ISO 180
Unnotched Izod Impact					
--	--	--	430 to 1100	J/m	ASTM D4812
--	--	--	23 to 69	kJ/m <sup>2</sup>	ISO 180
Instrumented Dart Impact					
--	--	--	5.00 to 15.2	J	ASTM D3763
--	--	--	1.00 to 4.00	J	ISO 6603-2
<b>Hardness</b>	<b>AKROMID® A3 ICF 15 black (5056) (Dry)</b>	<b>(Conditioned)</b>	<b>Generic Nylon 66 - Carbon Fiber</b>	<b>Unit</b>	<b>Test Method</b>
Rockwell Hardness	--	--	110 to 122		ASTM D785
<b>Thermal</b>	<b>AKROMID® A3 ICF 15 black (5056) (Dry)</b>	<b>(Conditioned)</b>	<b>Generic Nylon 66 - Carbon Fiber</b>	<b>Unit</b>	<b>Test Method</b>
Deflection Temperature Under Load					
0.45 MPa, Unannealed	--	--	254 to 261	°C	ASTM D648
0.45 MPa, Unannealed	--	--	249 to 261	°C	ISO 75-2/B
1.8 MPa, Unannealed	--	--	231 to 258	°C	ASTM D648
1.8 MPa, Unannealed	245	--	239 to 256	°C	ISO 75-2/A
Continuous Use Temperature	--	--	119 to 122	°C	ASTM D794
Glass Transition Temperature	--	--	5.00 to 72.5	°C	ISO 11357-2
Vicat Softening Temperature	--	--	230 to 256	°C	ISO 306



Thermal	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
Melting Temperature					
--	--	--	262	°C	
--	--	--	258 to 263	°C	ISO 11357-3
-- <sup>5</sup>	262	--	--	°C	ISO 11357-3
--	--	--	256 to 265	°C	ISO 3146
CLTE					
Flow	--	--	9.7E-6 to 7.0E-5	cm/cm/°C	ASTM D696
Flow	--	--	4.0E-6 to 2.6E-5	cm/cm/°C	ISO 11359-2
Transverse	--	--	8.0E-6 to 9.4E-5	cm/cm/°C	ASTM D696
Transverse	--	--	2.5E-5 to 1.1E-4	cm/cm/°C	ISO 11359-2
Thermal Conductivity	--	--	0.30 to 1.4	W/m/K	ISO 8302
RTI Imp	--	--	65.0 to 105	°C	UL 746B
Electrical	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
Surface Resistivity					
--	--	--	10 to 2.5E+10	ohms	ASTM D257
--	1.0E+5	1.0E+5	4.0 to 1.1E+11	ohms	IEC 60093
--	--	--	10 to 2.5E+7	ohms	IEC 62631-3-2
Volume Resistivity					
--	--	--	1.0 to 1.2E+8	ohms·cm	ASTM D257
--	--	--	1.0 to 9.5E+11	ohms·cm	IEC 60093
Insulation Resistance	--	--	1.0E+3 to 2.5E+6	ohms	IEC 60167
Flammability	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
Burning Rate	--	--	100	mm/min	ISO 3795
Flame Rating (1.6 mm)	HB	--	--		UL 94
Glow Wire Flammability Index	--	--	743 to 960	°C	IEC 60695-2-12



Additional Information	AKROMID® A3 ICF 15 black (5056) (Dry)	(Conditioned)	Generic Nylon 66 - Carbon Fiber	Unit	Test Method
Reinforcement Content	15	--	--	%	ISO 1172

  

Injection	AKROMID® A3 ICF 15 black (5056) (Dry)	Generic Nylon 66 - Carbon Fiber	Unit
Drying Temperature	--	79 to 83	°C
Drying Time	--	3.0 to 5.8	hr
Dew Point	--	-18	°C
Suggested Max Moisture	--	0.097 to 0.20	%
Rear Temperature	--	269 to 300	°C
Middle Temperature	--	280 to 303	°C
Front Temperature	--	281 to 302	°C
Nozzle Temperature	--	276 to 290	°C
Processing (Melt) Temp	--	280 to 294	°C
Mold Temperature	--	80 to 107	°C
Injection Pressure	--	95.3 to 97.5	MPa
Holding Pressure	--	60.0 to 75.0	MPa
Back Pressure	--	0.172 to 0.524	MPa
Screw Speed	--	45 to 57	rpm

**Injection Notes**

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**Notes**

- <sup>1</sup> Typical properties: these are not to be construed as specifications.
- <sup>2</sup> Mold Temperature: 100°C, Melt Temperature: 320°C, Injection Pressure: 750 bar, 2.00 mm
- <sup>3</sup> 2.0 mm/min
- <sup>4</sup> 2 mm/min
- <sup>5</sup> 10°C/min

