

Product News

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BorSafe ME3420 – The perfect balance of enhanced flexibility and high performance

Pressure pipes in small and mid-sized diameters, typically used for house connections, are most of the time delivered in coils for easier transportation, and the installation environment often requires bending around obstacles. Therefore, the most important product characteristics for these pipes are flexibility and good mechanical properties to withstand the tough handling and installation conditions. The technical challenge for raw material producers is to find the perfect balance between high flexibility and long-term strength.

Now Borealis has developed the solution to this challenge: BorSafe™ ME3420, the most flexible medium-density PE80 (MDPE80) compound for small-diameter pressure pipes currently available on the market. BorSafe ME3420 combines the high-impact and crack-resistant advantages of PE100 (high density PE) with the flexibility of MDPE80. This makes installation easier, faster and less expensive without any compromise in pipe performance.

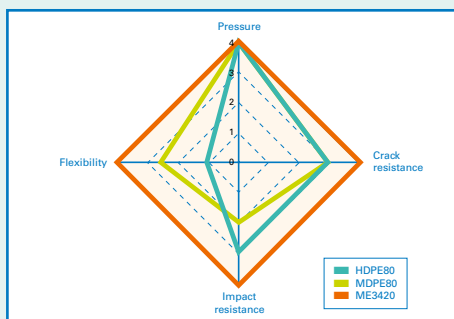


Figure 1: BorSafe ME3420, perfect balance of properties

Flexible BorSafe ME3420 PE80 material benefits the whole value chain

Pipe producers	Installers	Utilities	Consumer
<ul style="list-style-type: none"> • High quality material • Technical solution fulfilling market needs 	<ul style="list-style-type: none"> • Safe handling and installation • Faster and easier installation • Easy to bend around curves and obstacles 	<ul style="list-style-type: none"> • Long-lifetime • Less maintenance costs • Higher safety of installation • Decreased full-life costs 	<ul style="list-style-type: none"> • Long lifetime • Clean water • Reliable water supply



Breakthrough development in mechanical performance and ultra-flexibility

BorSafe ME3420 is developed using Borealis' proprietary Borstar® bimodal technology, providing the material with outstanding mechanical properties. It exhibits excellent Slow Crack Growth (SCG) resistance as proven by the Notch Pipe Test at 10,000 h or the FNCT (Full Notch Creep Test) at more than 5,000 h! The Rapid Crack Propagation (RCP) shows the best results for a MDPE80 material, in fact BorSafe ME3420 is the only material that could be approved for all dimensions according to EN 12201.

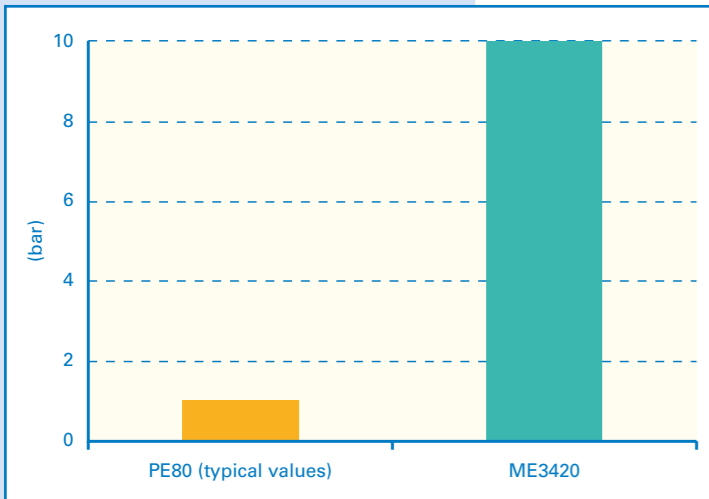


Figure 2: RCP: critical pressure on 250 mm, SDR11 pipe

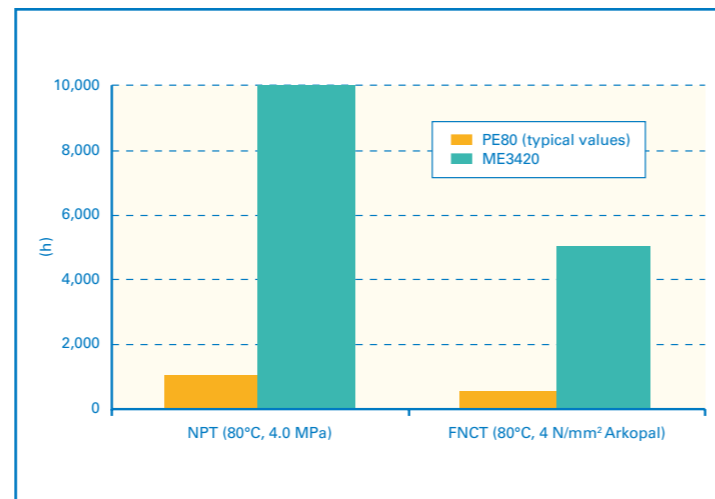


Figure 3: SCG performance

At the same time, BorSafe ME3420 is 40% more flexible compared to a HDPE80 and 65% more flexible compared to PE100 pipe material, making it the best-in-class PE80 material and ideal for small diameter pipes.

The new BorSafe PE flexible grades combine enhanced flexibility with high performance

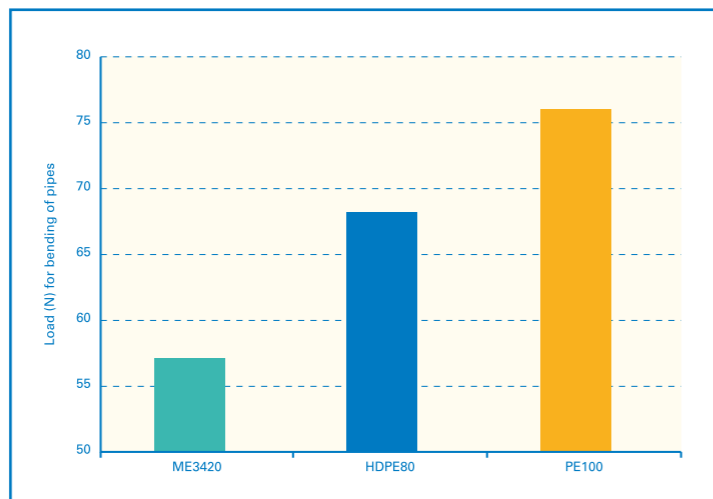


Figure 4: Compared flexibility of BorSafe ME3420 vs other PE pipe materials

Higher flexibility of pipes can reduce installation cost

BorSafe ME3420 pipe flexibility translates into valuable advantages at each step in the installation process, enabling savings not available with any other PE material:

- Flexible pipes can be laid to follow the line of curved trenches and, where necessary, be easily bent around obstacles such as inspection chambers and existing pipe and cable services, as well as natural underground obstructions, to provide a fast, safe, cost-effective installation solution.
- In the case of house connections, pipe cost represents only a marginal part of the total installation cost. The saving potential is thus higher on the other components, such as pipe installation. The enhanced flexibility of BorSafe ME3420 translates into easier and faster installation, contributing to cost reduction.

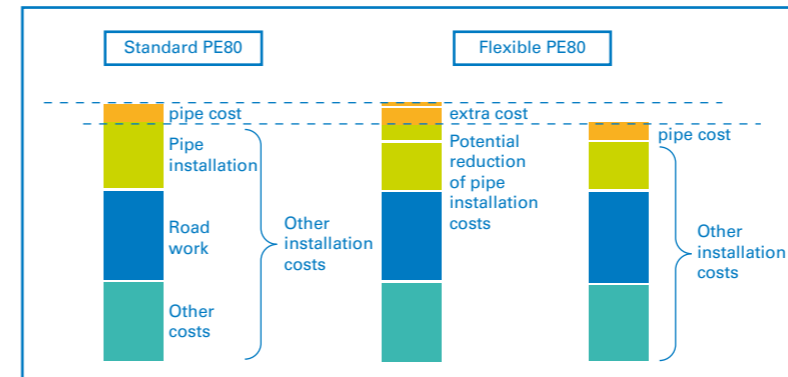


Figure 5: BorSafe ME3420 pipe flexibility translates into savings on overall installation costs

The ideal solution for enhanced geothermal applications

With the increasing cost of energy, the concept of geothermal heating or using the energy in the ground is becoming more and more popular. Geothermal energy is now broadly recognised as an environmentally efficient, cost-effective, and virtually inexhaustible alternative to traditional heating and air conditioning systems.

Developed for small diameters, BorSafe ME3420 is the perfect response to the demands for flexible geothermal collector pipes.

Horizontal systems are buried in the ground at a depth of about 60 cm, in loops to optimise the collection surface. For a standard, several hundred meters of small diameter pipes are needed.

Vertical systems are installed in a well, the average length is twice 50 m (down-pipe and return), small diameter pipes (32 to 63 mm) are generally used as well.

BorSafe ME3420 combines high flexibility for fast and easy installation with outstanding mechanical properties for a long lifetime, and leak-free solution eliminating the risk of the chemical fluids, such as glycol, leaking into the environment and contaminating the groundwater.



Grade characteristics

Classification	PE80
Flexural modulus	700 MPa
Notch Pipe Test (4.0 MPa, 80°C)	10,000 h
FNCT (4 N/mm ² , 80°C, 2% Arkopal)	> 4,000 h
RCP, S4 test, 250 mm SDR11 pipe	> 10 bars

We care about the environment

Borealis is committed to advancing innovative plastics solutions that can help protect our climate. Lightweight plastics save more energy during their lifespan than is used for their production. Thanks to the special molecular structure of Borstar® products, our unique polyolefin production Borstar technology results in material and energy savings for our customers in many areas of application.

Our latest Borstar PE2G materials allow up to 25% reduction in material usage and significant energy saving in processing. The carbon footprint of polyolefins is amongst the lowest in the plastics industry thanks to their simple production chain with an average "cradle-to-gate" footprint of 1.7 kg of CO₂ per kg of PP and 1.6 per kg of high density PE.

For more information, please contact our environmental platform experts at climate@borealisgroup.com



Borealis and Borouge are leading providers of innovative, value creating plastics solutions. With more than 40 years of experience in polyolefins and using our unique Borstar® technology, we focus on the infrastructure, automotive and advanced packaging markets across Europe, the Middle East and Asia. Our production facilities, innovation

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