



HIGH PERFORMANCE
VALUE GRADE
MATERIALS

Technically Reliable Solutions

Interface Solutions, Inc. (Interface) provides sealing solutions for a range of applications in the automotive, heavy-duty diesel, small engine and related industries. Committed to quality, all Interface processes and products are audited and meet or exceed the quality standards of leading customer programs worldwide. Our thorough design and validation processes include thousands of hours of rigorous performance and functional testing, resulting in robust, lab-certified solutions that satisfy the most stringent requirements. Interface helps customers meet global requirements for performance, cost reduction and certainty of operation.

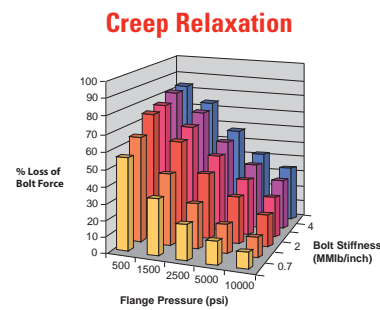
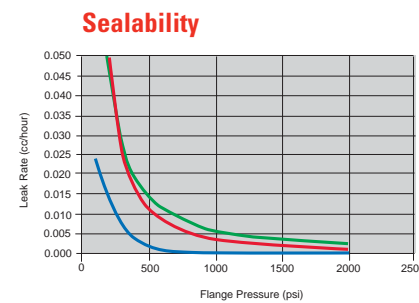
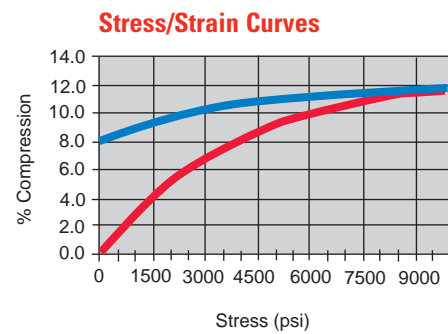
Value Grade Materials

The high performance set of materials in the Value Grade line give fabricator partners and end-users business advantages through superior performance, reduced lead times, assured availability, fast delivery and custom application analysis and testing. Each Value Grade material has unique characteristics and is the leader in its class.



Technical Information

FEA data for Value Grade materials ensures predictable performance. Interface application engineers can assist with material recommendations and sealing system optimization.



Physical Properties

- Tensile Strength • Comprehensive Strength • Coefficient of Friction
- Poisson Ratio • Coefficient of Thermal Expansion

Test Value Table

Value Grade ⁽¹⁾	Density ⁽²⁾ g/cc (lb./cu. ft.)	Tensile Strength ⁽³⁾ MPa (psi)	Compressibility ⁽⁴⁾ (%)	Recovery ⁽⁴⁾ (%)	Creep Relaxation ⁽⁵⁾ (%)	Compressive Strength ⁽⁶⁾ MPa (psi)	Coefficient of Friction ⁽⁷⁾		Fluid Seal ⁽⁷⁾			
							Aluminum	Iron/Steel	Nitrogen Seal ⁽⁷⁾ 1 Bar, 9MPa Clamp cc/min	Oil @ 4 Bar MPa (psi)	A/F @ 1 Bar MPa (psi)	Median Pore Dia ⁽⁷⁾ (microns)
CMP-4000	1.55 (97)	18.60 (2700)	5 - 15	50	15	276 (40000)	0.39	0.37	0.03	4.8 (700)	1.4 (200)	0.05
CMP-4200	1.55 (97)	12.00 (1740)	7 - 17	50	15	241 (35000)	0.39	0.39	0.03	4.1 (600)	2.7 (400)	0.05
HFL-781	1.63 (102)	13.90 (2014)	7 - 17	40	18	155 (22500)	0.29	0.32	0.13	4.1 (600)	16.0 (2300)	0.08
HFL-971	1.50 (93.6)	27.50 (3985)	7 - 17	40	16	276 (40000)	0.30	0.30	0.12	8.3 (1200)	3.7 (540)	0.08
MP-15	1.54 (96)	10.34 (1500)	13 - 25	50	15	138 (20000)	0.28	0.38	0.03	3.5 (500)	2.5 (360)	0.06
MP-2N	1.35 (84)	8.28 (1200)	13 - 25	35	22	124 (18000)	0.35	0.34	0.33	9.0 (1300)	21.0 (3000)	0.15
PF-4N	1.44 (90)	8.97 (1300)	12 - 20	45	22	172 (25000)	0.37	0.40	0.10	10.0 (1450)	13.0 (1900)	0.06
PF-4S	1.44 (90)	8.62 (1250)	9 - 23	45	22	483 (70000)	0.39	0.40	0.15	14.0 (2000)	16.0 (2300)	0.06
VB-72	1.47 (92)	15.86 (2300)	5 - 20	40	18	466 (67500)	0.37	0.41	0.10	17.0 (2500)	4.0 (580)	0.06
N-8092	1.20 (75)	11.03 (1600)	15 - 30	35	35	241 (35000)	0.38	0.41	2.0	21.0 (3000)	21.0 (3000)	0.36

Typical values shown – not to be used for establishing specifications.

(1) Note: Test values in this table are for comparative use only. They are not valid purchase specifications.

(2) ASTM F1315 (5) ASTM F38

(3) ASTM F152 (6) ASTM F1574

(4) ASTM F36 (7) ISI test procedure. Consult Application Engineering for additional details.

CMP-4000

Designed for OE and MRO applications

A material with a distinctive green color, CMP - 4000 features a synthetic fiber matrix and unique NBR binder. The material offers excellent low-flange-pressure sealability and superior torque retention. It handles intermittent operating temperatures up to 350°C (650°F).

Applications include semihermetic refrigeration compressors, hydraulic motor and brake systems, and heavy-duty transmission valve body sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.55 (97)
Tensile Strength: MPa (psi)	18.60 (2700)
Compressibility: %	5-15
Recovery: %	50
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.03
Creep Relaxation: %	15
Fluid seal, Oil @ 4 Bar: MPa (psi)	4.8 (700)
Fluid seal, A/F @ 1 Bar: MPa (psi)	1.4 (200)
Compressive Strength: MPa (psi)	276 (40000)
Median Pore Diameter: microns	0.05
Coefficient of Friction (aluminum)	0.39
Coefficient of Friction (iron/steel)	0.37



CMP-4200

Engineered for high-pressure oil, steam and Glycol-water applications

CMP - 4200 is a solvent-free, high-density gasket material that delivers high crush resistance, exceptional torque retention, outstanding resistance to blow-out and high surface friction on flange surfaces; making it perfect for MRO use as well as OEM applications. Its unique formulation features a blend of binders that, while resistant to most fluids, generate sufficient expansion to provide superior sealing characteristics in harsh operating conditions. Recommended for use with intermittent operating temperatures up to 350 °C (650°F).

Applications include oil and fuel system sealing, and compressors. High-performance aftermarket kits cover applications like ATVs, motorcycles and snowmobiles.

Properties	
Density: g/cc (lb./cu. ft.)	1.55 (97)
Tensile Strength: MPa (psi)	12.00 (1740)
Compressibility: %	7-17
Recovery: %	50
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.03
Creep Relaxation: %	15
Fluid seal, Oil @ 4 Bar: MPa (psi)	4.1 (600)
Fluid seal, A/F @ 1 Bar: MPa (psi)	2.7 (400)
Compressive Strength: MPa (psi)	241 (35000)
Median Pore Diameter: microns	0.05
Coefficient of Friction (aluminum)	0.39
Coefficient of Friction (iron/steel)	0.39



HFL-781

A controlled swell material for demanding applications

HFL - 781 incorporates a proprietary blend of styrene, butadiene and natural rubber. It is designed for demanding applications requiring excellent sealability, torque retention, recovery and conformity to uneven flange surfaces. The material swells in the presence of oils and fuels. Recommended for applications where intermittent operating temperatures do not exceed 290°C (550°F).

Applications include diesel oil pan, gearcase and flywheel housing.



Properties	
Density: g/cc (lb./cu. ft.)	1.63 (102)
Tensile Strength: MPa (psi)	13.90 (2014)
Compressibility: %	7-17
Recovery: %	40
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.13
Creep Relaxation: %	18
Fluid seal, Oil @ 4 Bar: MPa (psi)	4.1 (600)
Fluid seal, A/F @ 1 Bar: MPa (psi)	16.0 (2300)
Compressive Strength: MPa (psi)	155 (22500)
Median Pore Diameter: microns	0.08
Coefficient of Friction (aluminum)	0.29
Coefficient of Friction (iron/steel)	0.32



HFL-971

Designed for sealing transmission fluids, oils, fuels, water and steam

HFL - 971 is a high-density material featuring a nitrile/dual rubber binder system. The material exhibits exceptional tensile strength, low creep relaxation and good sealability. Easy to cut and fabricate, the material handles intermittent operating temperatures up to 350°C (650°F).

Applications include heavy-duty axle, transmission valve body, diesel oil pan, gearcase and flywheel housing sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.50 (93.6)
Tensile Strength: MPa (psi)	27.50 (3985)
Compressibility: %	7-17
Recovery: %	40
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.12
Creep Relaxation: %	16
Fluid seal, Oil @ 4 Bar: MPa (psi)	8.3 (1200)
Fluid seal, A/F @ 1 Bar: MPa (psi)	3.7 (540)
Compressive Strength: MPa (psi)	276 (40000)
Median Pore Diameter: microns	0.08
Coefficient of Friction (aluminum)	0.30
Coefficient of Friction (iron/steel)	0.30



MP-15

Designed for compressor, diesel engine and other heavy-duty applications

MP - 15 is composed of synthetic fiber with a polychloroprene binder. The material exhibits excellent low-flange pressure sealability and torque retention. It withstands intermittent operating temperatures up to 205°C (400°F).

Applications include semihermetic compressor, diesel engine oil pan, water pump, intake, gearcase covers and general automotive sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.54 (96)
Tensile Strength: MPa (psi)	10.34 (1500)
Compressibility: %	13-25
Recovery: %	50
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.03
Creep Relaxation: %	15
Fluid seal, Oil @ 4 Bar: MPa (psi)	3.5 (500)
Fluid seal, A/F @ 1 Bar: MPa (psi)	2.5 (360)
Compressive Strength: MPa (psi)	138 (20000)
Median Pore Diameter: microns	0.06
Coefficient of Friction (aluminum)	0.28
Coefficient of Friction (iron/steel)	0.38



MP-2N

Engineered for automotive powertrain, marine and small engine applications

MP - 2N provides excellent sealability and thermal integrity in coolant, lubrication and induction systems. The material is suitable for problem flanges including those with rough surfaces and/or long bolt spans, and handles intermittent operating temperatures up to 205°C (400°F).

Applications include general automotive, motorcycle, small engine and marine sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.35 (84)
Tensile Strength: MPa (psi)	8.28 (1200)
Compressibility: %	13-25
Recovery: %	35
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.33
Creep Relaxation: %	22
Fluid seal, Oil @ 4 Bar: MPa (psi)	9.0 (1300)
Fluid seal, A/F @ 1 Bar: MPa (psi)	21.0 (3000)
Compressive Strength: MPa (psi)	124 (18000)
Median Pore Diameter: microns	0.15
Coefficient of Friction (aluminum)	0.35
Coefficient of Friction (iron/steel)	0.34

PF-4N

Designed for maximum fluid resistance

PF - 4N has a nitrile butadiene rubber binder for exceptional fluid resistance. The material exhibits excellent sealability in a wide range of environments and flange conditions. It handles intermittent operating temperatures up to 290°C (550°F).

Applications include heavy-duty transmission valve body and case-to-case joints, and general-purpose diesel engine sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.44 (90)
Tensile Strength: MPa (psi)	8.97 (1300)
Compressibility: %	12-20
Recovery: %	45
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.10
Creep Relaxation: %	22
Fluid seal, Oil @ 4 Bar: MPa (psi)	10.0 (1450)
Fluid seal, A/F @ 1 Bar: MPa (psi)	13.0 (1900)
Compressive Strength: MPa (psi)	172 (25000)
Median Pore Diameter: microns	0.06
Coefficient of Friction (aluminum)	0.37
Coefficient of Friction (iron/steel)	0.40



PF-4S

Designed for oil, air and coolant applications

PF - 4S is a material with exceptional sealability and can be used as a replacement for styrene butadiene asbestos materials and nonasbestos calendered sheet. It handles intermittent operating temperatures up to 290°C (550°F).

Applications include automotive oil pans and general-purpose diesel engine sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.44 (90)
Tensile Strength: MPa (psi)	8.62 (1250)
Compressibility: %	9-23
Recovery: %	45
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.15
Creep Relaxation: %	22
Fluid seal, Oil @ 4 Bar: MPa (psi)	14.0 (2000)
Fluid seal, A/F @ 1 Bar: MPa (psi)	16.0 (2300)
Compressive Strength: MPa (psi)	483 (70000)
Median Pore Diameter: microns	0.06
Coefficient of Friction (aluminum)	0.39
Coefficient of Friction (iron/steel)	0.40



VB-72

Engineered to resist high fluid pressures

VB - 72 features a fully cured nitrile butadiene rubber binder. The material withstands extreme fluid pressures and exhibits excellent erosion resistance. It handles intermittent operating temperatures up to 290°C (550°F).

Applications include automotive and heavy-duty transmission valve body sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.47 (92)
Tensile Strength: MPa (psi)	15.86 (2300)
Compressibility: %	5-20
Recovery: %	40
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	0.10
Creep Relaxation: %	18
Fluid seal, Oil @ 4 Bar: MPa (psi)	17.0 (2500)
Fluid seal, A/F @ 1 Bar: MPa (psi)	4.0 (580)
Compressive Strength: MPa (psi)	466 (67500)
Median Pore Diameter: microns	0.06
Coefficient of Friction (aluminum)	0.37
Coefficient of Friction (iron/steel)	0.41



N-8092

Engineered for excellent crush resistance

N - 8092 is composed of reinforced cellulose with a nitrile butadiene rubber binder. It exhibits excellent crush resistance at high flange pressures. Recommended for sealing oil, fuels and water in applications with intermittent operating temperatures up to 180°C (350°F).

Applications include automotive water pump and intake manifold, general small engine and general purpose aftermarket sealing.

Properties	
Density: g/cc (lb./cu. ft.)	1.20 (75)
Tensile Strength: MPa (psi)	11.03 (1600)
Compressibility: %	15-30
Recovery: %	35
Nitrogen Seal: cc/min (1 Bar, 9MPa Clamp)	2.0
Creep Relaxation: %	35
Fluid seal, Oil @ 4 Bar: MPa (psi)	21.0 (3000)
Fluid seal, A/F @ 1 Bar: MPa (psi)	21.0 (3000)
Compressive Strength: MPa (psi)	241 (35000)
Median Pore Diameter: microns	0.36
Coefficient of Friction (aluminum)	0.38
Coefficient of Friction (iron/steel)	0.41

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