

CASE STORY: BorECO™ PP for large diameter solid wall pipes

## BorECO™ BA212E - success in XLarge piping project

In late spring 2002 another breakthrough was achieved with the extrusion of 2000 m BorECO BA212E pipes in the dimension 900 x 32,6 mm. The smooth solid wall PP pipes were produced at Egeplast in Germany and then transported to Norway, Fredrikstad. The pipeline serves as transportation line for raw water.

BorECO BA212E has been applied successfully in many different processing methods, like the production of corrugated and double wall pipes, injection moulded fittings, extruded sheets and spiral wound structured wall pipes.

Another performance aspect of BorECO BA212E however was made evident in the production of a 900 x 32,6 mm solid wall pipe at Egeplast in Germany.

### BorECO BA212E material features

The applied material BorECO BA212E is a polypropylene block copolymer, characterised by high stiffness (1700 MPa) in combination with high impact strength.

The toughness of the material provides reserves in installation and handling, especially at cold temperatures. The increased stiffness allows for material savings while still keeping easy processability.



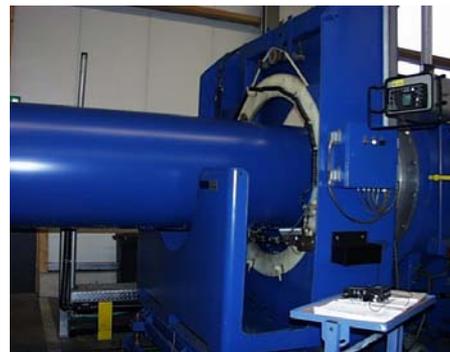
The project included the production and installation of 2000m BorECO BA212E pipes for raw water transportation in Fredrikstad, Norway.

Besides Egeplast as pipe manufacturer, the companies Hallingplast A/S, Norway; Peab AB and Fredrikstad Community together with Borealis were involved in the successful handling of the project.

### Production of the XLarge pipe

The pipes were produced on Egeplast's large Battenfeld extrusion line. The equipment is normally used for PE 80 and PE 100 pipes up to a diameter of 1.200 mm.

Prior to the start-up the extruder was completely cleaned. BorECO BA212E exhibited very good melt strength, requiring only a slight die set-off. 3% blue master batch were added, the final product showed very good pigment distribution.



Processing conditions:

Extruder: Battenfeld S150/30D  
Output: 650 kg/h  
Mass temperature: 218°C  
Material consumption: approx. 220 t

The good processing experience and low sagging behaviour indicate that even larger and thicker pipes can be produced easily with BorECO BA212E.

### Ease of Installation

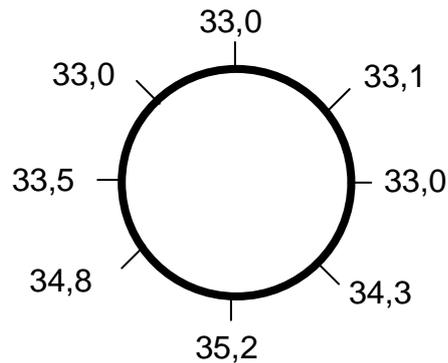
The BorECO BA212E pipes were produced in 22 m length and transported from Germany to Southern Norway by truck.

At the installation site in the forest of Fredrikstad the pipes were joint by butt welding.

Then the pipe sections with a maximum length of 350 m were drawn to the final lay-down position. The pipe was moved forward on very uneven forest ground with numerous stumps



Wall thickness distribution after 12 hours of production:



and other wood obstacles along the way.

Despite harsh conditions during installation, the BorECO BA212E pipe exhibited excellent surface finish, both on the inner and outer wall. Good abrasion resistance and the flexibility of the large pipe helped to ease the installation process.

The pipe laying was finalised in late autumn 2002, partly at cold temperatures below 0°C. The pipeline now serves as transportation line for raw water.



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