

## Torlon<sup>®</sup> 4301 polyamide-imide

Torlon® 4301 is a wear-resistant grade of polyamide-imide (PAI) resin. It has a good balance of mechanical properties and wear resistance. It offers high flexural and compressive strength with a low coefficient of friction and outstanding wear resistance at both high velocity and high pressure conditions.

Torlon® PAI has the highest strength and stiffness of any thermoplastic up to 275°C (525°F). It has outstanding resistance to wear, creep, and chemicals.

Potential applications for Torlon® 4301 polyamideimide include thrust washers, spline liners, valve seats, bushings, bearings, wear rings, cams and other applications requiring strength at high temperature and resistance to wear.

Injection Molding Grades:

- High Flow: Torlon® 4301 HF
- Low Flow: Torlon® 4301 LF
- Low Flow Small Pellets: Torlon® 4301 LFSP

Extrustion Grades:

- High Flow: Torlon® 4301-EXT
- Higher Flow: Torlon® 4301-HQ

General		
Material Status	<ul> <li>Commercial: Active</li> </ul>	
Availability	<ul> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> <li>Europe</li> </ul>	<ul><li> Latin America</li><li> North America</li></ul>
Additive	<ul> <li>PTFE + Graphite Lubricant</li> </ul>	
Features	<ul> <li>Chemical Resistant</li> <li>Creep Resistant</li> <li>Flame Retardant</li> <li>High Heat Resistance</li> <li>High Temperature Strength</li> </ul>	<ul> <li>Low Friction</li> <li>Self Lubricating</li> <li>Semi Conductive</li> <li>Wear Resistant</li> </ul>
Uses	<ul> <li>Aerospace Applications</li> <li>Aircraft Applications</li> <li>Automotive Applications</li> <li>Bearings</li> <li>Bushings</li> <li>Cams</li> <li>Gears</li> <li>Industrial Applications</li> <li>Industrial Parts</li> </ul>	<ul> <li>Machine/Mechanical Parts</li> <li>Metal Replacement</li> <li>Oil/Gas Applications</li> <li>Rollers</li> <li>Sealing Devices</li> <li>Seals</li> <li>Thrust Washer</li> <li>Transmission Applications</li> <li>Washer</li> </ul>
RoHS Compliance	RoHS Compliant	
Automotive Specifications	• BOSCH N28 BN05-OX2 N28 BN05-OX2, BN0512-CDSX-0Cgr01SO1	
Forms	Pellets	
Processing Method	<ul><li>Injection Molding</li><li>Machining</li></ul>	Profile Extrusion

Molding Shrinkage - Flow         0.35 to 0.60 %         ASTM D955           Water Absorption (24 hr)         0.28 %         ASTM D570           Mechanical         Typical Value Unit         Test method           Tensile Modulus          6830 MPa         ASTM D638            6830 MPa         ASTM D638             6830 MPa         ASTM D638            6650 MPa         ASTM D638            6650 MPa         ASTM D638            6650 MPa         ASTM D708           Tensile Etorgation             Break         3.3 %         ASTM D709           Tensile Etorgation             Break         3.3 %         ASTM D709           23°C         6890 MPa            23°C         215 MPa            23°C         112 MPa            Compressive Modulus         5310 MPa         ASTM D695           Compressive Modulus         5310 MPa         ASTM D695           Compressive Strength         166 MPa         ASTM D695           Compressive Modulus         0.31        4          4	Physical	Typical Value	Unit	Test method
Water Absorption (24 hr)         0.28 %         ASTM D570           Mechanical         Typical Value Unit         Test method           Tensile Modulus	Density / Specific Gravity	1.46		ASTM D792
Mechanical       Typical Value Unit       Test method         Tensile Modulus        6830 MPa       ASTM D638        2       6550 MPa       ASTM D638         Ensile Strength       113 MPa       ASTM D638         Tensile Strength       113 MPa       ASTM D708         Tensile Elongation       Break       3.3 %       ASTM D638         Break       3.3 %       ASTM D790       23°C       6890 MPa         23°C       6890 MPa       23°C       23°C       6890 MPa         23°C       215 MPa       ASTM D790       23°C       215 MPa         23°C       215 MPa       23°C       215 MPa       23°C         Compressive Modulus       5310 MPa       ASTM D790       23°C       215 MPa         23°C       215 MPa       337 MPa       ASTM D695         Compressive Modulus       5310 MPa       ASTM D695       Compressive Strength       166 MPa       ASTM D695         Coefficient of Friction      4       0.31      5       0.38      7       0.030      5       0.38      7       0.030      7       0.030      7       0.030      7       0.030      7       0.030      7       0.030	Molding Shrinkage - Flow	0.35 to 0.60	%	ASTM D955
Tensile Modulus	Water Absorption (24 hr)	0.28	%	ASTM D570
6830 MPa         ASTM D638          2         6550 MPa         ASTM D1708           Tensile Strength         113 MPa         ASTM D1708           Tensile Stress <sup>3</sup> 163 MPa         ASTM D1708           Tensile Elongation         Break         3.3 %         ASTM D1708           Break         3.3 %         ASTM D1708           Break <sup>2</sup> 7.0 %         ASTM D1708           Elexural Modulus         ASTM D790         23°C         6890 MPa           23°C         6890 MPa         ASTM D790           23°C         215 MPa         23°C           23°C         215 MPa         331 MD790           23°C         12 MPa         ASTM D695           Compressive Modulus         Compressive Strength         166 MPa         ASTM D695           Coefficient of Friction         ASTM D702         31        5          5         0.39        5         10.18        7           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi) <td< td=""><td>Mechanical</td><td>Typical Value</td><td>Unit</td><td>Test method</td></td<>	Mechanical	Typical Value	Unit	Test method
2         6550 MPa         ASTM D1708           Tensile Strength         113 MPa         ASTM D638           Tensile Elongation         Ensile Elongation         Ensile Elongation           Break         3.3 %         ASTM D1708           Plexural Modulus         3.3 %         ASTM D1708           23°C         6890 MPa         ASTM D790           23°C         23°C         6890 MPa           23°C         215 MPa         ASTM D790           23°C         215 MPa         23°C           23°C         215 MPa         ASTM D790           23°C         215 MPa         23°C           23°C         215 MPa         ASTM D790           23°C         215 MPa         23°C           23°C         215 MPa         ASTM D790           23°C         215 MPa         ASTM D790           23°C         10         ASTM D790           23°C         120 MPa         ASTM D790           Compressive Modulus         5310 MPa         ASTM D790           Compressive Strength         166 MPa         ASTM D790           Coefficient of Friction         ASTM D3702         ASTM D3702           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0 ftHohr	Tensile Modulus			
Correction         Correction         Correction           Tensile Strength         113         MPa         ASTM D638           Tensile Elongation         33         %         ASTM D638           Break         3.3         %         ASTM D638           Break         7.0         %         ASTM D790           23°C         6890         MPa            Compressive Strength         ASTM D790         ASTM D635           Compressive Strength         166         MPa         ASTM D636           Compressive Strength         166         MPa         ASTM D63702          4         0.31        5         0.39        6          7         0.030         MPa         STM D3702         Thrinh~10/           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         fith/hr         Thrinh~10/           Dry: 0.25 m/s, 6.9 MPa (75 fpm		6830	MPa	ASTM D638
Tensile Stress <sup>3</sup> 163         MPa         ASTM D1708           Tensile Elongation         Break         3.3 %         ASTM D638           Break <sup>2</sup> 7.0 %         ASTM D1708           Flexural Modulus         ASTM D790         23°C         6890         MPa           23°C         6890         MPa         23°C         6890         MPa           23°C         215         MPa         ASTM D790         23°C         215         MPa           23°C         215         MPa         ASTM D695         Compressive Modulus         5310         MPa         ASTM D695           Compressive Strength         166         MPa         ASTM D695         Coefficient of Friction         ASTM D695	<sup>2</sup>	6550	MPa	ASTM D1708
Tensile Elongation       Break       3.3 %       ASTM D638         Break 2       7.0 %       ASTM D708         Elevaral Modulus       ASTM D790       23°C       6890 MPa         23°C       6890 MPa       ASTM D790         23°C       6890 MPa       ASTM D790         23°C       29°C       4960 MPa         Strong Pressive Modulus       5310 MPa       ASTM D695         Compressive Strength       166 MPa       ASTM D695         Coefficient of Friction       ASTM D695       ASTM D3702        4       0.31      5       0.39        5       0.39      6       0.18        7       0.030       In*minA-10/       ftlibrin         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0       in*minA-10/       ftlibrin         Dry: 0.25 m/s, 3.4 MPa (800 fpm, 31.25 psi)       17.0       in*minA-10/       ftlibrin         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000       9.00       in*minA-10/       ftlibrin         Iubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in*minA-10/       ftlibrin         Iubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in*minA-10/       ftlibrin         Iubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)	Tensile Strength	113	MPa	ASTM D638
Break         3.3 %         ASTM D638           Break 2         7.0 %         ASTM D709           Flexural Modulus         ASTM D790         23°C           232°C         4960 MPa         ASTM D790           23°C         4960 MPa         ASTM D790           23°C         4960 MPa         ASTM D790           23°C         112 MPa         Compressive Modulus         S310 MPa         ASTM D695           Compressive Modulus         5310 MPa         ASTM D695         Compressive Strength         166 MPa         ASTM D695           Compressive Strength         166 MPa         ASTM D695         Coefficient of Friction         ASTM D3702          4         0.31        5         0.39        6         0.18          7         0.030         Wear Factor         ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         in³-min^-10/ftlb-hr           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         17.0         itlb-hr         Itlb-hr         Itlb-hr           Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000         9.00         in³-min^-10/ftlb-hr         Itlb-hr         Itlb-hr           Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)         0.400         in³-min^-10/ftlb-hr         Itlb-hr           Lubr	Tensile Stress <sup>3</sup>	163	MPa	ASTM D1708
Break <sup>2</sup> 7.0 %         ASTM D1708           Flexural Modulus         ASTM D790         23°C         6890         MPa           232°C         4960         MPa         ASTM D790           23°C         215         MPa         ASTM D790           23°C         112         MPa         ASTM D790           Compressive Modulus         5310         MPa         ASTM D695           Compressive Strength         166         MPa         ASTM D695           Coefficient of Friction         ASTM D3702        4         0.31          5         0.39        5         0.39        7          7         0.030         Wear Factor         ASTM D3702           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         in*min^-10/ ft:lb-hr         Itb-hr           Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000         9.00         in*min^-10/ ft:lb-hr         Itb-hr           Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)         0.400         in*min^-10/ ft:lb-hr         Itb-hr <td< td=""><td>Tensile Elongation</td><td></td><td></td><td></td></td<>	Tensile Elongation			
Flexural Modulus         ASTM D790           23°C         6890 MPa           23°C         4960 MPa           23°C         4960 MPa           Flexural Strength         ASTM D790           23°C         215 MPa           23°C         112 MPa           Compressive Modulus         5310 MPa         ASTM D695           Compressive Strength         166 MPa         ASTM D695           Coefficient of Friction         ASTM D3702        4          4         0.31        5         0.39          6         0.18        7         0.030           Wear Factor         ASTM D3702         ASTM D3702           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         fin*minA~10/           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         17.0         fit/bhr           Dry: 0.25 m/s, 6.9 MPa (75 fpm, 1000         9.00         fin*minA~10/           psi)         1.0         in*minA~10/         ft/bhr           Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000         9.00         fin*minA~10/           psi)         Unit Cett method         Notched Izod Impact         44 J/m           Notched Izod Impact         44 J/m         ASTM D256           Unnotched Izod Imp	Break	3.3	%	ASTM D638
23°C         6890         MPa           232°C         4960         MPa           Flexural Strength         ASTM D790           23°C         215         MPa           Compressive Modulus         5310         MPa           Compressive Strength         166         MPa           Compressive Strength         166         MPa         ASTM D695           Compressive Strength         0.31	Break <sup>2</sup>	7.0	%	ASTM D1708
232°C         4960 MPa           Flexural Strength         ASTM D790           23°C         215 MPa           232°C         112 MPa           Compressive Modulus         5310 MPa           Compressive Strength         166 MPa           Coefficient of Friction         ASTM D695          4         0.31          5         0.39          7         0.030           Wear Factor         ASTM D3702           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0           Dry: 0.25 m/s, 5.2 MPa (800 fpm, 31.25 psi)         17.0           Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000         9.00           psi)         0.400           Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)         0.400           Motched Izod Impact         64 J/m           Motched Izod Impact         64 J/m           Motched Izod Impact         64 J/m           Deflection Temperature Under Load         ASTM D648           1.8 MPa, Unannealed         279 °C           Thermal Conductivity         0.53 W/m/K         ASTM C177	Flexural Modulus			ASTM D790
Flexural Strength         ASTM D790           23°C         215 MPa           232°C         112 MPa           Compressive Modulus         5310 MPa         ASTM D695           Compressive Strength         166 MPa         ASTM D695           Coefficient of Friction         ASTM D3702        4          4         0.31	23°C	6890	MPa	
23°C       215 MPa         232°C       112 MPa         Compressive Modulus       5310 MPa         Compressive Strength       166 MPa         ASTM D695         Compressive Strength       166 MPa        4       0.31        5       0.39        6       0.18        7       0.030         Wear Factor       ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0       in³ min^-10/         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       17.0       in³ min^-10/         Dry: 0.25 m/s, 3.4 MPa (800 fpm, 31.25 psi)       17.0       in³ min^-10/         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000       9.00       in³ min^-10/         tilb-hr       Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³ min^-10/         tubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³ min^-10/         tubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³ min^-10/         tubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³ min^-10/         tubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³ min^-10/         tubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³ min^-10/         tubricated:	232°C	4960	MPa	
232°C         112         MPa           Compressive Modulus         5310         MPa         ASTM D695           Compressive Strength         166         MPa         ASTM D695           Coefficient of Friction         ASTM D3702        4         0.31          5         0.39        6         0.18          7         0.030        7         0.030           Wear Factor         ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         in®min^-10/ ft/lb-hr           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         in®min^-10/ ft/lb-hr         Insecccccccccccccccccccccccccccccccccccc	Flexural Strength			ASTM D790
Compressive Modulus5310MPaASTM D695Compressive Strength166MPaASTM D695Coefficient of FrictionASTM D370240.3150.3960.1870.030Wear FactorASTM D3702Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)14.0In*minA-10/ ft:lb-hrDry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)17.0Iubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)9.00Iubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)0.400ImpactTypical ValueInpactTypical ValueNotched Izod Impact64J/mASTM D256Unnotched Izod Impact410J/mASTM D4812ThermalTypical ValueDeflection Temperature Under LoadASTM D6481.8 MPa, Unannealed279 °CThermal Conductivity0.53W/m/KASTM C177	23°C	215	MPa	
Compressive Strength         166         MPa         ASTM D695           Coefficient of Friction         ASTM D3702        4         0.31          5         0.39        6         0.18          7         0.030         0         0           Wear Factor         ASTM D3702         ASTM D3702           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         in*min^-10/ ft·lb·hr         ASTM D3702           Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)         17.0         in*min^-10/ ft·lb·hr         inb·mr           Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000         9.00         in*min^-10/ ft·lb·hr         inb·mr           Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)         0.400         in*min^-10/ ft·lb·hr         Inb·hr           Impact         Typical Value         Unit         Test method           Notched Izod Impact         64         J/m         ASTM D256           Unnotched Izod Impact         410         J/m         ASTM D4812           Thermal         Typical Value         Unit         Test method           Deflection Temperature Under Load         ASTM D648         ASTM D648           1.8 MPa, Unannealed         279 °C         Thermal Conductivity         0.53 W/m/K         ASTM C177	232°C	112	MPa	
Coefficient of Friction         ASTM D3702          4         0.31          5         0.39          6         0.18          7         0.030           Wear Factor         ASTM D3702           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         14.0         in³-minA-10/ ft:Ib-hr           Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)         17.0         in³-minA-10/ ft:Ib-hr           Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)         9.00         in³-minA-10/ ft:Ib-hr           Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)         0.400         in³-minA-10/ ft:Ib-hr           Impact         Typical Value Unit         Test method           Notched Izod Impact         64 J/m         ASTM D256           Unnotched Izod Impact         410 J/m         ASTM D4812           Thermal         Typical Value Unit         Test method           Deflection Temperature Under Load         ASTM D6488         ASTM D6488           1.8 MPa, Unannealed         279 °C         Thermal Conductivity         0.53 W/m/K	Compressive Modulus	5310	MPa	ASTM D695
4       0.31        5       0.39        6       0.18        7       0.030         Wear Factor       ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0       in³·min^-10/ ft·lb-hr         Dry: 0.25 m/s, 0.2 MPa (800 fpm, 31.25 psi)       17.0       in³·min^-10/ ft·lb-hr         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)       9.00       in³·min^-10/ ft·lb-hr         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³·min^-10/ ft·lb-hr         Impact       Typical Value       Unit       Test method         Notched Izod Impact       64       J/m       ASTM D256         Unnotched Izod Impact       410       J/m       ASTM D4812         Thermal       Typical Value       Unit       Test method         Deflection Temperature Under Load       ASTM D648       ASTM D648         1.8 MPa, Unannealed       279 °C       C         Thermal Conductivity       0.53       W/m/K       ASTM C177	Compressive Strength	166	MPa	ASTM D695
5       0.39        6       0.18        7       0.030         Wear Factor       ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0       in³·minA-10/ ft·lb·hr         Dry: 0.25 m/s, 6.9 MPa (50 fpm, 500 psi)       17.0       in³·minA-10/ ft·lb·hr         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000       9.00       in³·minA-10/ ft·lb·hr         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³·minA-10/ ft·lb·hr         Impact       Typical Value Unit       Test method         Notched Izod Impact       64 J/m       ASTM D256         Unnotched Izod Impact       410 J/m       ASTM D4812         Thermal       Typical Value Unit       Test method         Deflection Temperature Under Load       ASTM D648       1.8 MPa, Unannealed         1.8 MPa, Unannealed       279 °C       C         Thermal Conductivity       0.53 W/m/K       ASTM C177	Coefficient of Friction			ASTM D3702
6       0.18        7       0.030         Wear Factor       ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0       in³min^-10/ft·lb·hr         Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)       17.0       in³min^-10/ft·lb·hr         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000       9.00       in³min^-10/ft·lb·hr         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³-min^-10/ft·lb·hr         Impact       Typical Value Unit       Test method         Notched Izod Impact       64 J/m       ASTM D256         Unnotched Izod Impact       410 J/m       ASTM D4812         Thermal       Typical Value Unit       Test method         Deflection Temperature Under Load       ASTM D648       1.8 MPa, Unannealed         1.8 MPa, Unannealed       279 °C       Thermal Conductivity       0.53 W/m/k	4	0.31		
7       0.030         Wear Factor       ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0       in³·min^-10/         Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)       17.0       in³·min^-10/         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000       9.00       in³·min^-10/         psi)       0.400       in³·min^-10/         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in³·min^-10/         Impact       Typical Value       Unit       Test method         Notched Izod Impact       64       J/m       ASTM D256         Unnotched Izod Impact       410       J/m       ASTM D4812         Thermal       Typical Value       Unit       Test method         Deflection Temperature Under Load       ASTM D648       1.8 MPa, Unannealed       279 °C         Thermal Conductivity       0.53       W/m/K       ASTM C177	5	0.39		
Wear Factor       ASTM D3702         Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0 ft·lb·hr         Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)       17.0 ft·lb·hr         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)       9.00 ft·lb·hr         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400 ft·lb·hr         Impact       Typical Value Unit       Test method         Notched Izod Impact       64 J/m       ASTM D256         Unnotched Izod Impact       410 J/m       ASTM D4812         Thermal       Typical Value Unit       Test method         ASTM D4812       ASTM D4812       ASTM D4812         Thermal       Typical Value Unit       Test method         18 MPa, Unannealed       279 °C       Thermal Conductivity       0.53 W/m/K	6	0.18		
Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)       14.0       in <sup>3</sup> ·min^-10/         Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)       17.0       in <sup>3</sup> ·min^-10/         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000       9.00       in <sup>3</sup> ·min^-10/         psi)       9.00       in <sup>3</sup> ·min^-10/         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400       in <sup>3</sup> ·min^-10/         Mpact       Typical Value Unit       Test method         Notched Izod Impact       64       J/m       ASTM D256         Unnotched Izod Impact       410       J/m       ASTM D4812         Thermal       Typical Value Unit       Test method         Deflection Temperature Under Load       279 °C       C         Thermal Conductivity       0.53       W/m/K       ASTM C177	7	0.030		
Dry: 0.25 m/s, 3.4 MPd (50 rpm, 300 psi)       14.0 ft:lb-hr         Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)       17.0 ft:lb-hr         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)       9.00 ft:lb-hr         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400 ft:lb-hr         Impact       Typical Value Unit         Impact       Typical Value Unit         Notched Izod Impact       64 J/m         ASTM D256         Unnotched Izod Impact       410 J/m         Thermal       Typical Value Unit         Test method         ASTM D4812         Thermal       279 °C         Thermal Conductivity       0.53 W/m/K	Wear Factor			ASTM D3702
Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)       17.0 ft·lb·hr         Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)       9.00 ft·lb·hr         Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)       0.400 ft·lb·hr         Impact       Typical Value Unit       Test method         Notched Izod Impact       64 J/m       ASTM D256         Unnotched Izod Impact       410 J/m       ASTM D4812         Thermal       Typical Value Unit       Test method         Deflection Temperature Under Load       ASTM D648       1.8 MPa, Unannealed       279 °C         Thermal Conductivity       0.53 W/m/K       ASTM C177	Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)	14.0		
psi)9.00ft·lb·hrLubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)0.400in³·min^-10/ ft·lb·hrImpactTypical ValueUnitTest methodNotched Izod Impact64J/mASTM D256Unnotched Izod Impact410J/mASTM D4812ThermalTypical ValueUnitTest methodDeflection Temperature Under Load279°C1.8 MPa, Unannealed279°CThermal Conductivity0.53W/m/KASTM C177	Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)	17.0		
Lubricated: 4 m/s, 5.2 MPd (800 fpm, 750 psi)       0.400 ft·lb·hr         Impact       Typical Value Unit       Test method         Notched Izod Impact       64 J/m       ASTM D256         Unnotched Izod Impact       410 J/m       ASTM D4812         Thermal       Typical Value Unit       Test method         Deflection Temperature Under Load       ASTM D648         1.8 MPa, Unannealed       279 °C         Thermal Conductivity       0.53 W/m/K       ASTM C177		9.00		
Notched Izod Impact64 J/mASTM D256Unnotched Izod Impact410 J/mASTM D4812ThermalTypical Value UnitTest methodDeflection Temperature Under LoadASTM D6481.8 MPa, Unannealed279 °CThermal Conductivity0.53 W/m/K	Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)	0.400		
Notched Izod Impact64 J/mASTM D256Unnotched Izod Impact410 J/mASTM D4812ThermalTypical Value UnitTest methodDeflection Temperature Under LoadASTM D6481.8 MPa, Unannealed279 °CThermal Conductivity0.53 W/m/KASTM C177	Impact	Typical Value	Unit	Test method
Unnotched Izod Impact410 J/mASTM D4812ThermalTypical Value UnitTest methodDeflection Temperature Under LoadASTM D6481.8 MPa, Unannealed279 °CThermal Conductivity0.53 W/m/K				ASTM D256
Deflection Temperature Under LoadASTM D6481.8 MPa, Unannealed279 °CThermal Conductivity0.53 W/m/KASTM C177		410	J/m	ASTM D4812
1.8 MPa, Unannealed279 °CThermal Conductivity0.53 W/m/KASTM C177	Thermal	Typical Value	Unit	Test method
Thermal Conductivity0.53 W/m/KASTM C177	Deflection Temperature Under Load			ASTM D648
	1.8 MPa, Unannealed	279	°C	
Coefficient of Linear Thermal Expansion 2.5E-5 cm/cm/°C ASTM D696	Thermal Conductivity	0.53	W/m/K	ASTM C177
	Coefficient of Linear Thermal Expansion	2.5E-5	cm/cm/°C	ASTM D696

Electrical	Typical Value Unit	Test method
Surface Resistivity	8.0E+17 ohms	ASTM D257
Volume Resistivity	8.0E+15 ohms∙cm	ASTM D257
Injection	Typical Value Unit	
Drying Temperature	177 °C	
Drying Time	3.0 hr	
Suggested Max Moisture	0.050 %	
Rear Temperature	304 °C	
Nozzle Temperature	371 °C	
Mold Temperature	199 to 216 °C	
Back Pressure	6.89 MPa	
Screw Speed	50 to 100 rpm	
Screw L/D Ratio	18.0:1.0 to 24.0:1.0	

## Injection Notes

Minimum drying conditions: 3 hours at 350°F (177°C), 4 hours at 300°F (149°C), or 16 hours at 250°F (121°C). Compression Ratio: 1:1 to 1.5:1

Begin hold pressure at a high setting 6,000–8,000 psi (41.37–55.16 MPa), for several seconds, then drop off to 3,000–5,000 psi (20.69–34.48 MPa), for the duration of the hold pressure sequence.

Molded parts must be post cured.

## Notes

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

<sup>1</sup> Material should be Tempered (Cured).

<sup>2</sup> ASTM Test Method D1708 has been used to measure the tensile properties of PAI and similar materials because the small test specimen conserved material.

Today the most widely used specimen is the Type 1 bar of ASTM D638. These D1708 values are included for historical purposes and they should not be compared to the D638 values.

<sup>3</sup> ASTM Test Method D1708 has been used to measure the tensile properties of PAI and similar materials because the small test specimen conserved material. Today the most widely used specimen is the Type 1 bar of ASTM D638. These D1708 values are included for historical purposes and they should not be compared to the D638 values.

<sup>4</sup> Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)

<sup>5</sup> Dry: 4 m/s, 0.2 MPa, (800 fpm, 31.25 psi)

<sup>6</sup> Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)

<sup>7</sup> Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)

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