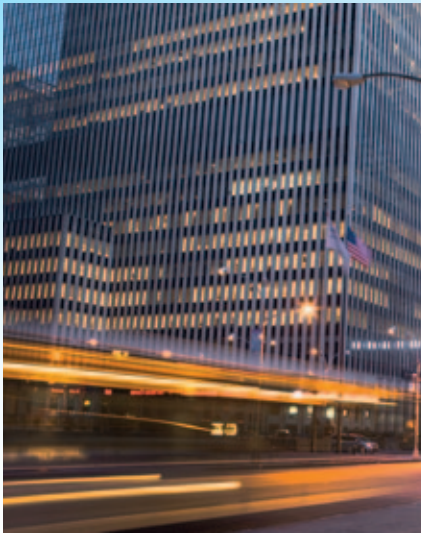


Visico™ FR4450 and FR4451 – Moisture curable insulation and jacketing for building wire and photovoltaic cable



Introducing new Low Fire Hazard compound based on Visico™ scorch retardant technology

Visico™ FR4450 and FR4451 is a new halogen-free, moisture cure system based on Visico scorch retardant technology. Used together with specially designed catalysts LE4439 (natural) and LE4433 (black) these compounds exhibit excellent processability and scorch resistance, combined with good mechanical properties and flexibility.

Visico FR4450 – Designed for UL style building & industrial wire

Visico FR4450/LE4439 (natural) and FR4450/LE4433 (black) have been recognized by Underwriters Laboratories to meet the requirements of UL 44 and UL 854. This system is unique in being halogen-free, since most available solutions for this application are based on brominated flame retardant additives.

Visico FR4450/LE4439 and FR4450/LE4433 are listed by UL for the following cable types passing horizontal flame test:

- XHH, XHHW, XHHW-2, RHH, RHW, RHW-2, and SIS according to UL 44
- USE, and USE-2 according to UL 854
- Visico FR4450/LE4433 is listed for Sun Res option for all sizes



Visico FR4451 – Photovoltaic cable

Visico FR4451/LE4439 is designed to meet the requirements for insulation and jacketing of photovoltaic cables according to specifications TÜV 2 Pfg 1169/08.2007 and EN 50618. This UV stabilized compound also fulfils the requirements for building wire insulation type EI5 according to EN 50363-5. Compared to most available solutions, Visico FR4451/LE4439 enables easy processing, and long shelf life.

PRODUCT NEWS

Visico FR4450/LE4439 (natural) and FR4450/LE4433 (black) – Property profile

| Property | Typical Value | Test Method |
|--|------------------------|-------------|
| Density | 1100 kg/m ³ | ASTM D 792 |
| Melt flow rate (190 °C/2.16 kg) | 0.7 g/10 min | ASTM D 1238 |
| Tensile Strength ¹ | > 15 MPa/2,350 psi | ASTM D 412 |
| Tensile Strain at Break ¹ | > 300 % | ASTM D 412 |
| Oxygen index | 32 % | ASTM D 2863 |
| Horizontal flame test, HB-1 ¹ | Pass | UL 2556 |

¹ 14 AWG/30 mil wire

Visico FR4451/LE4439 – Property profile

| Property | Typical Value | Test Method |
|---|------------------------|---------------------|
| Density | 1190 kg/m ³ | ISO 1872-2/ISO 1183 |
| Melt flow rate (190 °C/2.16 kg) | 0.5 g/10 min | ISO 1133 |
| Tensile Strength | > 15 MPa | IEC 60811-501 |
| Tensile Strain at Break | > 300 % | IEC 60811-501 |
| Flexural Modulus | 100 MPa | ISO 178 |
| Pressure test at high temperature (140 °C, 240 h) | Pass | IEC 60811-508 |
| Oxygen index | 32 % | ISO 4589-2 |
| Single vertical flame test ² | Pass | IEC 60332-1-2 |

² Photovoltaic cables according to TÜV 2 Pfg 1169/08.2007

Bringing energy all around | Date of issue: September 2015

About Borealis and Borouge Borealis is a leading provider of innovative solutions in the fields of polyolefins, base chemicals and fertilizers. With headquarters in Vienna, Austria, Borealis currently employs around 6,500 and operates in over 120 countries. It generated EUR 8.3 billion in sales revenue in 2014. The International Petroleum Investment Company (IPIC) of Abu Dhabi owns 64% of the company, with the remaining 36% owned by OMV, an integrated, international oil and gas company. Borealis provides services and products to customers around the world in collaboration with Borouge, a joint venture with the Abu Dhabi National Oil Company (ADNOC). Building on its proprietary Borstar® and Borlink™ technologies and 50 years of experience in polyolefins, Borealis and Borouge support key industries including infrastructure, automotive and advanced packaging. The Borouge 3 plant expansion in Abu Dhabi will be fully operational in 2015. Borouge 3 will deliver an additional 2.5 million tonnes of capacity when fully ramped up, bringing the total Borouge capacity to 4.5 million tonnes. Borealis and Borouge will then have approximately 8 million tonnes of polyolefin capacity. Borealis offers a wide range of base chemicals, including melamine, phenol, acetone, ethylene, propylene, butadiene and pygas, servicing a wide range of industries. Together with Borouge the two companies will produce approximately 6 million tonnes of Base Chemicals in 2015. Borealis also creates real value for the agricultural industry with a large portfolio of fertilizers and technical nitrogen products. The company distributes approximately 5 million tonnes per year. Borealis and Borouge aim to proactively benefit society by taking on real societal challenges and offering real solutions. Both companies are committed to the principles of Responsible Care®, an initiative to improve safety performance within the chemical industry, and contribute to solve the world's water and sanitation challenges through product innovation and their Water for the World™ programme. **For more information visit:** www.borealisgroup.com · www.borouge.com · www.waterfortheworld.net

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