

MATERIAL SELECTION GUIDE INDUSTRIAL APPLICATIONS





For product designers and engineers, Rogers Corporation is the elastomeric materials solutions partner of choice when quality, innovation, and collaborative support are critical to design optimization and product functionality.

Rogers' materials are designed into products and applications in segments where high reliability and mission-critical performance are essential: automobiles, aerospace, mass transit, electronics, protective gear, footwear, medical products, and much more.

With unrivaled technical support, we foster successful customer relationships through a dedication to technical know-how, application expertise, and global support.













KUSHON®





For further information on Rogers' portfolio of elastomeric material solutions, please contact the Rogers' facility closest to you or visit rogerscorp.com.

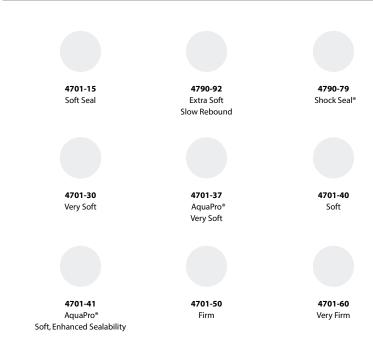






MATERIAL SAMPLES PORON® POLYURETHANE FOAMS

Core Standard Products



Value-Added Capabilities



| PRODUCT DATA | | Core Standard Products | | | | | | | | | Energy Management Products | | | | | | | | | | Water Sealing Products | | | | | | | | | | | | | | | | | | |
|---|---|--|---------------------|----------------------|--|-------------------------------|----------------------------|---|----------------------|---------------------|---|---|---------------------------------------|------------------------|--|---|-------------------------|-------|---|--------------|------------------------------------|---------------------------------------|----------------------|---------------|------------------|--|--|----------------------------|------------------------|------------------------|--------------------------------|--------------------|----------------|--------------------|----------------|---------------------|----------------------------------|------------------------|---|
| Product | 4701-30 Unsupported | | 4701-30 Unsupported | | nsupported 4701-30 Supported | | ported 4701-40 Unsupported | | d | 4701-40 Supported | d 4701-50 Unsupported | | 4701-50 Supported 4701-60 Unsupported | | orted | d 4701-15 Soft Seal Supported | | 4790- | 4790-79 ShockSeal* Unsupported 4790-79 ShockSeal* Supported | | ed 4790-921 | 4790-92 Unsupported 4790-92 Supported | | | | AquaPro* 4701-37 | | Т | AquaPro* 4701-41 | | Product | | | | | | | | |
| hysical Properties | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Physical Properties |
| Nensity, kg/m² (lb./ft²) ISTM D 3574-95, Test A | 240 (15) | 320 (20) | 400 (25) | 320 (2 | 20) 400 (25) | 240 | (15) | 320 (20) | 480 (30) | 320 (20) | 240 (15) | 320 (20) | 490 (30) | 480 (30) | 240 (15) | 320 (20) | 400 (25) | | 104 (6.5) | | 192 (12) | 240 (15) | 320 (20 | 144 (9) | 192 (12) | 192 (12) | 240 (15) | 144 (9) | 192 (12) | 240 (15) | 320 (20) | 400 (25) | 480 (30 | 224 (14) | 304 (19) | 240 (15) | 320 (20) | 480 (30) | Density, kg/m² (lb./fr²) ASTM D 3574-95, Test A |
| Tolerance, % | | ±10 | | | ±10 | | | ±10 | | ±10 | | ±10 | | ±10 | | ±10 | | | 16 (±1) | | | ±10 | | | ±10 | | ± 10 | | | | ±10 | | | | 2 (±32) | | ±10 | | Tolerance, % |
| Thickness, mm (in) | | | | | 2.36 0.53 - 1.1 0.095) (0.021 - 0.0 | | | | | 3.18 (0.125) | | | 0.79 - 1.14 (0.031 - 0.045) | 0.90 (0.012) | | | 0.79 - 2.36 | | (0.050) | 1.00 (0.039) | | | | | | 3.18 - 10.80 (9) (0.125 - 0.425) | | | | | | 0.53 - 1.04 | | | | | 157 - 3.18 00) (0.052 - 0.125 | | Thickness, mm (in) |
| folerance, % | ±10 | ±10 | ±15 | ± 10 | D ±15 | ±1 | 10 | ±10 | ±20 | ±10 | ±10 | ±10 | ±20 | 0.08 (±0.003) | ±10 | ±10 | ±20 | | 0.10 (±0.004) | | | ±10 | | 0. | 10 (±0.004) | | ± 10 | 0.10 (±0.0039 | ±10 | ±10 | ±10 | ±10 | ±15 | ± 10 | ± 0.10 (0.003 | 19) | ±10 | | Tolerance, % |
| tandard Color (Code) | | Black (04 | 9 | | Black (04) | | | Black (04) | | Black (04) | | Black (04) | | Black (04) | | Black (04) | | | Gray (90) | | | Black (04) | | | Black (04) | Sia | ck (04) | | | | Black (04) | | | | Black (04) | | Black (04) | | Standard Color (Code) |
| Compression Force Deflection, 16°a (psi) 0.51 cm/min (0.2°/min) Strain Rate Force Measured () 25% Deflection | 7-35 (1-5) | 21-55 (3.8) | | | | | -76 11) | 45-90 (7-13) | 104-276 (15-40) | 48 - 90 (7 - 13) | 55-97 (8-14) | 90-159 (13-23) | 207-415 (30-60) | 103 - 310 (15 - 45) | 124-345 (18-50) | 172-586 (25-85) | 345-896 (50-130) | | 1.38-5.86 (0.20-0.85) | | 7 - 35 (1 - 5) | 14-69 (2-10) | 28 - 110 (4 - 16) | | | 1.7 - 17 (0.25 - 2.5) | 2 - 24 (0.3 - 3.5) | 1.7 - 9.3 (0.25 - 1.35) | 2 - 17 (0.25 - 2.5) | | | | | | | | | 138 - 317 (20 - 46) | Compression Force Deflection, M 0.51 cm/min (0.2"/min) Strain Rate Measured @ 25% Deflection |
| Typical kPa, (psi) | 21 (3) | 35 (5) | 62 (9) | 34 (5. | 0) 58 (8.4) | 41 (| (5) | 76 (11) | 173 (25) | 76 (11) | 69 (10) | 117 (17) | 269 (39) | 221 (32) | 249 (35) | 428 (62) | 643 (93) | NA | NA | NA | NA | NA | NA | 13.7 (2) | 20.7 (3) | NA. | NA | NA | NA | 12 (1.7) | 22 (5.2) | 37 (5.3) | NA | NA. | NA. | 64 (9.3) | 103 (15) | 193 (28) | Typical kPa, (psi) |
| Compression Force Deflection, kPa (psi) ISO 6916-1, 30mm/min Strain Rate Force Measured @ 25% Deflection | 24 (4) | 50 (7) | 69 (10) | 41 (6 | s) NA | 42 (| (6) | 85 (12) | 225 (33) | 85 (12) | 66 (10) | 128 (19) | 273 (40) | 273 (40) | 231 (34) | 538 (78) | 783 (114) | NA. | NA | NA | NA | NA | NA | NA. | NA. | NA | 14 (2) | NA. | NA | 16 (2) | 22 (1) | NA | NA | 38 (5) | NA. | 57 (8) | 97 (14) | 247 (36) | Compression Force Deflection, kPa ISO 6916-1, 30mm/min Strain Rate Measured @ 25% Deflection |
| Compression Set, % max. ASTM D 3574-95 Test D ⊕ 23°C (73°F) ASTM D 3574-95 Test D ⊕ 70°C (15°F*) ASTM D 3574-95 Test J /Test D autoclave 5 bn ⊕ 121°C (250°F) | | 2 10 5 | | | 4 10 NA | | | 5 10 5 | | 5 10 NA | | 5 10 5 | | 5 10 NA | | 5 10 10 | | | 5 10 5 | | | 5 10 NA | | 5 10 NA | 2 10 NA | | 2 10 5 | 5 10 NA | | | 2 10 NA | | | NA 10 NA | NA 10 NA | | 5 10 5 | | Compression Set, % max. ASTM D 3574-95 Test D @ 23°C (77 ASTM D 3574-95 Test D @ 70°C (15 ASTM D 3574-95 Test J/Test D auto 5 hrs @ 121°C (250°F) |
| SO 1856 Test A @ 70°C (158°F) Dimensional Stability, % max. change | 0.7 | 12 | 1.5 | 1.9 | NA NA | 0.2 | 3 | 1.4 | 2.4 | 1.4 NA | 0.5 | +1 | 2 | NA NA | 7.9 | 6.9 | 4.7 | NA. | NA NA | NA. | - | NA NA | NA. | NA. | NA NA | NA. | 0.7 | NA. | NA. | 0.4 | NA NA | NA. | NA. | 1.5 NA | NA. | 1.7 | 1.5 | 2.5 | ISO 1856 Test A @ 70°C (158°F) Dimensional Stability, % max. cha |
| 22hrs @ 80°C (176°F) in a forced-air oven Tensile Strenoth, min kPa (psi) | 138 (20) | 207 (30) | 242 (35) | | NA NA | 7784 | (40) | ±1 518 (75) | 829 (120) | NA NA | 462 (70) | ±1 829 (120) | 1382 (200) | NA NA | 931 (135) | 1382 (200) | 1724 (250) | | NA NA | | NA 207 (30) | NA 414 (60) | 689 (100 | | NA NA | ± 3 83 (12) | 103 (15) | | | | NA NA | | | NA 246 (36) | NA NA | 276 (40) | | 827 (120) | 22hrs () 80°C (176°F) in a forced-al Tensile Strenoth, min kPa (psi) |
| ASTM D 3574-75 Text E Tensile Elongation, % min., | 138(20) | 100 | 242(33) | | NA NA | 2,01 | (44) | 100 | W2F(120) | NA. | | 100 | 90 | NA. | 50 | 45 | 50 | | NA. | | 207 (20) | 145 | 000(100 | - | NA. | 150 | 120 | | | | NA NA | | | 150 | NA NA | 270(40) | 100 | 827 (120) | ASTMD 3574-75 Test E Tensile Elongation, % min., |
| ASTM D 3574-75 Test E Tear Strength, kN/m (pli), min. ASTM D 264-91 Die C Troical M/m (pli) | 0.2 (1) 0.9 (5) | 0.5 (3) 1.2 (7) | | | NA NA | 0.5 | | 0.9 (5) 2.1 (12) | 2.1 (12) 3.0 (17) | NA NA | 1.1 (6) 2.1 (12) | 1.8 (10) 2.8 (16) | 2.3 (13) 4.2 (24) | NA NA | 2.1 (12) 3.3 (19) | 3.0 (17) 4.4 (25) | 3.3 (19) 5.3 (30) | | NA NA | | 0.9 (5) NA | 1.1 (6) NA | 1.8 (10) NA | | NA NA | 0.4 (2) NA | 0.53 (3) NA | | | | NA NA | | | 0.96 - (5.5) NA | NA NA | 1.1 (6) 1.8 (10) | 1.4 (8) | 2.6 (15) 3.2 (18) | ASTM D 3574-75 Test E Tear Strength, kN/m (pli), min. ASTM D 264-91 Die C Typical kN/m (pli) |
| Temperature Resistance | | | | | | | | | | | 1 | | - | | | | - | 1 | | | | | | | | | | | | | | | | | _ | | _ | - | Temperature Resistance |
| Recommended Constant Use, max. SAE J-2236 | | 90°C (194° | 1) | | 90°C (194°F) | | 90 | RO'C (194°F) | | 90°C (194°F) | | 90°C (194°F) | | 90°C (194°F) | | 90°C (194°F) | | | 90°C (194°F) | | | 90°C (194°F) | | | IO°C (194°F) | 9010 | (194'f) | | | 9 | IO°C (194°F) | | | 94 | D°C (194°F) | T | 90°C (194°F) | | Recommended Constant Use, max. SAE J-2236 |
| Recommended Intermittent Use, max | | 121°C (250 | 79) | | 121°C (250°F) | | 12 | 21°C (250°F) | | 121°C (250°F) | | 121°C (250°F |) | 121°C (250°F) | | 121°C (250°F) | | | 121°C (250°F) | | | 121°C (250°F) | | 12 | 21°C (250°F) | 1217 | C (250°F) | | | 12 | 21°C (250°F) | | | 12 | 11°C (250°F) | | 121°C (250°F) |) | Recommended Intermittent Use, |
| Imbrittlement ASTM D 746-96 | | -51°C (-60 | T) | | -51°C (-60°F) | | -4 | 40°C (-40°F) | | -40°C (-40°F) | | -40°C (-40°F | | -40°C (-40°F) | | -16°C (-3°F) | | | NA | | NA. | NA | NA | -47°C (-53 | (F) -37°C (-35°I | F) -20' | °C (419) | NA. | NA. | -20°C (-4°I | F) -18°C (0°1 | F) -12°C (10°1 |) NA | -42°C (-44°I | r) NA | | NA. | | Embrittlement ASTM D 746-98 |
| Cold Flexibility MILP 12420D 1991@-40°C (-40°F) | | PASS | | | PASS | | | PASS | | PASS | | PASS | | PASS | | PASS | | | NA | | NA. | NA. | NA. | | NA . | | NA | | | | NA . | | | PASS | NA. | | PASS | | Cold Flexibility MILP 12420D 1991@-40°C (-40°F) |
| Nammability | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Flammability |
| lammability, mm (in) IL 94H8F (File E20005) (Pass a) IVSS 302 (Pass a) SA Comp H8F (File 188149) (Pass a) | 4.5 (0.155) 4.5 (0.155) 4.5 (0.155) | 2.4 (0.09) 1.6 (0.06) 2.4 (0.09) | 1.6 (0.062 | 1.5 (0.0 NA NA | NA NA | 4.5 (D. 4.5 (D. 4.5 (D. | 1880 | 1.6 (0.062) 1.6 (0.062) 1.6 (0.062) | NA NA NA | NA NA NA | 4.6 (0.166) 4.6 (0.166) 4.6 (0.166) | 1.6 (0.062) 1.6 (0.062) 1.6 (0.062) | 1.1 (0.045) | NA NA NA | 3.18 (0.125) 3.18 (0.125) 3.18 (0.125) | 1.6 (0.062) 1.6 (0.062) 1.6 (0.062) | NA 1.6 (0.062) NA | | NA NA NA | | 4.78 (0.188) 6.35 (0.250) NA | | | (2) NA | | 3.94 (0.155) 3.94 (0.155) 3.94 (0.155) | 3.00 (0.118) 3.00 (0.118) 3.00 (0.118) | NA. | NA NA NA | 3.05 (1.20 NA NA | 2.0 (0.081 2.0 (0.081 NA |) NA) NA NA | NA NA NA | |) NA | | 4.6 (0.166) NA NA | | Flammability, mm (in) UL 94HBF (file E20305) (Pass Ir) MVSS 302 (Pass Ir) CSA Comp HBF (file 188149) (Pass |
| nvironmental | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Environmental |
| lasketing and Sealing UL JMST2 Consisting of ULSO & ULSOB) JANYSA-C222 No. 94-M99 | | File MH154 | | | File MH15464 NA | | File MH154 File 18814 | | NA NA | File MH15464 NA | | File MH1546 File 188149 | | File MH15464 NA | | File MH1546- File 188149 | | | File MH15464 NA | | | File MH15464 NA | | NA NA | | 64 File MH15464 | File MH1546 | | | File MH154 | 464 | | NA. | File MH1546 | 64 NA NA | | File MH15464 File 188140 | | Gasketing and Sealing UL JMST2 (Cominting of UL50 & UL508) CAN/CSA-C22 No. 94-M91 |

| | Supporting Material - Clear Polysater Film (PET) | | | | | | | | | | |
|-------------|--|---------------------------|------------------------|------------------------|---------------------------------|---------------------|--------------------------------|--|--|--|--|
| Property | Coefficient of Friction A/B, (Kinetic) | Density, kg /m² (lb./ft²) | Modules, MD, kPa (psi) | Shrinkage, MD, %, (TD) | Tensile Strength, MD, kPa (psi) | Ultimate Elongation | Yield Strength (FS), kPa (psi) | | | | |
| Test Method | ASTM D 1894 | ASTM D 1505 | ASTM D 882 | 39 min. at 150°C | ASTM D 882 | ASTM D BIG2 | ASTM D 882 | | | | |
| Value | 0.4 | 1.395 (87.1) | 3.5x10* (500,000) | 1.2 (0.0) | 2.1x10 ⁵ (30,000) | 150 | 1.0x10 ⁵ (15,000) | | | | |

DESIGN TOOLS

Product Properties Guide

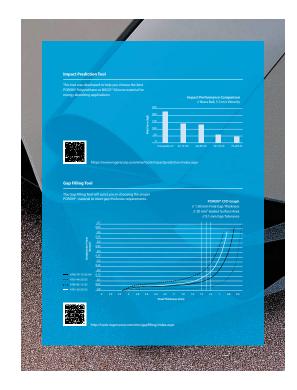
The Product Properties Guide filters PORON* product information by various criteria, providing several material options based on your application requirements.

> // Sort by Specific Property (Primary): Compression Force Deflection Typical Va // Sort by Specific Property (Primary): Compression Force Deflection Typical Va // Sort by Specific Property (Secondary): Product Na // 2016 175 Rat

| Product | 4701-30-15 | 4790-79-12 | Condux Plus TM Foam - 0.53 mm | 4790-92-20 | 4701-70-11 | 4701-70-13 | 4701-30-20 | | | | | | | |
|--|------------|------------|---|------------|------------|------------|------------|--|--|--|--|--|--|--|
| Physical Properties | | | | | | | | | | | | | | |
| Thickness (Min) (mm) | 4.78 | 2.03 | 0.53 | 2.06 | 12.50 | 12.50 | 1.57 | | | | | | | |
| Thickness (Max) (mm) | 12.70 | 9.53 | N/A | N/A | 25.00 | 25.00 | 3.18 | | | | | | | |
| Thickness Tolerance (%) | 4/-10% | +/-10 % | +/-15% | +/-10% | +/-10% | +/-10% | +/-10% | | | | | | | |
| Density ASTM D 3574 Test A (kg/m²) | 240 | 192 | N/A | 320 | 168 | 206 | 320 | | | | | | | |
| Color | Black | Black | Metallic / Black | Black | Pink | tive | Black | | | | | | | |
| Compression Force Deflection Typical Value () 25 % (6°a) | 21.0 | 21.0 | 21.0 | 22.0 | 28.0 | 34.0 | 35.0 | | | | | | | |
| Compression Set (70°C) Max. Value ASTM D 3574 Test D (%) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | | | | | | | |
| Tensile Elongation % Typical Value ASTM D 3574 (%) | 161 | > 145 | N/A | N/A | 295 | 360 | 154 | | | | | | | |



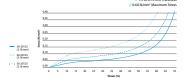
http://tools.rogerscorp.com/ems/products/poron-properties/index.aspx



Compression Force Deflection (CFD) Tool

Using stress-crass data, the CTD Curve tool helps in the identification of the PSIGNY materials) that meet your engineering requirements.

TOOL OF THE PSIGN PSI





http://tools.rogerscorp.com/ems/cfdcurve/index.aspx

Elastomeric Material Solutions Application Design Tool

The Elastomeric Material Solutions Application Design Tool assists in the identification of PORON* Polyurethane and BISCO* Silicone materials that best meet your design requirements and provides material options based upon your application requirements.

| ON* Polyurethanes | BISCO® Silicones |
|-----------------------------|-------------------|
| RON* 4701-40 | // BISCO* HT-800 |
| ORON® AquaPro™ 4701-41 | // BISCO* L3XX-20 |
| RON® Dura-Shape™ Foams | // BISCO* RS-720 |
| ORON* ShockSeal** Materials | // BISCO* RS-750 |
| ORON® V-0 Foam | // BISCO* 7330 |
| | // BISCO* HT-350 |
| | |

Configuration

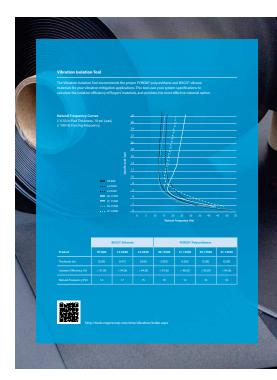
// Application: Sealing & Gasketing

// S.1 - 15.0 mm Thickness

// Medium Compressibility



http://tools.rogerscorp.com/ems/products/msg/index.aspx



APPLICATIONS

Environmental Seals

Protective Cases

Water Sealing

Spacers

Motor Mounts

Cushioning

Vibration Isolation

Springs

Gaskets

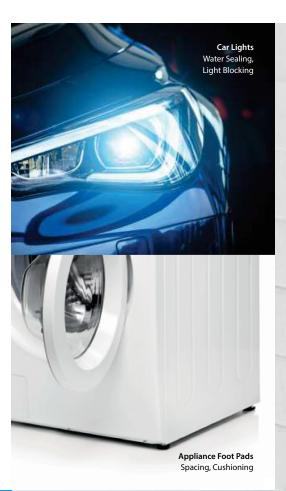
EMI/RFI Shielding

Sound Damping

Gap Filling

Light Blocking

and more ...









For more information visit rogerscorp.com/ems

World Class Performance

Rogers Corporation (NYSE:ROG) is a global leader in engineered materials to power, protect, and connect our world. With more than 180 years of materials science experience, Rogers delivers high-performance solutions that enable clean energy, internet connectivity, and safety and protection applications, as well as other technologies where reliability is critical. Rogers delivers Power Electronics Solutions for energy-efficient motor drives, vehicle electrification and alternative energy; Elastomeric Material Solutions for sealing, vibration management and impact protection in mobile devices, transportation interiors, industrial equipment and performance apparel; and Advanced Connectivity Solutions for wireless infrastructure, automotive safety and radar systems.

Headquartered in Arizona (USA), Rogers operates manufacturing facilities in the United States, China, Germany, Belgium, Hungary, and South Korea, with joint ventures and sales offices worldwide.

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Rogers is committed to producing quality products in a safe environmen manufactured with robust management systems certified to industry standards

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