
Bormed™ Solutions for Healthcare Moulding and Film Applications



BOREALIS

بروج

Borouge



Borealis and Borouge are leading providers of innovative plastics solutions that create value for society.

Building on their proprietary Borstar[®] and Borlink[™] technologies and 50 years of experience in polyolefins, Borealis and Borouge support key industries including **infrastructure, automotive and advanced packaging**. Their manufacturing capacity reaches over 5.4 million tonnes of polyethylene and polypropylene per year.

Borealis is headquartered in Vienna, Austria, and operates in over 120 countries with around 6,400 employees worldwide. **Borouge**, its joint venture with the Abu Dhabi National Oil Company (ADNOC), employs approximately 3,000 people, has customers in more than 50 countries and its headquarters are in Abu Dhabi in the UAE and Singapore. Together, both companies provide services and products to customers around the world.

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 proactively benefit society by taking on today's challenges and are working to drive ideas forward. Both companies are committed to the principles of Responsible Care[®], driving improved safety performance within the chemical industry and contributing to addressing 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.borealisbecausewecare.com
www.waterfortheworld.net

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The Bormed™ Concept

We understand that in the healthcare market, safety and efficiency of the product matters most, so you need the right partner to do business with in a reliable and meaningful way. We achieve this through our dedicated, constantly developing range of polyethylene and polypropylene grades, our global team and, critically, the Bormed concept. This is more than simply documentation and technical service, rather it is all encompassing – from product conception to production, procurement, support and distribution. It is based on the three core principles of service, commitment and conformance which cover the different aspects of active information management, change control and security of supply. Additionally, through our technical expertise and an ongoing, clear dialogue with our business partners, we remain at the forefront of healthcare trends and challenges allowing us to evolve our Bormed offering with the industry, providing tailored healthcare solutions for you. Because we care.

Commitment

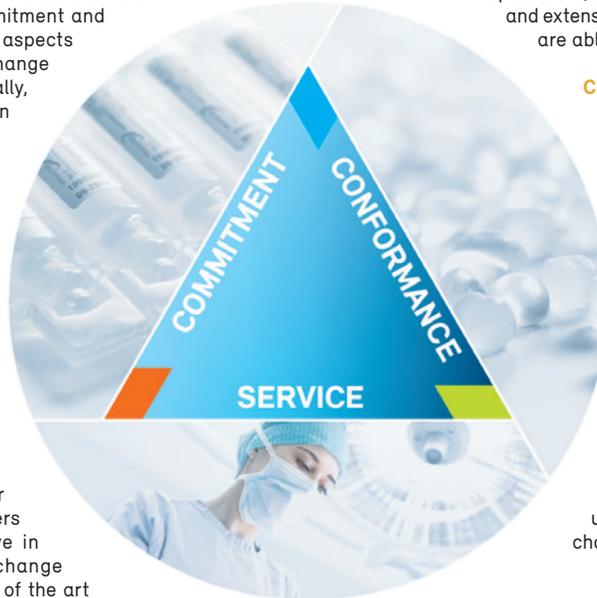
Our commitment to and understanding of the healthcare market is tangible in everything we do. We provide security of supply, for the short and long term, with higher stock levels and planning prioritisation. We seek out cooperation with our business partners, the OEMs, converters and machinery suppliers. We believe in consistency – combined with step change innovation which we drive at our state of the art facility in Linz, Austria. Experience, technical expertise and a forward looking attitude make us the right partner for the healthcare market.

Service

It is important to have the right material and the right information at the right time in the right place. To achieve this, we steer information and notifications proactively, aiming to provide you with what you need to know, when you need it, in a concise and structured format. We lead open discussions with our business partners which enables us to remain at the forefront of industry trends and challenges. Through our dedicated global team of specialists, from R&D to technical support to sales and extensive dedicated distribution networks, we are able to provide fast and reliable delivery.

Conformance

Borealis' expertise results in a maintained consistency of the variables used to make polyolefins for the healthcare market – safeguarding continued regulatory compliance, be it the European or US Pharmacopeia, or ISO standards. Going beyond this, we have dedicated procedures in place to avoid uncontrolled changes and variations in quality. Our change control procedure ensures the highest quality standards. This goes hand in hand with enhanced operating instructions, which ensure that anyone involved in Bormed, knows Bormed – from product development to production, supply chain and support functions.



Polypropylene Homopolymer

Product name	MFR 230°C/2.16kg [g/10min] ISO 1133	Flexural Modulus [MPa] ISO178	Charpy Notched impact 23°C [kJ/m ²] ISO 179 /1eA	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
PP Homopolymers													
DM55pharm	2,8	1,350	4.0	164				●	●	✓	✓	✓	✓
HD800CF	8	1,400	4.3	164				●	●	✓	✓	✓	-
HD850MO	8	1,850	5.5	162				●	●	✓	✓	✓	✓
HD810MO	10	1,250	4.5	164	Nu, Rad			●		-	✓	✓	✓
HF840MO	19	1,250	3.5	160	SA			●		-	✓	✓	✓
HG820MO	28	1,900	1.8	162	Nu			●		-	✓	✓	✓
HJ875MO	75	1,600	1.8	160				●		✓	✓	*	✓

Key:

Nu: Nucleation

Rad: Radiation package

SA: Contains slip agent

- Main application
- Secondary application
- ✓ tested
- test not performed
- * in preparation

All figures are typical values -
data should not be used for
specification work

Polypropylene Random Copolymers

Product name	MFR 230°C/2.16kg [g/10min] ISO 1133	Flexural Modulus [MPa] ISO 178	Charpy Notched impact 23°C [kJ/m²] ISO179/1eA	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
PP Random copolymer													
RB845MO	1.9	1,100	7.0	145		●	●	●	●	✓	✓	✓	-
RB801CF-01	1.9	750	11.0	140		●	●		●	✓	✓	✓	-
RD804CF	8	1,000	4.8	151			●	●	●	✓	✓	✓	-
RD808CF	8	700	9.0	140			●	●	●	✓	✓	✓	-
RE816CF	11	800	5,5	145	AB				●	✓	✓	✓	-
RF825MO	20	1,100	6.0	150	Nu			●		-	✓	✓	✓
RF830MO	20	1,100	6.0	150	Nu, Rad			●		-	✓	✓	✓
RG835MO	30	1,200	6.0	150	Nu, SA			●		-	✓	✓	✓
RJ880MO	45	1,050	5.0	150	Nu			●		-	✓	✓	✓

Key:

AB: Antiblock

Nu: Nucleation

Rad: Radiation package

SA: Contains slip agent

- Main application
- Secondary application
- ✓ tested

- test not performed

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PP Heterophasic (Block) Copolymers

Product name	MFR 230°C/2.16kg [g/10min] ISO 1133	Flexural Modulus [MPa] ISO 178	Charpy Notched impact 23°C [kJ/m²] ISO 179/1eA	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
PP Heterophasic (Block) Copolymers													
BE860MO	13	1,400	8.0	164				●		✓	✓	✓	✓

Polypropylene Random Hetero- phasic Copolymers (Soft PP)

Product name	MFR 230°C/2.16kg [g/10min] ISO 1133	Flexural Modulus [MPa] ISO 178	Charpy Notched impact 23°C [kJ/m²] ISO 179/1eA	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
PP Random Heterophasic Copolymers													
SB815MO	1.5	425	80	145		●	●	●	●	✓	✓	✓	✓
SC820CF	3.9	550	26	141				●	●	✓	✓	✓	-
SC876CF	3.8	330	77	149					●	✓	✓	✓	-

- Key:**
- Main application
 - Secondary application
 - ✓ tested
 - test not performed

All figures are typical values -
data should not be used for
specification work

Low Density Polyethylene

Product name	MFR 190°C/2.16kg [g/10min] ISO 1133	Density [kg/m ³] ISO 1183	Flexural Modulus [MPa] ISO 178	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
LD-PE													
LE6607-PH	0.3	927	290	114		●				✓	✓	✓	-
LE6609-PH	0.3	930	330	117		●				✓	✓	✓	-
LE6600-PH	1.5	919	250	110		●	●			✓	✓	✓	-

High Density Polyethylene

Product name	MFR 190°C/2.16kg [g/10min] ISO 1133	Density [kg/m ³] ISO 1183	Flexural Modulus [MPa] ISO 178	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
HD-PE													
HE2581-PH	0.3	958	1,250	131		●	●	●		✓	✓	✓	✓
HE7541-PH	4	954	950	129				●		✓	✓	✓	✓
HE9621-PH	12	962	1,300	133				●		✓	✓	✓	✓

Key: ● Main application
● Secondary application
✓ tested
- test not performed

All figures are typical values -
data should not be used for
specification work

PP Terpolymer

Product name	MFR 230°C/2.16kg [g/10min] ISO 1133	Density [kg/m ³] ISO 1183	Flexural Modulus [MPa] ISO 178	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
PP Terpolymer													
TD109CF	6	900	700	131				•	●	✓	✓	✓	-

PO Specialties

Product name	MFR 230°C/2.16kg [g/10min] ISO 1133	Flexural Modulus [MPa] ISO 178	Charpy Notched impact 23°C [kJ/m ²] ISO 179/1eA	Melting Point [°C] DSC	Special Features	EBM	IBM/ISBM	IM	Film	EP	USP	DMF	ISO 10993
PO Specialties													
WD170CF ¹	6.5	910	800	151					●	✓	✓	✓	-
WE150CF ¹	12.5	925	1,000	151	SA, AB				●	-	✓	-	-

Key:

SA: Contains slip agent

AB: Antiblock

- Main application
- Secondary application
- ✓ tested

¹ WD170CF and WE150CF are not

Bormed™ branded

- test not performed

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Sterilisation

Steam Sterilisation

Sterilisation by steam may be used on the majority of the Bormed PE and PP grades. For Polypropylene, due to its high melting point, 121°C sterilisation may be applied. For HDPE grades, this is usually valid as well. For the LDPE grades, lower sterilisation temperatures need to be applied.

Depending on the final product design and manufacturing process of the application, the optimum product needs to be determined. The dimensional stability (deformation) always needs to be checked – internal and/or external tensions can deform the product during sterilisation, e.g. relaxation of moulded-in stress.

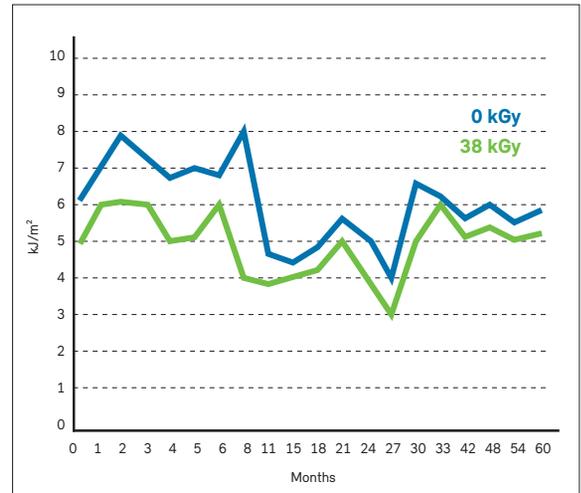
EtO Sterilisation

May be used with all Bormed grades.

Radiation Sterilisation

Gamma or E-Beam sterilisation is used in an increasing number of applications. Some polymers, especially PP, are sensitive to degradation (formation of radicals) due to the high energy used. Effects like brittleness or yellowing may develop over a after few weeks or months (see graph).

Bormed HD810MO & RF830MO are, respectively, a homopolymer and a random copolymer which have been appropriately additivated to mitigate the effects of irradiation. All Bormed PE grades may be used with radiation sterilisation, however performance should be checked using the final article.



Charpy notched 23°C - Bormed HD810MO

Facts

Polypropylene MFR
[230°C/2.16 kg] g/10 min = ISO 1133

Polyethylene MFR
[190°C/2.16 kg] g/10 min = ISO 1133

EBM= Extrusion Blow Moulding
IBM= Injection Blow Moulding
ISBM= Injection Stretch Blow Moulding
IM= Injection Moulding

Food contact regulations and certificate on pharmaceutical use
If required, contact your Borealis or Borouge representative for a certificate.

For Technical Data Sheets, Safety Data Sheets and Product Liability Statements please visit us at www.borealisgroup.com and www.borouge.com or contact your Borealis or Borouge representative.

All Bormed grades are produced and sold under dedicated Healthcare directives including enhanced change control, increased security of supply, proactive notifications. A healthcare policy and risk assessment process applies.

For any information related to Healthcare, please contact us www.borealisgroup.com, www.borealisbecausewecare.com

Notes

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For more information :

visit www.borealisgroup.com and www.borouge.com

Borealis AG · IZD Tower

Wagramer Strasse 17-19 · A-1220 Vienna · Austria

Tel +43 1 22 400 000 · Fax +43 1 22 400 333

Borouge Pte Ltd · Sales and Marketing Head Office

1 George Street 18-01 · Singapore 049145

