

Solutions for

Healthcare Applications

Bormed delivers “peace of mind” to our customers!

Besides the superior technical performance, the Bormed product range meets the challenging service requirements of the healthcare industry. Bormed offers stability, reliability, traceability, consistency and continuity.

<h4>DEDICATED MATERIALS</h4> <ul style="list-style-type: none"> • Broad grade range • Regulatory compliance [EP and USP] • US DMF registered • Special production and quality control [QC] precautions to provide superior product consistency, high quality and purity 	<h4>ADDITIONAL SUPPORT</h4> <ul style="list-style-type: none"> • Regular updates [EP and USP compliance] • Regular updates DMF files • Long-term traceability [QC data and retained sample] • Extended technical support • Extensive application experience
<h4>SECURITY OF SUPPLY</h4> <ul style="list-style-type: none"> • Long-term Commitment* • Pre-notification before deletion or modification* • Prioritisation in planning • Higher stock levels • Global supply <p><small>* to be agreed individually in a Technical Delivery Specification</small></p>	<h4>INNOVATION</h4> <ul style="list-style-type: none"> • Solutions provider • Strong company commitment • Pilot capabilities • Use of the latest proprietary technologies • Partnership with value chain



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Borealis and Borouge – leading, innovative plastics providers

Borealis is a leading provider of chemical and innovative plastics solutions that create value for society. With sales of EUR 6.3 billion in 2010, customers in over 120 countries, and 5,100 employees worldwide, Borealis is owned 64% by the International Petroleum Investment Company (IPIC) of Abu Dhabi and 36% by OMV, the leading energy group in the European growth belt. Borealis is headquartered in Vienna, Austria, and has production locations, innovation centres and customer service centres across Europe and the Americas. Through Borouge, a joint venture between Borealis and the Abu Dhabi National Oil Company (ADNOC), one of the world's major oil and gas companies, the company's footprint reaches out to the Middle East, Asia Pacific, the Indian sub-continent and Africa.

Established in 1998, Borouge employs approximately 1,600 people, has customers in more than 50 countries and its headquarters are in Abu Dhabi in the UAE and Singapore. Building on Borealis' unique Borstar® technology and their more than 50 years experience in polyolefins, Borealis and Borouge provide innovative, value

creating plastics solutions for the infrastructure (pipe systems and power and communication cables), automotive and advanced packaging markets. In addition, Borealis offers a wide range of base chemicals from melamine and fertilizer to phenol and acetone.

Today Borealis and Borouge have a manufacturing capacity of over 5.4 million tonnes of polyolefins (polyethylene and polypropylene) per year having recently completed a 1.5 million tonne expansion in Abu Dhabi. The Borouge 3 plant expansion will be completed at the end of 2013 with a further capacity of 2.5 million tonnes per year (t/y) being fully operational in mid-2014. The companies continue to invest to ensure that their customers throughout the value chain and across the globe, can always rely on product quality, consistency and security of supply. Borouge and Borealis are committed to the principles of Responsible Care® and proactively contribute to addressing the world's water and sanitation challenges through their Water for the World™ initiative.

Disclaimer The product(s) mentioned herein are not intended for use as medical implant material or implantable medical devices and we do not support their use for such applications. To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication, however we do not assume any liability whatsoever for the accuracy and completeness of such information. Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose. It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products. 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.

Borstar is a registered trademark of the Borealis group. Bormed, Steripeel and Shaping the Future with Plastics are trademarks of the Borealis group.

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Bormed grade range for moulding applications

PP	Product name	MFR 230°C/2.16 kg [g/10 min] ISO 1133	Typical basic properties					Melting point [°C] DSC	Best suited for Properties / Applications	European Pharmacopeia	Regulatory status	
			Tensile Modulus 1 mm/min [MPa] ISO 527-2	Charpy impact strength, notched 23°C [kJ/m²] ISO 179/1eA	Rockwell hardness ISO 2039-2	HDT [°C] ISO 75-2	USP tested / DMF nr.				Tested according ISO 10993	
PP HOMOPOLYMERS	Bormed™ HD850MO	8.0	1,800	5.5	105	112	162	Medium flow – high HDT – high rigidity – improved transparency – closures – packaging – medical devices	3.2.2/3.1.3/3.1.6	USP class VI / 17929	Y	
	Bormed™ HD810MO	10.0	1,100	4.5	94	90	164	Medium flow – good transparency – radiation resistant up to 25 kGy – nucleated / syringes – needle hubs – catheters	3.2.2	USP class VI / 9040	Y	
	Bormed™ HF840MO	19.0	1,250	3.5	93	85	160	Good flow – low COF – slip agent / syringes – catheters – closures	3.2.2	USP class VI / 9040	Y	
PP BLOCK COPOLYMER	Bormed™ BE860MO	13.0	1,250	8.0	86	85	164	Medium flow – very good impact even at negative temperatures / closures – packaging – medical devices	3.2.2/3.1.3/3.1.6	USP class VI / 17930	Y	
PP RANDOM COPOLYMERS	Bormed™ RB845MO	1.9	1,000	7.0	83	83	150	Very high top load, not sensitive to ESCR. Steam sterilisable at 121°C during 20 mn. Can be used on conventional extrusion lines adapted for PP / ampoules and bottles up to 2 l.	3.2.2/3.1.3/3.1.6	USP class VI / 17931	N	
	Bormed™ RF825MO	20.0	1,150	6.0	90	80	150	Good flow – excellent transparency – suitable for optical reading – nucleated / syringes – catheters – diagnostics packaging	3.2.2	USP class VI / 12123	Y	
	Bormed™ RF830MO	20.0	1,150	6.0	90	80	150	Good flow – excellent transparency – radiation resistant up to 25 kGy – nucleated / syringes – catheters – blood collection systems	3.2.2	USP class VI / 12123	Y	
	Bormed™ RG835MO	30.0	1,200	6.0	90	82	150	Excellent flow properties – excellent transparency – low COF – nucleated – slip agent / syringes – closures	3.2.2	USP class VI / 12123	Y	
PE	Product name	MFR 190°C 2.16 kg [g/10 min] ISO 1133	Tensile Modulus 1 mm/min [MPa] ISO 527-2	Density [kg/m³] ISO 1183	Hardness, Shore D ISO 868	HDT [°C] ISO 75-2	Melting point [°C] DSC	Key properties	European Pharmacopeia	Regulatory status		
										USP tested / DMF nr.		Tested according ISO 10993
HDPE	Bormed™ HE2581-PH	0.3	1,300	958	65	80	131	Excellent processability, very high top load, low swell. Very high ESCR. Can be used on conventional extrusion lines & for IBM / Bottles & containers up to 10 l.	3.2.2/3.1.3/3.1.5	USP class VI / 18041	N	
	Bormed™ HE7541-PH	4.0	850	954	61	65	129	Excellent processability – high ESCR / Closures – Packaging – Medical devices	3.2.2/3.1.3/3.1.5	USP class VI / 18351	Y	
	Bormed™ HE9621-PH	12.0	1,150	962	62	73	133	Good flow and processability – Good rigidity / Syringe plungers – Closures – Packaging – Medical devices	3.2.2/3.1.3/3.1.5	USP class VI / 18040	Y	
	Bormed™ HE9601-PH	31	1,250	960	62	71	132	High flow, high stiffness / Syringes plungers – Diagnostic packaging – Closures	3.2.2/3.1.3/3.1.5	USP class VI / up	Y	
LDPE	Bormed™ LE6607-PH	0.3	300	927	52	51	114	Pharmaceutical packaging for Intravenous solutions and medicines. Suitable for BFS machines and conventional extrusion lines. Sterilisable <110°C / Ampoules and bottles (up to 1l.)	3.2.2/3.1.3/3.1.4	USP class VI / 8124	N	
	Bormed™ LE6609-PH	0.3	350	930	53	54	117	Pharmaceutical packaging for Intravenous solutions and medicines. Suitable for BFS machines and conventional extrusion lines. Sterilisable >110°C / Ampoules and bottles (up to 1l.)	3.2.2/3.1.3/3.1.4	USP class VI / 17927	N	
	Bormed™ LE6601-PH	1.5	240	922	49	49	112	Good processability. Soft and flexible pharmaceutical packaging. Suitable for BFS machines and conventional extrusion lines. Ampoules and small bottles.	3.2.2/3.1.3/3.1.4	USP class VI / 8124	N	

Bormed grade range for film applications

PP	Product name	MFR 230°C/2.16kg [g/10 min] ISO 1133	Typical basic properties		Melting point [°C] DSC	Typical film properties ⁽¹⁾			Regulatory status	
			Flexural Modulus [MPa] ISO 178	Tensile Mod. MD/TD [MPa] ISO 527-3		Gloss 20° [-] ASTM D2457	Haze [%] ASTM D1003	European Pharmacopoeia	USP tested/ DMF nr.	
PP HOMOPOLYMERS	Bormed™ DM55pharm	2.8	1,350	164	> 90 ⁽⁴⁾	< 30 ⁽⁴⁾	1,100/1,050 ⁽⁴⁾	3.1.3./3.1.6./3.2.2.	USP class VI / 9146	
	Bormed™ HD800CF	8.0	1,400	164	> 110	< 2.0	800/800	3.1.3./3.1.6./3.2.2.	USP class VI / 20240	
PP RANDOM COPOLYMERS	Bormed™ RB801CF	1.9	750	140	> 140	< 1.0	400/400	3.1.3./3.1.6./3.2.2.	USP class VI / 16484	
	Bormed™ RD804CF	8.0	1,000	150	> 130	< 1.5	600/600	3.1.3./3.1.6./3.2.2.	USP class VI / 24930	
	Bormed™ RD808CF	8.0	700	140	> 140	< 0.5	400/400	3.1.3./3.1.6./3.2.2.	USP class VI / 20244	
PP TERPOLYMER	Bormed™ TD109CF	6.0	700	130	> 130	< 1.3	470/490	3.1.3./3.2.2.	USP class VI / 24931	
PP RANDOM-HETEROPHASIC COPOLYMER/ SOFT PP	Bormed™ SA833CF	0.8	500	140	> 70	< 4.0	310/280	3.1.3./3.1.6./3.2.2.	USP class VI / 20238	
	Bormed™ SC820CF	4.0	550	141	> 120	< 1.0	330/330	3.1.3./3.1.6./3.2.2.	USP class VI / 20243	
PO	Product name	MFR 190/5 [g/10 min]	Flexural Modulus [MPa]	Melting point [°C]	Gloss 20° [-]	Haze [%]	Tensile Mod. MD/TD [MPa]	European Pharmacopoeia	USP tested/ DMF nr.	
PO SPECIALITIES	Steripeel™ WD170CF	6.5	800	150	n.a.	n.a.	n.a.	3.1.3./3.2.2.	USP class VI / 20242	
	Steripeel™ WE150CF	12.5	1,000	155	n.a.	n.a.	n.a.	3.1.3./3.2.2.	USP class VI / up	

Bormed products: dedicated polyolefins for healthcare applications

To meet the challenging needs of the healthcare market, Borealis offers a long term committed and dedicated grade range of Bormed™ polyolefins. Bormed includes both polyethylene and polypropylene grades for moulding and film applications, ensuring a consistent approach to the medical and healthcare market, independent of conversion technology or polymer type.

The broad Bormed grade range meets the technical requirements of a wide variety of end-uses including:

- Packaging of parenteral, ophthalmic and enteral solutions
- Medical devices
- Pharmaceutical and diagnostic products

For more information please contact:

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www.borealisgroup.com/healthcare

(1) Measured on 50 µm thick monolayer cast films produced acc. to internal standard. (2) MFR 190/5 [g/10 min]. (3) Measured on 40 µm thick monolayer blown films produced acc. to internal standard (BUR 1:3). (4) measured on 300 µm monolayer cast films acc. to internal standard. up = under preparation.