Borcycle™ MD4481SY

40% talc filled post-consumer recyclate (PCR) compound

Background Challenge

On the path towards circularity, we have developed MD4481SY suitable for various appliances applications (e.g. coffee machines and white goods parts) that can replace current fossil based compounds as well as engineering plastics and metal parts. MD4481SY has an excellent property profile matching fossil based alternatives - ensured by an excellent batch to batch consistency.

Your Benefits

- High PCR content of 40% - leading to a >20% CO_2 footprint reduction*
- Matching fossil based 40% talc filled compound - enabling drop in solutions
- Excellent flowability - enables complex part geometries
- Low odour - excellent consumer perception and improved production environment
- UL listing - enabling global usage

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Material Requirements and Characteristics

Key Material Characteristics

- Excellent balance between stiffness and impact strength
- High heat stabilization package
- Excellent dimensional stability
- Good flowability - suitable for injection molding
- Close to virgin performance (e.g. MD441U)
- Full product documentation and regular compliance testing
- Available in black color

Product Compliance

Properties	Compliance
REACH	✓
SVHC	✓
Short-term Skin Contact	✓
RoHS	✓
UL94 Listing	✓

Key Technical Properties

Properties	MD441U	MD4481SY	Unit	Method
Density	1220	1275	kg/m³	ISO1183
MFR (230 °C / 2.16 kg)	6	9	g/10 min	ISO1133
Flexural Modulus	4700	4000	MPa	ISO 178
Tensile Strength	32	29	MPa	ISO 527-2
Heat Deflection Temperature B (0.45 MPa)	130	120	°C	ISO 75-2
Charpy notched impact strength +23 °C	2.4	2.0	kJ/m²	ISO179 1eA
PCR Content	0	40	wt %	

Values determined on standard injection moulded specimens conditioned at 23 °C and 50 % relative humidity after at least 96 hours storage time.

Well-balanced Material Properties

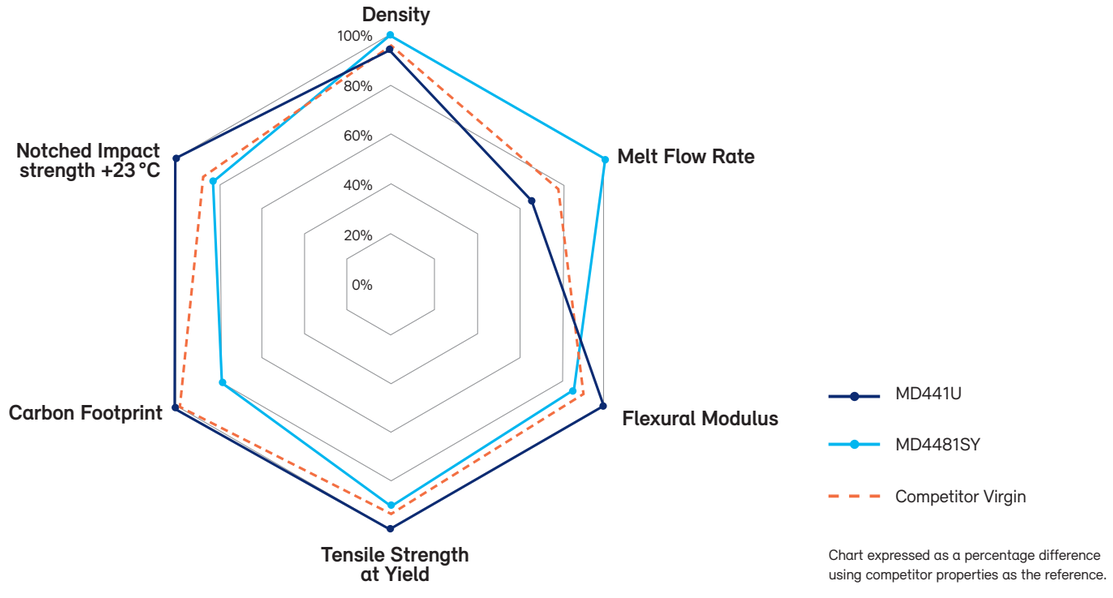

Chart expressed as a percentage difference using competitor properties as the reference.

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* **Disclaimer:** The result was estimated internally using the results from a life cycle assessment for Borealis' virgin fossil polyolefins, conducted in 2022 and a separate life cycle assessment for Borealis' PCR produced at Ecoplast/mtm conducted in 2021. A full life cycle analysis study, as well as other potential environmental impacts, was not conducted in this context. The result is estimated for the production of the pellet, and based on the assumed same functional performance between the conventional virgin solution and solution containing PCR. Other life cycle stages beyond the production of the pellets have not been considered.

About Borealis Borealis is one of the world's leading providers of advanced and sustainable polyolefin solutions. In Europe, Borealis is also an innovative leader in polyolefins recycling and a major producer of base chemicals. We leverage our polymer expertise and decades of experience to offer value-adding, innovative and circular material solutions for key industries such as consumer products, energy, healthcare, infrastructure and mobility.

With operations in over 120 countries and head offices in Vienna, Austria, Borealis employs around 6,000 people. In 2022, we generated a net profit of EUR 2.1 billion. OMV, the Austria-based international oil and gas company, owns 75 % of our shares. The Abu Dhabi National Oil Company (ADNOC), based in the United Arab Emirates (UAE), owns the remaining 25 %.

In re-inventing essentials for sustainable living, we build on our commitment to safety, our people, innovation and technology, and performance excellence. We are accelerating the transformation to a circular economy of polyolefins and expanding our geographical footprint to better serve our customers around the globe. Our operations are augmented by two important joint ventures: Borouge (with ADNOC, headquartered in the UAE); and Baystar™ (with TotalEnergies, based in the US).

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