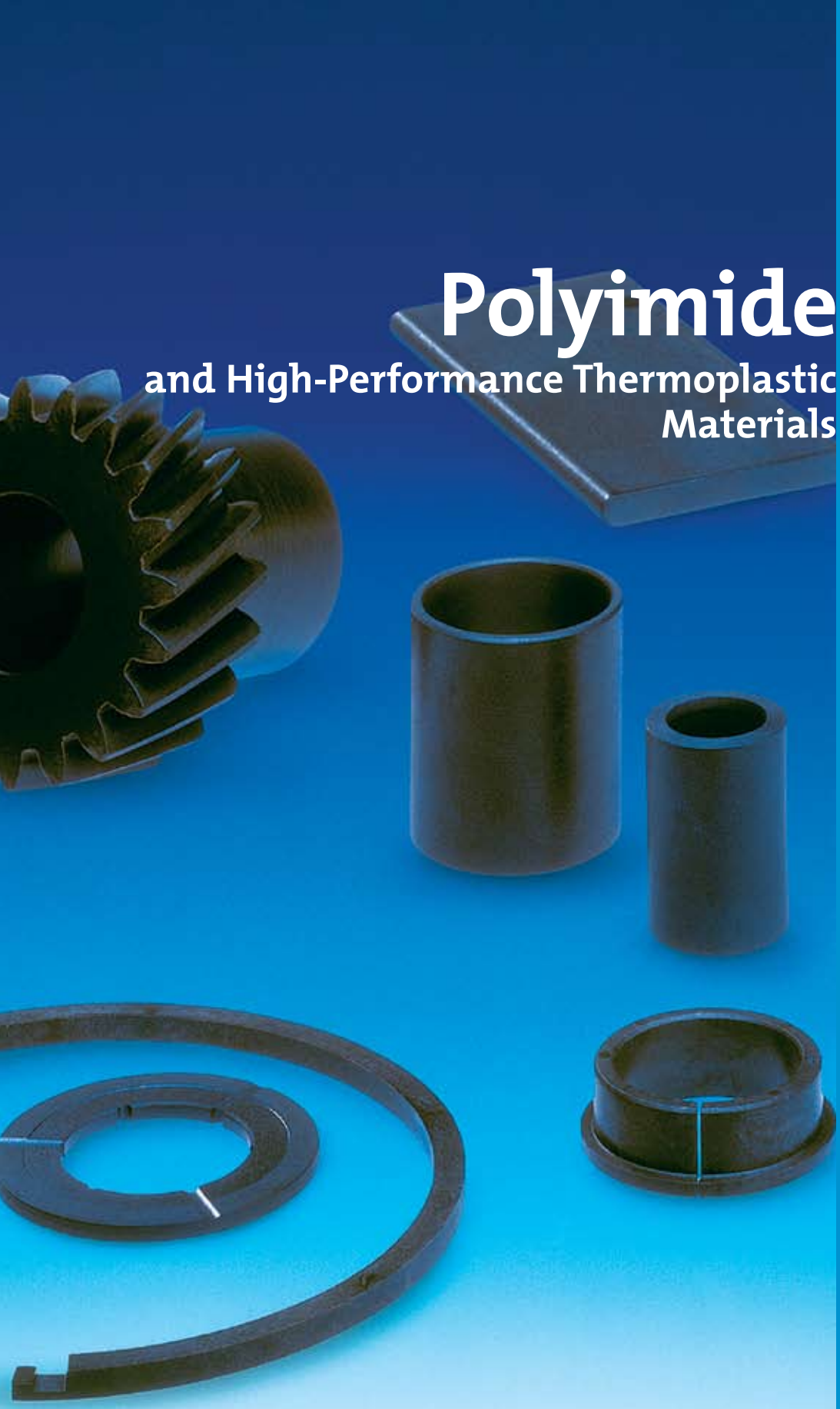

Polyimide and High-Performance Thermoplastic Materials

MELDIN®

- Temperature from Cryogenic to 600°F (315°C)
- Intermittently up to 900°F (482°C)
- Self-lubricating properties

Available as:

- Machined part
- Stock shape
- Custom molded

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Principal Features of MELDIN® 3100

Excellent Mechanical Properties

MELDIN® 3100 materials have excellent mechanical properties, in tension and compression, and maintain an impressive level of these attributes as operating temperatures increase. These properties add extreme strength and rigidity to component parts, even in narrow cross-section.

Broad Design Flexibility

Since MELDIN® 3100 components are manufactured by an injection molding process, extremely intricate as-molded part designs are available. Injection molding allows for close tolerances, without the complication and cost of secondary machining.

No Post Cure

Typically, MELDIN® 3100 molded components require no post cure. Product deliveries are enhanced through reduced lead times and brief manufacturing cycles.

Good Chemical Resistance

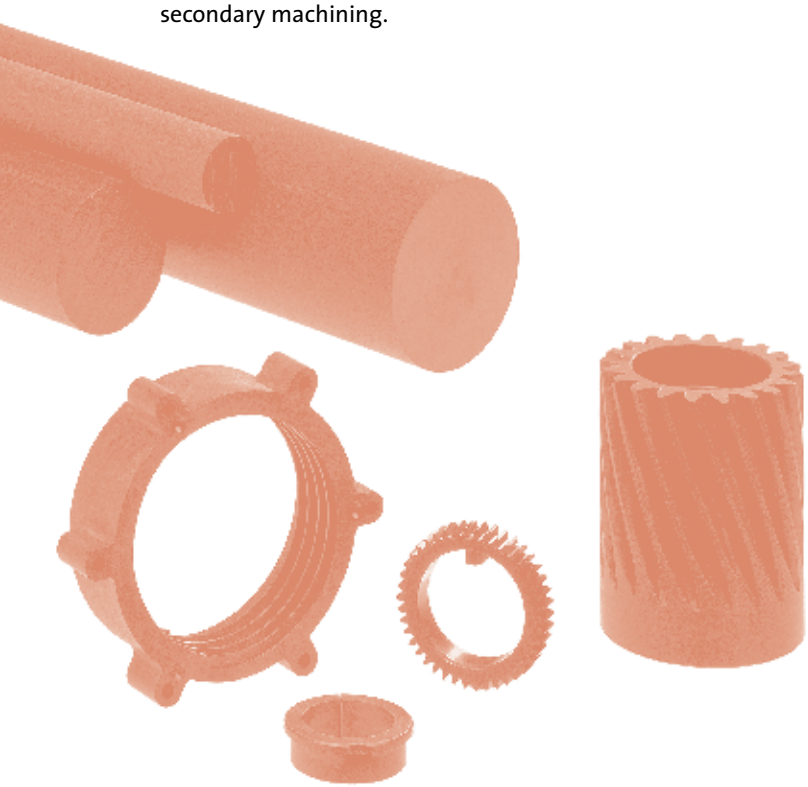
MELDIN® 3100 is resistant to a great many chemicals, fuels, and lubricating fluids. This outstanding chemical resistance provides superior performance in a variety of aggressive environments.

Superior Weld Line Strength

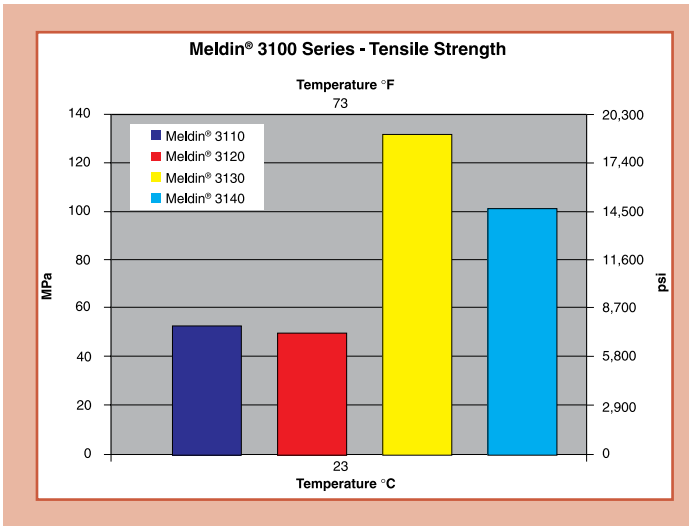
Unlike other high performance materials, MELDIN® 3100 exhibits extremely strong weld lines. With MELDIN® 3100 components, you don't have to be concerned about molded part integrity.

Complete Mating Surface Compatibility

There are MELDIN® 3100 bearing grades available for all mating surfaces with hardnesses of Rockwell B25 and higher.



Technical Graphs



MELDIN® 3100 Compounds

MELDIN® 3110

This bearing formulation has a very low coefficient of friction and is particularly well suited for use with soft mating surface materials such as aluminum and soft stainless steel.

MELDIN® 3120

This excellent multi-purpose, wear-resistant material that is suitable for bearing, thrust washer, and piston ring applications. It also has a low coefficient of thermal expansion.

MELDIN® 3130

MELDIN® 3130 components provide good strength and stiffness in addition to excellent high velocity performance. This formulation can be used with both hard or soft mating surfaces.

MELDIN® 3140

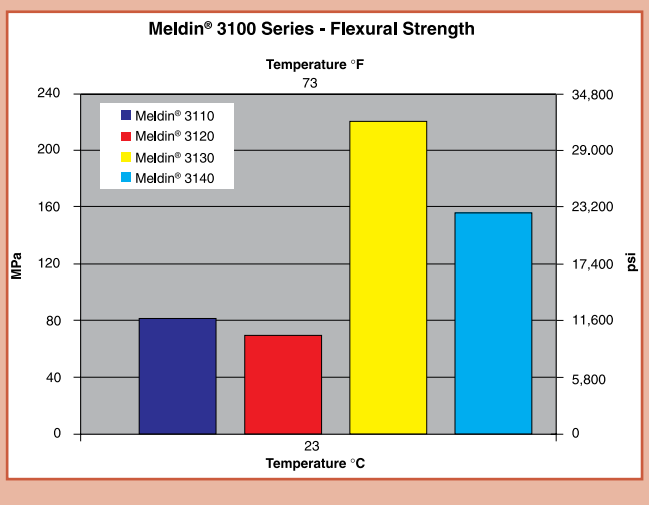
MELDIN® 3140 is an ideal thrust washer material and is well suited for thrust washer applications. Its high strength and stiffness, combined with its excellent heat dissipation properties, make it an excellent choice for high pressure loading applications.

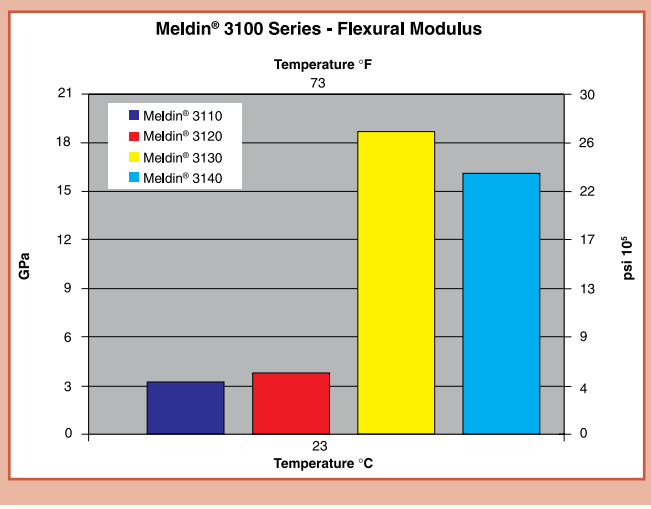
Product availability:

Basic shapes	☐
Finished parts	☑

Manufacturing processes:

Compression molding	☐
Injection molding	☑
Direct forming	☐
Machined parts	☑

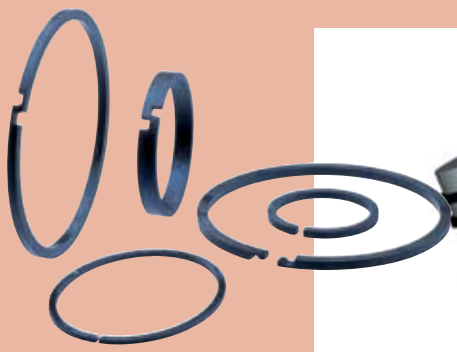




Applications of MELDIN® 3100

Heavy Equipment Applications

MELDIN® 3100 series mechanical components are used on heavy duty industrial rotating equipment. Their exceptional wear resistance and load bearing properties make these materials the best choice for applications requiring heat dissipation and dry-running characteristics.



Compressor Piston Rings

MELDIN® 3100 series materials offer a very wide chemical compatibility and excellent wear life versus classical cast iron solutions.

Automotive Interiors

In automotive interior applications such as power seats, MELDIN® 3100 components are used in areas where there is high pressure loading in a small amount of space. Their ability to operate without lubrication allows for quiet operation of electric motors, and use of small motor sizes.

Typical Properties of MELDIN® 3100

PROPERTY	TEST METHOD	ENGLISH (METRIC)	MELDIN® 3110	MELDIN® 3120	MELDIN® 3130	MELDIN® 3140
MECHANICAL @ RT						
Tensile Strength	ASTM D638	psi (MPa)	7,880 (54.3)	7,353 (50.7)	19,376 (133.59)	14,946 (103.05)
Tensile Modulus	ASTM D638	psi x 10^5 (GPa)	1.71 (1.18)	1.84 (1.27)	5.55 (3.83)	5.66 (3.91)
Elongation	ASTM D638	%	7.5	6.3	5.4	6.6
Flexural Strength	ASTM D790	psi (MPa)	11,950 (82.4)	10,098 (69.62)	32,266 (222.47)	22,746 (156.83)
Flexural Modulus	ASTM D790	psi x 10^5 (GPa)	4.61 (3.18)	5.41 (3.74)	26.83 (18.52)	23.06 (15.91)
Compressive Strength	ASTM D695	psi (MPa)	14,516 (100.08)			
Compressive Modulus	ASTM D695	psi x 10^5 (GPa)	2.58 (1.78)			
Izod Impact Strength (notched)	ASTM D256	Ft-lb/in (J/m)	0.38 (20.28)			
THERMAL						
Coefficient of Thermal Expansion	ASTM D696	in/in/°F (m/m/°C) x 10^{-5}	2.2 (3.9)			
Heat Deflection Temperature @ 264 psi (1.8 MPa)	ASTM D648	°F (°C)	418 (214)	422 (217)	421 (216)	430 (221)
Tg		°F (°C)	451 (233)	451 (233)	451 (233)	451 (233)
GENERAL						
Specific Gravity	ASTM D792	—	1.4	1.4	1.44	1.65
Hardness Shore D	ASTM D2240	—	80			
Hardness Rockwell M	ASTM D785	—	85			
TRIBOLOGICAL						
Coeffiecient of Friction	Saint-Gobain	—	0.20			
Wear Factor K	ASTM D3702	[(in^3min/(ft.lb.hr)] E^{-10} [mm^3/Nm]E^{-8}	5.93 (11.95)			

Customized Engineering Support and Solutions

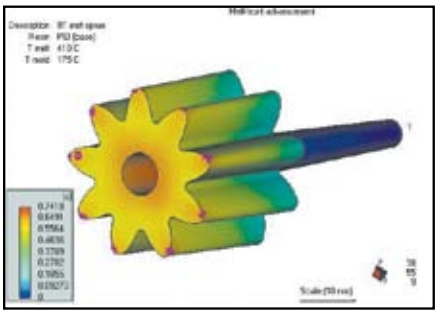
Saint-Gobain Performance Plastics uses its state-of-the-art testing and engineering equipment to support you in your most challenging applications.

Tribology Test Rigs

Tribology test rigs continuously measure material wear, coefficient of friction, and mating surface temperature over time. A wide range of mating surface materials, surface finishes, and surface hardnesses are available for testing. Test rig options include submerged (wet) testing, as well as externally heated mating surfaces to simulate hot environments.

Tribological Test Room

Tribology test room can operate 24 hours a day with continuous computer data acquisition.



Mold flow analysis is used for both engineering and process studies.

Saint-Gobain Performance Plastics Plants for MELDIN® Products

Bristol/USA

Kontich/Belgium

Logroño/Spain

Chemical Resistance of MELDIN®

	MELDIN® 2001	MELDIN® 2021	MELDIN® 2030	MELDIN® 2211	MELDIN® 3110	MELDIN® 3120
2-Butanene	●	●	●	●	●	●
Acetic Acid	●	●	●	●	●	●
Acetylene	●	●	●	●	●	●
Alkalines						
Ammonia						
Amyl Chloride	●	●	●	●	●	●
Analine	●	●	●	●	●	●
Aqua Regia	●	●	●	●	●	●
Benzaldehyde	●	●	●	●	●	●
Benzonitrile	●	●	●	●	●	●
Benzenesulfonic Acid	●	●	●	●	●	●
Bromine	●	●	●	●	●	●
Calcium Hypochlorite	●	●	●	●	●	●
Camphor Oil	●	●	●	●	●	●
Carbon Sulfide	●	●	●	●	●	●
Carbon Tetrachloride	●	●	●	●	●	●
Chloral Hydrate	●	●	●	●	●	●
Chloroacetic Acid	●	●	●	●	●	●
Chlorine or Bleaching Agents						
Chloroform	●	●	●	●		
Chlorosulfonic Acid	●	●	●	●		
Chromic Acid	●	●	●	●	●	●
Concentrated Oxidizing Acids	●	●	●	●	●	●
Creosote	●	●	●	●	●	●
Cresol	●	●	●	●	●	●
Decalin	●	●	●	●	●	●
Dichlorobenzene	●	●	●	●	●	●
Diethyl Ether	●	●	●	●	●	●
Dimethylamine	●	●	●	●	●	●
Dimethyl Sulfoxide	●	●	●	●	●	●
Ethyl Acetate	●	●	●	●	●	●
Ethylene & Propylene Dichloride	●	●	●	●	●	●
Ferric Chloride	●	●	●	●	●	●
Ferric Nitrate	●	●	●	●	●	●
Ferric Sulfate	●	●	●	●	●	●
Ferrous Sulfate	●	●	●	●	●	●
Fluoboric Acid	●	●	●	●	●	●
Flourinating Agents, strong	●	●				
Flourine >140˚F & Dry Gas >250˚F	●	●				
Fluosilicic Acid	●	●	●	●		
Hydrobromic Acid	●	●	●	●	●	●
Hydrochloric Acid					●	●
Hydrocyanic Acid	●	●	●	●	●	●
Hydrofluoric Acid					●	●
Hydrofluosilicic Acid	●	●	●	●	●	●
Hydrogen Fluoride, Dry >250˚F	●	●	●	●	●	●
Hydrogen Peroxide	●	●	●	●	●	●
Hydroxides						
Mercury of Silver salts	●	●	●	●	●	●
Methylene Chloride	●	●	●	●	●	●
MEK	●	●	●	●	●	●
Molten Alkali metals	●	●			●	●
Molten Anhydrous bases						
Nitric Acid (30%)					●	●
Nitrobenzene	●	●	●	●	●	●
Oleum	●	●	●	●	●	●
P-Dioxane	●	●	●	●	●	●
Partly Halogenated Hydrocarbons	●	●	●	●	●	●
Phenol (Diluted)	●	●	●	●	●	●
Phosphoric Acid	●		●	●	●	●
Potassium Chlorate	●	●	●	●	●	●
Potassium Cyanide	●	●	●	●	●	●
Potassium Dichromate	●	●	●	●	●	●
Potassium Hydroxide					●	●
Potassium Nitrate	●	●	●	●	●	●
Sodium Chlorate	●	●	●	●	●	●
Sodium Cyanide	●	●	●	●	●	●
Sodium Hydroxide					●	●
Sodium Nitrate	●	●	●	●	●	●
Stannous Chloride	●	●	●	●	●	●
Steam						
Sulfur Dioxide 5% + H2O	●	●	●	●	●	●
Sulfur, Molten	●	●	●	●	●	●
Sulfuric Acid (40%)	●	●	●	●	●	●
Tetralin	●	●	●	●		
Trichloroethylene	●	●	●	●		
Toluene	●	●	●	●	●	●
Trifluoroacetic Acid	●	●	●	●	●	●
Xylene	●	●	●	●	●	●
Zinc Chloride	●	●	●	●	●	●

MELDIN® 3130	MELDIN® 3140	MELDIN® 5001	MELDIN® 5320	MELDIN® 5055	MELDIN® 5330
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SAINT-GOBAIN
PERFORMANCE PLASTICS

Saint-Gobain Performance Plastics
386 Metacom Avenue
Bristol, RI 02809
Tel: 401-253-2000
Toll Free: 800-223-4966
Fax: 401-253-8211
www.plastics.saint-gobain.com

MELDIN® APPLICATION INQUIRY FORM

NOTE: Please attach any helpful comments/sketches

CUSTOMER INFORMATION

COMPANY:

STREET:

CITY, STATE. ZIP:

ENGINEERING CONTACT

TELEPHONE No. FAX No.

PURCHASING CONTACT:

TELEPHONE No. FAX No.

ACTION REQUIRED	DATE NEEDED	QUOTATION GENERALITIES
MATERIAL RECOMMENDATION ❑		QUOTE PRODUCTION QUANTITIES OF:
PROVIDE TECH DATA ON MATERIAL ❑		
PART DESIGN RECOMMENDATION ❑		SEND QUOTE TO:
PRODUCE PROTOTYPES ❑		QUOTE DUE DATE:

PRODUCT INFORMATION (ATTACH DRAWING OR SKETCH IF AVAILABLE)

DESIGN: NEW ❑ EXISTING ❑ **BEARING* SIZE:** UNITS: IN ❑ MM ❑
*For non-bearing application, attach drawing

IF EXISTING:

TYPE/BRAND: ID: OD:

MATERIAL: LENGTH: FLANGE OD:

PART/DRAWING No: FLANGE THICKNESS:

DESCRIBE END USES: OTHER DIMENSIONS:

DESIRED CHARACTERISTICS:

OTHER COMMENTS:

MELDIN® APPLICATION INQUIRY FORM

APPLICATION PARAMETERS

PART INSTALLATION

PRESS FIT ON OD:

SHRINK FIT ON ID:

MECHANICAL MEANS:

SLIP FIT:

BONDING:

OTHER (LIST):

SHAFT SPECIFICATIONS

DIAMETER (& TOLERANCE):

MATERIAL TYPE:

SURFACE FINISH:

HARDNESS:

HOUSING SPECIFICATIONS

DIAMETER (& TOLERANCE):

MATERIAL TYPE:

LENGTH (& TOLERANCE):

TEMPERATURE

TYPICAL: °F ❑ °C ❑

MAXIMUM: °F ❑ °C ❑

DURATION: Min. ❑ Hrs. ❑

MINIMUM: °F ❑ °C ❑

DURATION: Min. ❑ Hrs. ❑

MAXIMUM:

LOAD

RADIAL ❑ THRUST ❑

UNITS: LB ❑ PSI ❑ N/MM² ❑ OTHER:

CANTILEVERED ❑ IMPACT ❑

CONSTANT ❑ MISALIGNMENT ❑

TYPICAL:

MAXIMUM:

Duration:

MINIMUM:

Duration:

VELOCITY

UNITS: RPM ❑ FT/MIN ❑ M/SEC ❑

LINEAR/STROKE LENGTH:

NUMBER OF STROKES/MIN:

ROTARY:

DEGREE OF OSCILLATION:

NUMBER OF CYCLES/MIN:

OTHER:

RUNNING SURFACE: ID ❑ OD ❑ FACE ❑

ENVIRONMENT

DRY ❑ WATER ❑ LUBRICATED ❑

CLEAN ❑ DIRT ❑ VACUUM ❑

CHEMICALS (SPECIFY):

GASES (SPECIFY):

OIL (TYPE):

SERVICE LIFE

CURRENT:

DESIRED:

PRODUCT VALIDATION

BENCH: ❑

FIELD: ❑

BOTH: ❑

PRODUCT TESTING

TEST START DATE:

TEST DURATION:

		INJECTION MOLDING	NORGLIDE® BEARINGS	NORSLIDE®	OMNILIP™	OMNISEAL®	MELDIN®	RULON®	RAM EXTRUSION	HIGH PURITY PRODUCTS	MACHINED & MOLDED COMPONENTS
NORTH AMERICA											
*Saint-Gobain Performance Plastics Corporation Wayne, New Jersey • USA	Phone: (1) 973-696-4700 Fax: (1) 973-696-4056		•	•							
*Saint-Gobain Performance Plastics Corporation Bristol, Rhode Island • USA	Phone: (1) 401-253-2000 Fax: (1) 401-253-1755	•					•	•	•		•
*Saint-Gobain Performance Plastics Corporation Garden Grove, California • USA	Phone: (1) 714-630-5818 Fax: (1) 714-688-2614				•	•				•	•
EUROPE											
* Saint-Gobain Performance Plastics Pampus GmbH Willich • Germany	Phone: (49) 2154 600 Fax: (49) 2154 60310		•	•				•			•
*Saint-Gobain Performance Plastics N.V. Kontich • Belgium	Phone: (32) 34 58 28 28 Fax: (32) 34 58 26 69				•	•	•	•			•
*Saint-Gobain Performance Plastics Asti Charnay-les-Macon • France	Phone: (33) 3 85 20 27 00 Fax: (33) 3 85 29 18 48									•	
*Saint-Gobain Performance Plastics Asti Nanterre • France	Phone: (33) 1 55 68 59 59 Fax: (33) 1 55 68 59 68		•	•						•	
Saint-Gobain Performance Plastics Agrate Brianza (Mi) • Italy	Phone: (39) 03 96 50 070 Fax: (39) 03 96 52 736		•	•	•	•	•	•		•	
Saint-Gobain Performance Plastics Espana, S.A. Barcelona • Spain	Phone: (34) 93 682 8138 Fax: (34) 93 682 8143		•	•							
*Saint-Gobain Performance Plastics Espana, S.A. Logrono • Spain	Phone: (34) 94 14 86 035 Fax: (34) 94 14 37 095	•					•	•			•
SOUTH AMERICA											
*Saint-Gobain Ceramicas Industrias Ltda. Vinhedo-SP • Brazil	Phone: (55) 19 3876 8153 Fax: (55) 19 3876 8077	•	•	•	•	•	•	•			
ASIA											
*Saint-Gobain KK-Performance Plastics Tokyo • Japan	Phone: (81) 33 26 30 285 Fax: (81) 33 26 30 286		•	•	•	•	•	•		•	•
*Saint-Gobain Performance Plastics Korea Co., Ltd. Seoul • South Korea	Phone: (82) 25 08 82 00 Fax: (82) 25 54 15 50		•	•	•	•	•	•			•
*Saint-Gobain Performance Plastics Shanghai Co., Ltd. Shanghai • China	Phone: (86) 21 54 72 15 68 Fax: (86) 21 54 72 60 35	•	•	•	•	•	•	•		•	•
*Saint-Gobain Advanced Materials (Taiwan) Co., Ltd. Taipei • Taiwan	Phone: (886) 22 50 34 201 Fax: (886) 22 50 34 202		•	•	•	•	•	•			•
*Grindwell Norton Ltd. Bangalore • India	Phone: (91) 80 847 2900 Fax: (91) 80 847 2905		•	•	•	•	•	•			
Saint-Gobain Advanced Materials (M) Sdn.Bhd Selangor Darul Ehsan • Malaysia	Phone: (60) 37 36 40 82/81 Fax: (60) 37 36 40 99		•	•	•	•	•	•			

** Manufacturing Facilities*

SAINT-GOBAIN
PERFORMANCE PLASTICS