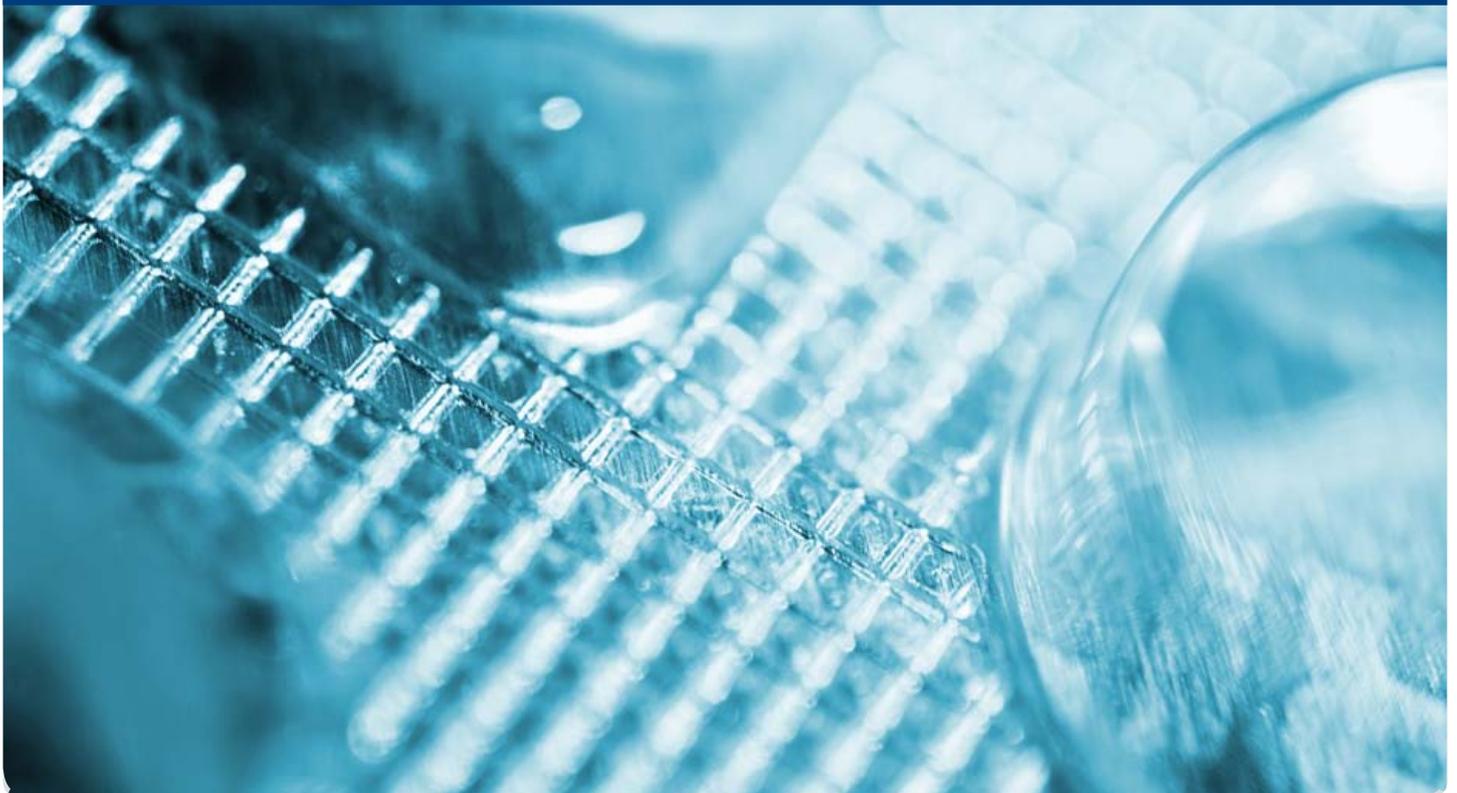


## Take a closer look...

Discover how the Leading Polyolefin Healthcare Concept Focuses on Meeting Customer Needs





## Experience – Reliability – Confidence – Innovation

Any company can claim that they provide quality resins used in healthcare products that address producers' unique needs. But to deliver products and services with a dedicated protocol in a meaningful way requires experience.

Since the 1980s, LyondellBasell has been serving the specialized needs of the healthcare industry, and has been supplying its innovative *Purell* polyethylene and polypropylene resins for the past ten years.

### Dynamic Support of the Risk Management Process

Whether you require security of supply or the additive composition of our *Purell* products, rely on LyondellBasell. As the original and unique healthcare concept in the polyolefins industry, our *Purell* Medical Procedure exemplifies the spirit of pharmaceutical GMP – awareness, change control and documentation – while supporting your efforts to minimize risk. As a living concept that serves a dynamic market, we actively continue to develop services that support this process, such as bioburden surveillance and extractable profiles.

### Benchmark Resins

The *Purell* family of industry-defining products is based on LyondellBasell's pioneering resin and manufacturing technology developments. Profit from our experience and know-how!



Purell resins selected for healthcare applications

# Continuously Improving our Comprehensive Services

**Purell**  
Excellence builds trust

Manufacturing

Logistics

Service

Support



## Manufacturing

- We strive to keep long-term consistency of formulation
- Single-sourcing concept to maximize product consistency
- Back-up plant concept
- Dedicated resources and silo cleaning protocols
- Proactive, near-miss system

## Logistics

- Dedicated cleaning procedures for trucks, railcars and containers
- Customer-specific delivery and storage concepts
- Pest control

## Service

- Tailored selection of polyethylene and polypropylene grades used in healthcare applications
- Compliance with Ph. Eur., USP, ISO10993 and other regulations\*
- DMF registration for all products
- Prior notice if product changes occur
- Bio-burden surveillance
- Development of extractable profiles
- Plant audits possible
- Long-term sample retention and documentation

*\*depending on product.*

## Support

- Effective risk management tools
- Global asset base
- Dedicated business management team
- Local sales and technical service teams in all regions of the world
- Security stocks
- Access to innovative products

# Communication is Essential

For decades, LyondellBasell customers have benefited from the Purell resins service concept, which is continuously enhanced to address new industry and regulatory requirements. Your feedback is essential to helping us offer products and services that meet your growing needs.

Contact us at

[medical@lyondellbasell.com](mailto:medical@lyondellbasell.com)

or visit

[www.purell-polymers.com](http://www.purell-polymers.com),

and discover the possibilities offered by the polyolefin industry's leading healthcare concept.

[www.purell-polymers.com](http://www.purell-polymers.com)



This overview provides basic technical information about *Purell* polypropylene resins and their typical customer applications. For detailed information, please contact your technical service representative as indicated on the last page of this brochure.

Properties	Physical	Mechanical/Thermal		Conversion Technology			Regulatory				Further Description and Typical Applications
				IM	BM	FLM	ISO 10993	EP	USP	DMF	
Method	MFR (230°C/ 2.16kgs) (g/10min)	Tensile Modulus (MPa)	Vicat Softening Temp (VST/A50) (°C)	ISO1133	ISO527	ISO306					
<b>Homopolymers (HOMO-PP)</b>											
<i>Purell</i> HP570M	7.5	1400	152	X		(X)	X	X	X	13038	Selected by customers for a wide variety of healthcare products such as medical devices, containers, closures and diagnostic equipment
<i>Purell</i> HP371P	18	1250	150	X			X		X	13038	Clarified grade with improved impact resistance compared to standard Homo PP; modified for radiation sterilization (subject to conditions); mainly used for empty 3-part-syringes, diagnostic and labware applications
<i>Purell</i> HP570R	23	1500	153	X			X	X	X	13038	Versatile material used in 3-part syringes, diagnostic applications, containers and drug delivery systems
<i>Purell</i> HM671T	60	1600	135	X			X		X	13038	Metallocene technology providing low warpage and high clarity, modified for radiation sterilization (subject to conditions); predominantly selected for diagnostic applications and applications with no impact requirements
<i>Purell</i> HP570U	75	1550	154	X			X	X	X	13038	High flow and high stiffness; used in diagnostics applications and other thin-wall injection molding that must be free from antistatic agents
<b>Heterophasic Copolymers (HECO-PP)</b>											
<i>Purell</i> EP274P	15	1000	142	X			X	X	X	13038	Excellent balance of stiffness and low-temperature impact resistance; used for medical applications and healthcare products
<b>Random Copolymers (RACO-PP)</b>											
<i>Purell</i> SM170G	1.5	650	125	(X)	X	(X)	X	X	X	13038	New-generation PP selected for BFS applications combining excellent transparency, softness and sterilization at 121°C without visible post-crystallization
<i>Purell</i> RP270G	1.8	950	134	(X)	X	(X)	X	X	X	13038	Commercially available for more than 30 years, consequently well established in all PP BFS applications
<i>Purell</i> RP373R	25	950	130	X			X		X	13038	Clarified grade modified to provide improved impact and steam sterilization resistance; contains slip; mainly selected for empty disposable 2-part syringes
<i>Purell</i> RP374R	25	950	129	X			X		X	13038	Clarified grade modified to provide improved impact and steam sterilization resistance; typically used in medical devices and empty disposable 3-part syringes
<i>Purell</i> RP378T	48	1150	130	X			X		X	13038	Clarified and contains antistatic; high-flow grade selected for applications requiring thin-walling and fast cycle times; used in a variety of medical applications and healthcare products such as inhalers and diagnostic devices

**Remark:** BM = Blow Molding IM = Injection Molding FLM = Film Extrusion IBM = Injection Blow Molding ISBM = Injection Stretch Blow Molding  
(X) conversion technology also used by customers but not the main one



This overview provides basic technical information about *Purell* polyethylene resins and their typical customer applications. For detailed information, please contact your technical service representative as indicated on the last page of this brochure.

Properties	Physical		Mechanical/Thermal			Conversion Technology			Regulatory				Further Description and Typical Applications
	MFR (190°C/ 2.16kgs) (g/10min)	Density (g/cm <sup>3</sup> )	Tensile Modulus (MPa)	DSC-Melting Point (°C)	ESCR (FNCT 2% Arcopal) (h)	IM	BM	FLM	ISO 10993	EP	USP	DMF	
Method	ISO1133	ISO1183	ISO527	ISO3146	ISO16770								
<b>Low Density Polyethylene (LDPE)</b>													
<i>Purell</i> PE1810E	0.4	0.920	200	108		(X)	X	(X)	X	X	X	8412	Very flexible grade selected by customers for ampoules in BFS process
<i>Purell</i> PE1840H	1.5	0.919	200	108		(X)	X	(X)	X	X	X	8410	Very flexible grade selected by customers for ampoules. Commercially available for more than 30 years and widely used in latest-generation BFS machines
<i>Purell</i> PE2420F	0.75	0.923	260	111			(X)	X	X	X	X	21697	High purity film grade, well-established in the industry
<i>Purell</i> PE3020H	2.0	0.927	300	114			(X)	X	X	X	X	21094	High purity film grade, well-established in the industry
<i>Purell</i> PE3020D	0.3	0.927	300	114		(X)	X	(X)	X	X	X	8413	Leading BFS grade used by customers in IV-bottles and ampoules. Commercially available for more than 30 years
<i>Purell</i> PE3040D	0.25	0.928	300	115		(X)	X	(X)	X	X	X	8700	Slightly higher density version of 3020D
<i>Purell</i> PE3220D	0.4	0.930	430	117		(X)	X	(X)	X	X	X	19659	2nd generation development allowing higher sterilization temperatures; widely used in most popular BFS applications
<i>Purell</i> PE3420F	0.9	0.933	520	119		(X)	X	(X)	X	X	X	23515	Latest-generation PE with high temperature resistance, enabling higher sterilization temperatures, offering significantly reduced cycle times compared to standard LDPE grades
<i>Purell</i> 2007H	1.5	0.920	200	108		X		(X)	X	X	X	15040	Soft PE with anti-block additive; often used for closures
<i>Purell</i> 2410T	36	0.924	280	112		X			X	X	X	18451	High flow material for fast times; often used for closures and seals
<b>High Density Polyethylene (HDPE)</b>													
<i>Purell</i> PE GF4750	0.4	0.950	1000		15*	(X)	X		X	X	X	5654	Commercially available for more than 30 years; customer selected for diagnostic and tube applications. Features a special additivition package for use in diagnostic applications
<i>Purell</i> ACP5231D	0.3	0.952	1100		30*	(X)	X		X	X	X	25137	Latest-generation ACP technology produces HDPE offering an excellent combination of stiffness & ESCR. Features a special additivition package for use in a wide range of diagnostic applications
<i>Purell</i> PE GF4760	0.4	0.956	1250		5*	(X)	X		X	X	X	5654	High barrier properties, offering protection for water sensitive fillings such as pills. Typically also converted in IBM process
<i>Purell</i> ACP6031D	0.25	0.960	1350		7*	(X)	X		X	X	X	20343	Latest-generation ACP technology produces HDPE offering increased density and barrier properties. Also possible to convert in IBM processing
<i>Purell</i> ACP6541A	1.5	0.954	1100		30**	X			X	X	X	19116	Latest-generation ACP technology produces HDPE offering a combination of high ESCR and good flowability (comparable to an MFR 6 grade); often selected by customers for closures, seals and tube shoulders
<i>Purell</i> GB7250	10	0.952	1000		2.5**	X			X	X	X	5654	Predominantly used in closures, seals, tube shoulders
<i>Purell</i> GC7260	8	0.960	1350		2.5**	X			X	X	X	5654	Predominantly used in closures, seals, tube shoulders
<i>Purell</i> GA7760	18	0.963	1350		1†	X			X	X	X	5654	High stiffness grade often selected for distortion-free moldings; typical applications include syringe plungers

**Remark:** BM = Blow Molding IM = Injection Molding FLM = Film Extrusion IBM = Injection Blow Molding ISBM = Injection Stretch Blow Molding (X) conversion technology also used by customers but not the main one \*3.5MPa / 80°C \*\*6MPa / 50°C †2.5MPa / 80°C

# Contacts

**This healthcare segment relates to applications mainly in the pharmaceutical, medical device, laboratory, cosmetic, syringe and diagnostics area. Without exception, any potential use of *Purell* products has to be discussed with the relevant Application Development and Business contacts in advance.**

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