

BorECO™ PP

Sewage system in ground water area in Helsinki

The challenges facing an urban ground water area

In eastern Helsinki, a new neighborhood was built on a ground water area. The quality of the sewage system was a top priority and needed to meet the very high standards in order to avoid any leakage into the ground water. For this project, Borealis BorECO PP was chosen to manufacture ribbed wall pipes, (Ultra Rib 2 by Uponor Oyj).

BorECO PP was selected because it offers excellent processability and allows the manufacturing of premium class sewage pipes with excellent stiffness, high impact strength and durability. To provide the highest safety and durability, these premium pipes are recommended for use in ground water areas with heavy traffic load and unstable soil conditions, particularly in urban areas where pipe maintenance is difficult and expensive.

Ribbed wall sewage pipes made with BorECO PP fulfills the strict requirements of such a challenging project:

- High safety and durability for installation in urban area
- High impact strength for installation during the freezing Finnish winter
- Ease of installation
- Very reliable and leak-tight joints in the ground water area

Companies involved in the Helsinki project

The structured wall pipes used in this project (Ultra Rib 2) were supplied by Uponor Oyj. The installation was carried out by Helsingin kaupungin rakennusvirasto (construction office of the city of Helsinki) for Helsingin vesi (Helsinki water company).

Extreme installation conditions

The work started in autumn 2004 and ended in spring 2005. The work was carried out during the winter period in Finland when the temperatures can fall to -20°C , which is the lowest possible installation temperature as the hydraulic systems of the construction machines may suffer, when used in colder temperatures. BorECO PP is the best choice for cold installation conditions because of both the high stiffness and the excellent impact strength properties at low temperatures.



The twin wall BorECO PP sewage pipes made of Borealis material is the best choice for installation in icy conditions.



The Ultra Rib 2 pipes made from BorECO PP are lightweight and easy to handle.

Ease of installation in an urban area

The length of the sewage system is 1 km and both 250 mm and 315 mm pipes were used. For the slightly hilly ground, the larger diameter pipes were used downstream while the smaller diameter pipes are used upstream. In urban areas, it is especially important that the pipes are easy to move and install, again the light-weight BorECO PP pipes are the preferred solution. The connection technique for these pipes is straightforward, for this project the Ultra Rib 2 pipes are jointed by electro fusion technology, which is automated and fast. It provides the ultimate leak-tight pipe connection, which is an important pipe system characteristic for this installation.



The electro fusion of the Ultra Rib 2 pipes made from BorECO PP is easy and fast and results in a leak-tight, high quality controllable seam, suitable for demanding ground water areas.

BorECO PP

The BorECO PP product family, which is highly appreciated in the market, delivers an optimum balance of both stiffness and impact properties and good processing characteristics for extrusion and injection moulding.

In addition to these key characteristics, excellent mechanical properties, excellent durability and very good processability-the performance profile of BorECO PP includes excellent resistance to chemicals and compatibility with conventional jointing techniques. BorECO PP is suitable for the production of structured wall pipes in accordance with prEN 13576 and for solid wall pipes in conformity with EN1852/A1.

Disclaimer

The information contained herein is to our knowledge accurate and reliable as of the date of publication. Borealis extends no warranties and makes no representations as to the accuracy or completeness of the information contained herein, and assumes no responsibility regarding the consequences of its use or for any printing errors.

Our products are intended for sale to industrial and commercial customers. It is the customer's responsibility to inspect and test our products in order to satisfy himself as to the suitability of the products for the customer's particular purpose. The customer is also responsible for the appropriate, safe and legal use, processing and handling of our products. Nothing herein shall constitute any warranty (express or implied, of merchantability, fitness for a particular purpose, compliance with performance indicators, conformity to samples or models, non-infringement or otherwise), nor is protection from any law or patent to be inferred. No statement herein shall be construed as an endorsement of any product or process.

Insofar as products supplied by Borealis or its subsidiary companies are used in conjunction with third party materials, it is the responsibility of the customer to obtain all necessary information relating to the third party materials and ensure that Borealis' products when used together with these materials are suitable for the customer's particular purpose. No liability can be accepted in respect of the use of Borealis' products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.

BorECO is a trademark of Borealis A/S, Denmark.

BorECO	MFR 230°C/ 2.16 kg ISO 1133, (g/10 min)	Tensile modulus 23°C ISO 527-2 (MPa)	Tensile stress at yield 23°C ISO 527-2 (MPa)	Charpy notched impact strength ISO 179/1eA (kJ/m ²) +23°C/-20°C	Conformity to material requirements in EN 1852/ prEN 13476
BorECO BA222E	0.3	1900	32	50/4	yes/yes
BorECO BA212E	0.3	1700	31	50/5	yes/yes
BorECO BEC5015	0.3	1500	30	70/7	yes/yes

Borealis is a leading, innovative provider of plastics solutions based on polyethylene (PE) and polypropylene (PP). Its technology shapes daily life products and forms the basis of next generation innovation and creative development in plastics.

Borealis A/S

Parallelvej 16, DK-2800 Kongens Lyngby (Denmark)
Telephone: +45 45 96 60 00, Fax: +45 45 96 61 23
www.borealisgroup.com

©2006 Borealis A/S.
All rights reserved



SHAPING the FUTURE with PLASTICS