

Borlink™ Superclean handling of octabins for power cable insulation compounds



About Borealis

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 6,400 and operates in over 120 countries. It generated EUR 8.1 billion in sales revenue in 2013. The International Petroleum Investment Company (IPIC) of Abu Dhabi owns 64% of the company, with the remaining 36% owned by OMV, the leading energy group in the European growth belt. 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 2014. 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 2014.

Borealis also creates real value for the agricultural industry with a large portfolio of fertilizers. The company distributes approximately 2.1 million tonnes per year. This volume will increase to more than 5 million tonnes by the end of 2014.

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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Introduction

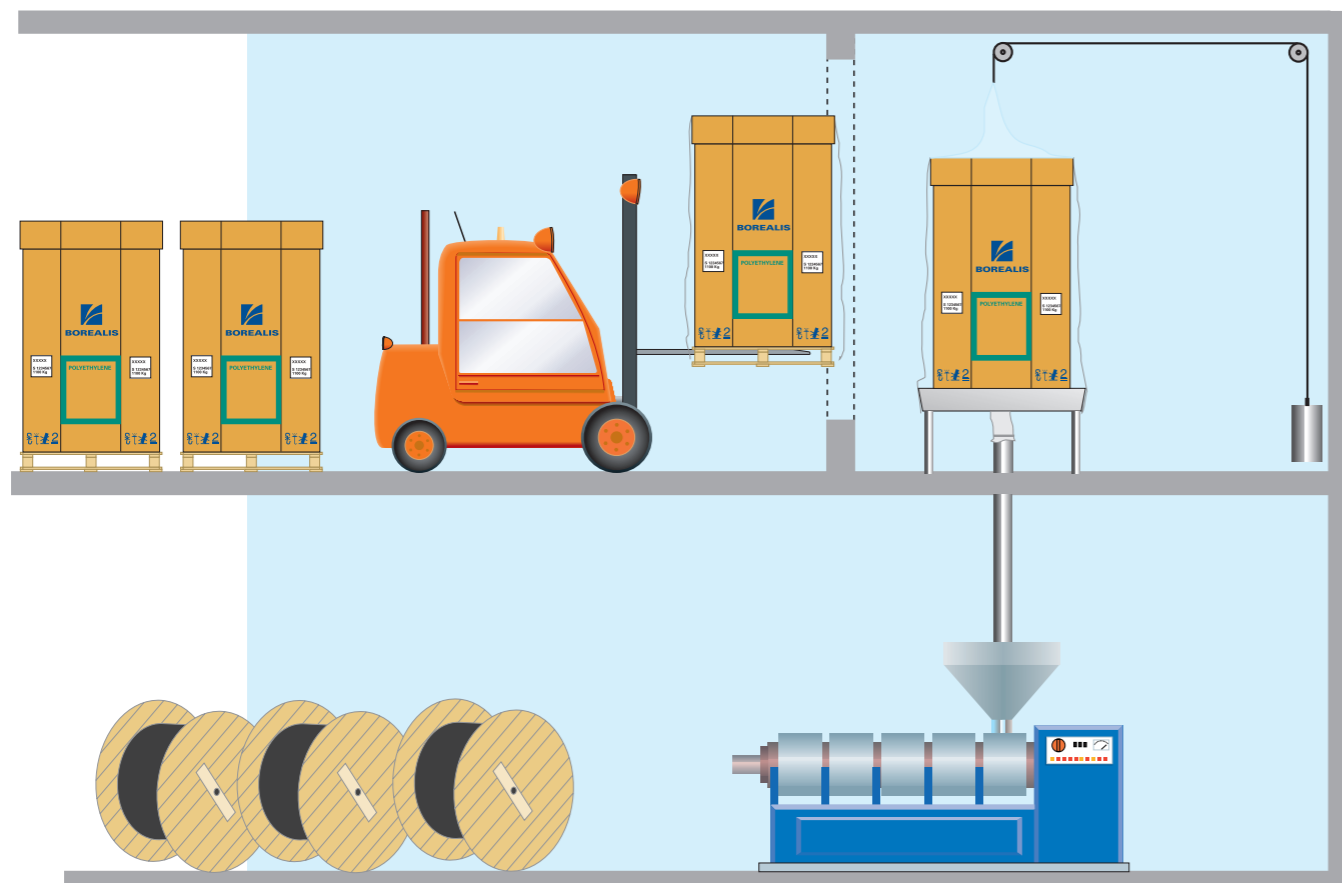
One of the most important quality criteria for XLPE insulation, when it is used in manufacturing grades of Medium to Extra High Voltage cable, is cleanliness.

Since we first started producing these types of compounds in the 1960's, Borealis has consistently improved cleanliness to a level where cables with voltage ratings up to 525 kV AC are possible.

Borlink™ Superclean quality is achieved by special manufacturing of compounds in completely closed loop or critically controlled systems.

Power cable XLPE compounds from Borealis are commonly supplied in 1000 kg octabins with inner liner.

Once packed in their final package, cleanliness is ensured by a completely closed compartment. The weakest link in the chain from Borealis to the cable producer's extruder is unloading of the packaging. Based on the general philosophy of keeping the material in closed systems, the octabin package is specially designed to minimise the risk of external contaminants entering the polymer.

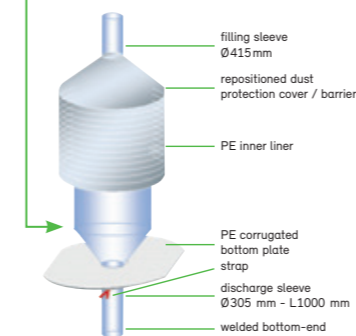


Unloading of octabins

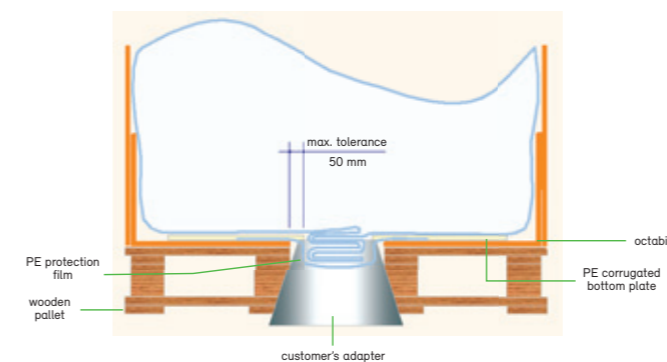
General

Octabins can be unloaded from the top by means of a vacuum system and a probe inserted into the spout.

Product handling such as pneumatic conveying always increases the risk of contaminants and dust entering systems. Due to wear and tear of the conveying system, supervision and maintenance are needed. The other method of unloading is to use the bottom emptying hose of the polyethylene inner liner. The material can then be fed to the extruder gravimetrically. This method is recommended because of its simplicity and the minimum external equipment needed.



The design features of the octabin enables the package to be easily enclosed in a compartment consisting of a protecting polyethylene liner and a dust-tight pallet tray. This method completely eliminates the risk of external contaminants being introduced from the package itself.



Octabin basic design

Pallet size PRS8:

1140 x 1140 x 151 mm

Height of package:

1950 mm max. (including pallet of 151 mm)

Dead weight:

Approx. 40 kg

Volume:

Approx. 1.8 m³

Liner:

High strength cardboard package with a polyethylene liner and special cover/barrier.

Material weight:

In a range from 500 to 1200 kg

Handling instruction:

To be stored indoors in dry atmosphere. Can be stacked one on one, provided that the PE stretch-wrapping is not removed.

Unloading procedure:

The octabin can be unloaded from the top or the bottom. This package is specially designed to facilitate super clean bottom unloading.

Borlink™ Superclean bottom unloading

Basic considerations

Provided that the package is prepared as described below, the only potential contaminants will be those coming from the surrounding air or from dust from the floor, walls, ceilings, or the operator. Particles bigger than 1–2 micron will settle, while smaller particles will remain airborne.

For production of High Voltage and Extra High Voltage cables, it is common practice to unload the XLPE package in a clean room operating under defined clean room specifications.

To maintain standards, regular cleaning of the unloading clean room is needed. It is recommended that the clean room is frequently cleaned with a stationary vacuum cleaner with external exhaust and, at regular intervals, by water spraying. It is also recommended that the operator unloading the package wears protective clothing that do not release fibres.

Octabin design details

The Borlink™ octabin is designed with the following features for clean handling:

- Bottom plate of corrugated polyethylene.
- Polyethylene film for protection of the emptying hose.
- Dust protection cover/barrier which has been repositioned can easily be deployed enclosing the whole package to create a super clean environment.



Platform

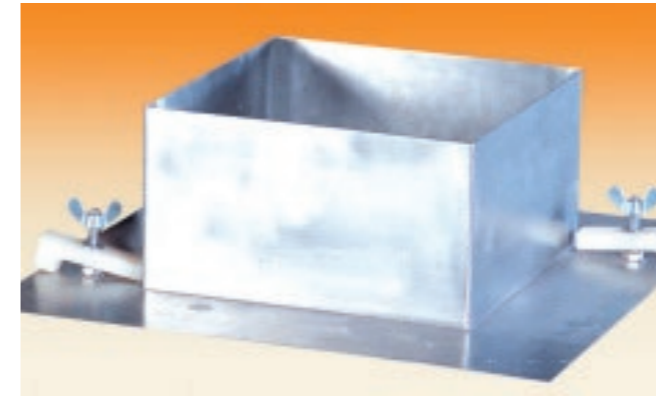
1. Platform

The package should be placed on a platform preferably of stainless steel, as shown in the picture above. The platform has to be specially designed by the cable maker according to the needs of his plant layout.

The platform can be made as a single unit with wheels placed on rails leading into the clean unloading area, or as a unit designed to be handled by a forklift or a traverse crane. The tray should be cleaned with a vacuum cleaner between each operation.

The design of the platform described here includes a stainless steel adapter which can be inserted from the bottom into the outlet frame of the pallet.

This procedure facilitates easy placement of the package in the tray by means of a forklift truck, preferably equipped with a side shift system.



Adapter

2. Dust protection

A polyethylene liner used as dust protection is fitted on top of the inner liner, inside the package. This dust protection liner should be manually pulled from the top over the octabin and the platform. This should be done before the package is transported into the clean area where the unloading will take place. Strapping the dust protection liner around the circumference of the platform ensures that the whole package is enclosed.

3. Inner liner

During unloading of the XLPE compound, the inner liner of the package will fall down inside the octabin and potentially interfere with the flow of the material. To avoid this, and to ensure that the package is completely unloaded, the top of the inner liner should be fixed in its top position during unloading. This can be done by placing a strap around the top of the inner liner linked to a balance weight. See Step 6.

4. Unloading hose

The emptying hose is placed in the centre of the bottom of the package. The hose is an integral part of the inner liner. The hose is protected during transport by a polyethylene film fixed to the bottom plate. The bottom of the package is a polyethylene corrugated plate specially selected to eliminate the risk of contamination when the protective film is removed. The film should be removed, using a knife, before the package is moved into the clean area.

5. Connection

The hose should be opened by cutting with a knife to the desired length. The hose is then connected to the filling pipe of the downstream system. The material will start to flow when the hose strap is removed. This part of the operation is critical and necessary precautions have to be taken to eliminate any risks that contaminants can enter while the connection is openly exposed before closure.



Unloading procedures



Step 1
Lift the octabin and insert the adapter in the bottom outlet frame of the pallet.



Step 2
Place the package on the tray.



Step 3
Remove the lid and pull the dust protecting liner over the octabin.



Step 4
Strap the dust protection liner around the bottom tray.



Step 5
When placed in unloading position, connect the top of the liner to the balance weight system.



Step 6
Remove the hose protection. The covered octabin is now prepared for transfer to the unloading position in the clean room.



Step 7
Pull out the hose and cut to the desired length.



Step 8
Connect the hose to the filling pipe and open the strap for unloading.

Borealis – Dedicated to Wire & Cable Solutions

Borealis and Borouge are the world's leading providers of innovative, value creating plastics solutions for the wire and cable industry. Our solutions are customer-driven and designed to satisfy the industry's continuously evolving demands for higher technical performance. Consequently, they can be found in the most challenging EHV and HV cable applications, as well as MV and LV energy transmission and distribution cables, building wires, and communications cables.

In answer to the need for production, installation and cable-system lifetime enhancements, we create the innovation links that secure world-class, step-change solutions and benefit the whole wire and cable value chain. Through the introduction of unique polymer technologies, which include Borlink™, Visico™/Ambicat™, Borstar®, and Casico™, we continue to pioneer the development of advanced insulation and jacketing systems for both energy and communication cables.

Built on more than 50 years experience, Borealis and Borouge have a well-established track record in serving customers' needs with the consistently high quality products expected of global leaders. We are committed

to extending that leadership position and our role as reliable partners for the long-term – a commitment not only supported by our forward thinking in innovative solutions, but also confirmed by ongoing investments for our customers' continued success.

Putting customers' needs at the centre of our planning is reflected in Borealis' largest investment in Europe to date, the new 350,000 t/y high-pressure, low-density PE plant in Stenungsund, Sweden, was inaugurated in June 2010, further strengthening Borealis' capabilities to meet the needs of the growing wire and cable markets. Furthermore, Borouge's expansion of Borstar® and Borlink™ capacity in Abu Dhabi, UAE, allows us to satisfy growing customer demand for wire and cable products in the Middle East and Asia Pacific markets and other emerging markets.

Through ongoing research and development, investment in the future and a dedicated team with solid industry knowledge, we aim to remain fully responsive to our customers' needs throughout the world.

Bringing energy all around | Date of issue: March 2014

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