Product Information

# ROHACELL® EC

## A VERY SPECIAL FOAM

**ROHACELL® EC** is a polymethacrylimide (PMI) based foam core material specifically designed for stealth applications.

During processing, the polymer is loaded with carbon particles resulting in a conductive foam product that possesses superior dielectric properties and enables absorption of electromagnetic waves at radar frequencies.

## DIELECTRIC PROPERTIES

| Property | Frequency [GHz] | ROHACELL® 71 EC | ROHACELL® 150 EC |
|---|---|---|---|
| Real part of permittivity | 5 | 1.44 | 1.83 |
| | 10 | 1.33 | 1.62 |
| | 20 | 1.25 | 1.68 |
| | 30 | 1.28 | 1.52 |
| Imaginary part of permittivity | 5 | 0.18 | 0.41 |
| | 10 | 0.12 | 0.30 |
| | 20 | 0.14 | 0.24 |
| | 30 | 0.10 | 0.20 |

Scattering parameters determined using transmission / Reflection method (waveguide and Vector Network Analyzer). Permittivity determined using Nicholson Ross Weir algorithm. Single measurement based values.

Additionally, **ROHACELL® EC** features all the exceptional thermomechanical properties and strength-to-weight ratios found in traditional ROHACELL® foam products. This combination of properties makes it an excellent sandwich core solution for components requiring both radar absorption properties and superior mechanical performance.

Typical applications include use in stealth aircraft and electromagnetic shielding.

## OUTSTANDING MECHANICAL PERFORMANCE

Due to its closed cell structure, **ROHACELL® EC** provides controlled resin absorption since the resin enters only the cut cells on the surface of the core material. This assures secure bonding of the core to the surface layers, but adds no excessive resin weight to the finished part.

With excellent weight-specific mechanical properties at a very low weight, this lightweight foam is available in nominal densities starting at 75 kg/m$^3$ (4.68 lb/ft$^3$).

## EFFICIENT PROCESSING

**ROHACELL® EC** can withstand the most demanding curing and processing conditions up to 180 °C (356 °F) and 7 bars depending on material density. It is compatible with all common curing processes including vacuum infusion, resin transfer molding, pre-preg autoclaving, as well as hand lay-up.

**Notice:** Evonik is aware of its product responsibility to the global community and takes reasonable care in the distribution of its products. **ROHACELL® EC** purchase and usage may require a license and proof of end user application. This product is:

- Subject to EEC regulation 428/2009 (Dual Use Regulation) annex I 1C101
- Subject to EEC regulation 1334/2000 annex IV, a EEC domestic export license is required
- NOTE: United States customers purchasing from a US supplier are not subject to the above listed EEC regulations.

| Property | Test Method* | Unit | ROHACELL® 71 EC | ROHACELL® 150 EC |
|---|---|---|---|---|
| Density | ISO 845<br>ASTM D 1622 | kg/m³<br>lbs/ft³ | 75<br>4.68 | 150<br>9.36 |
| Compressive Strength | ISO 844<br>ASTM D 1621 | MPa<br>psi | 1.6<br>232 | 5.0<br>725 |
| Tensile Strength | ISO 527-2<br>ASTM D 638 | MPa<br>psi | 2.0<br>290 | 4.8<br>696 |
| Tensile Modulus | ISO 527-2<br>ASTM D 638 | MPa<br>psi | 105<br>15,200 | 245<br>35,500 |
| Elongation at Break | ISO 527-2<br>ASTM D 638 | % | 3.2 | N/A |
| Shear Strength | DIN 53294<br>ASTM C 273 | MPa<br>psi | 1.0<br>145 | 3.5<br>508 |
| Shear Modulus | DIN 53294<br>ASTM C 273 | MPa<br>psi | 36<br>5,220 | 90<br>13,100 |

Technical data values presented above are typical for nominal density, subject to normal manufacturing variations. *Data values are based on ISO & DIN standard test methods, however ASTM values can be confirmed upon request. All ROHACELL® products are closed-cell rigid foams based on polymethacrylimide (PMI) chemistry and contain no CFC's.



**Evonik Operations GmbH | Smart Materials**
High Performance Polymers
Performance Foams
64293 Darmstadt, Germany
Phone +49 6151 18-1005

**Evonik Corporation**
Theodore, Alabama USA
Phone +1 866 764-6235

**Evonik Specialty Chemicals (Shanghai) Co., Ltd.**
Shanghai, China
Phone +86 21 6119 3788



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