

HYOSUNG
Polypropylene
The Next Circular Economy

MEDICAL / HEALTHCARE APPLICATIONS



All That We Can Do For You



The Overall Flow For Ultra-High Purity PP Production



Raw Material

Hyosung Polypropylene for medical applications has superior purity compared to other normal PP. Hyosung Chemical supplies itself with ultra-high purity over 99.7% propylene from the propane dehydrogenation (DH) process where it has adapted cutting-edge manufacturing technology.

Production

The production of Hyosung Chemical PP includes the gas phase process that involves high randomness of the co-monomers and self-developed multi reactor polymerization to materialize the optimal PP random copolymer for medical applications. The PP produced this way has high transparency and toughness and it is suitable for blow process such as ISBM and EBM.

Packaging

The new facility of Hyosung Chemical, the De-Duster, eliminates dust, angel hair and black spot from the PP for medical applications. Then the PP is packaged in bags made of specially selected materials to prevent the inflow of dust and the damage of the products. We have developed a suitable bag design technique for medical products with plenty of experience of sales.

HYOSUNG CHEMICAL Specialized Ultra-high Purity Polypropylene Ensuring the Best Safety for Medical Applications

Hyosung Polypropylene for medical applications is a specially designed polypropylene that features excellent processability, balanced mechanical properties and good clarity. It is suitable for Medical IV(Intravenous) Bottles, IV Bags, Ampoules and Disposable Syringes.



Physical Properties

For Ampoules, IV Bottles and IV Bags

Resin Properties	Test Method	Unit	R530A	R530	R430CN	R530CN
Melt Index (230°C, 2.16kg)	ASTM D1238 / ISO 1133	g/10min	2	7	5	7
Density	ASTM D792 / ISO 1183	g/cm ³	0.9	0.9	0.9	0.9
Flexural Modulus	ASTM D790	kg/cm ²	9,000	10,500	7,000	7,500
	ISO 178	MPa	750	900	550	650
Tensile strength at Yield	ASTM D638	kg/cm ²	290	310	230	240
	ISO 527	MPa	26	28	22	23
Izod Impact Strength (23°C)	ASTM D256	kg-cm/cm	8	5.5	7.5	8
Charpy Impact Strength (23°C)	ISO 179/1eA	kJ/m ²	7	5	7	7
Type of PP			Random	Random	TER-PP	TER-PP
Applications			Ampoule, EBM Bottle	ISBM Bottle	IV Bag port	IV Bag
Production Site			Korea	Korea	Vietnam	Vietnam

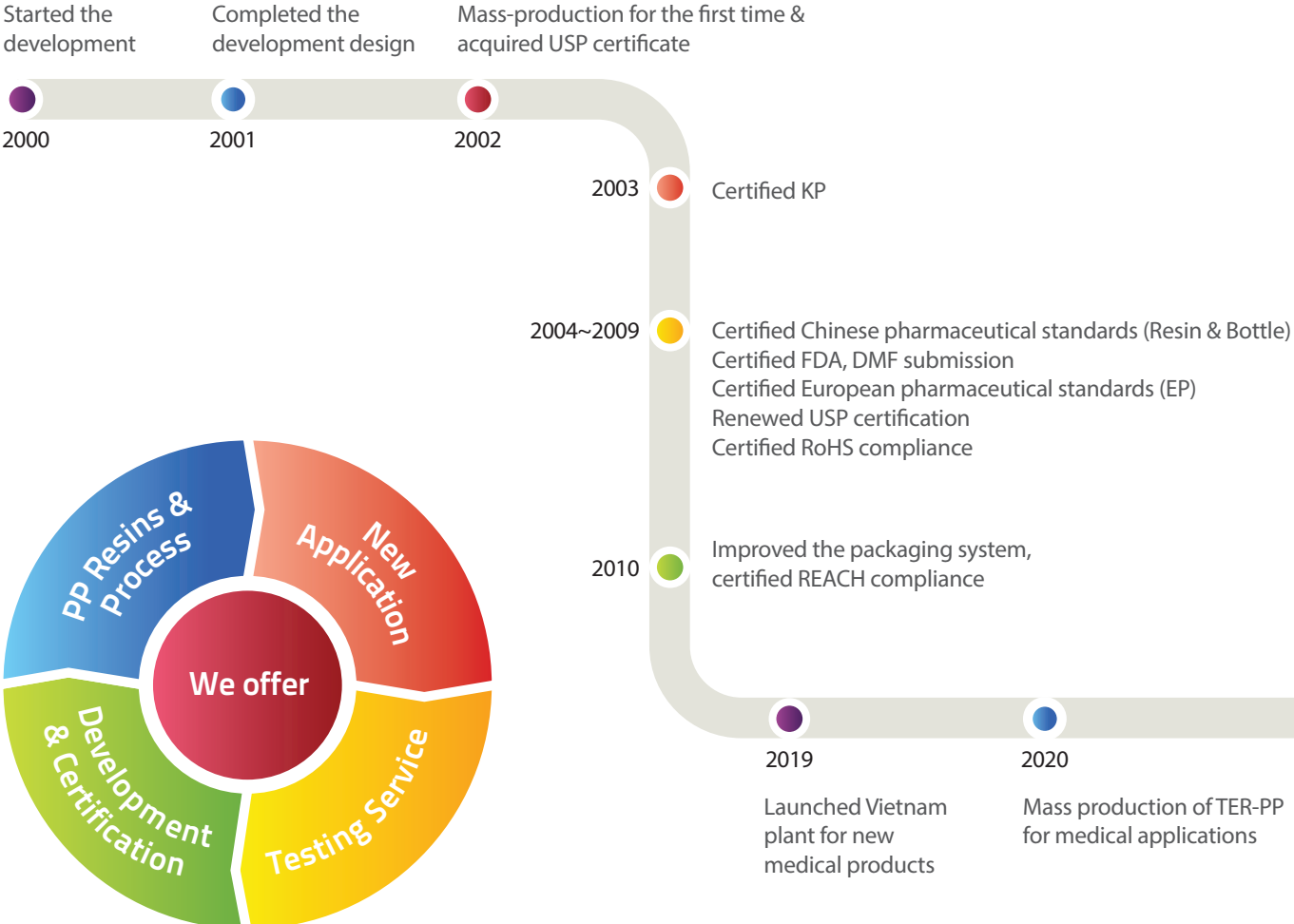
For Disposable Syringes

Resin Properties	Test Method	Unit	J800S	J801	R701G	J801N
Melt Index (230°C, 2.16kg)	ASTM D1238 / ISO 1133	g/10min	20	25	20	26
Density	ASTM D792 / ISO 1183	g/cm ³	0.9	0.9	0.9	0.9
Flexural Modulus	ASTM D790	kg/cm ²	22,500	17,500	12,000	16,000
	ISO 178	MPa	1,950	1,500	1,000	1,400
Tensile strength at Yield	ASTM D638	kg/cm ²	430	400	310	370
	ISO 527	MPa	40	38	28	35
Izod Impact Strength (23°C)	ASTM D256	kg-cm/cm	3	4	6	3.5
Charpy Impact Strength (23°C)	ISO 179/1eA	kJ/m ²	4	4	6	5
Haze (2mm)	ISO 14782	%	-	35	20	-
Type of PP			Homo	Homo	Random	Homo
Applications			Syringe parts (Plunger, hub, cap)	Syringe parts (Barrel, hub, cap)	Syringe for gamma ray sterilization	Syringe parts
Production Site			Korea	Korea	Korea	Vietnam

For Hygiene Products

Resin Properties	Test Method	Unit	S805S
Melt Index (230°C, 2.16kg)	ASTM D1238 / ISO 1133	g/10min	36
Density	ASTM D792 / ISO 1183	g/cm ³	0.9
Flexural Modulus	ASTM D790	kg/cm ²	16,000
	ISO 178	MPa	1,350
Tensile strength at Yield	ASTM D638	kg/cm ²	360
	ISO 527	MPa	35
Izod Impact Strength (23°C)	ASTM D256	kg-cm/cm	2.5
Charpy Impact Strength (23°C)	ISO 179/1eA	kJ/m ²	2.5
Type of PP			Homo
Applications			Spunbond non-woven
Production Site			Vietnam

History



We Offer Total Solutions for Medical Applications

Hyosung Chemical provides the perfect solution for various processing machine, and constantly develops new products by co-working with diverse machine makers.



CERTIFICATES

CERTIFICATES	R530A	R530	R430CN	R530CN	J800S	J801	R701G	J801N
US Pharmacopeia (USP Class VI)	●	●	●	●	●	●	●	●
European Pharmacopeia (EP §3.1.6)	●	●						
Chinese Pharmacopeia	●	●						
Korean Pharmacopeia	●	●						
FDA Drug Master File Registration	●	●			●	●		

Plant Certificates



ISO 9001



ISO 14001

Medical Certificates



E.P. 3.1.6(Europe)



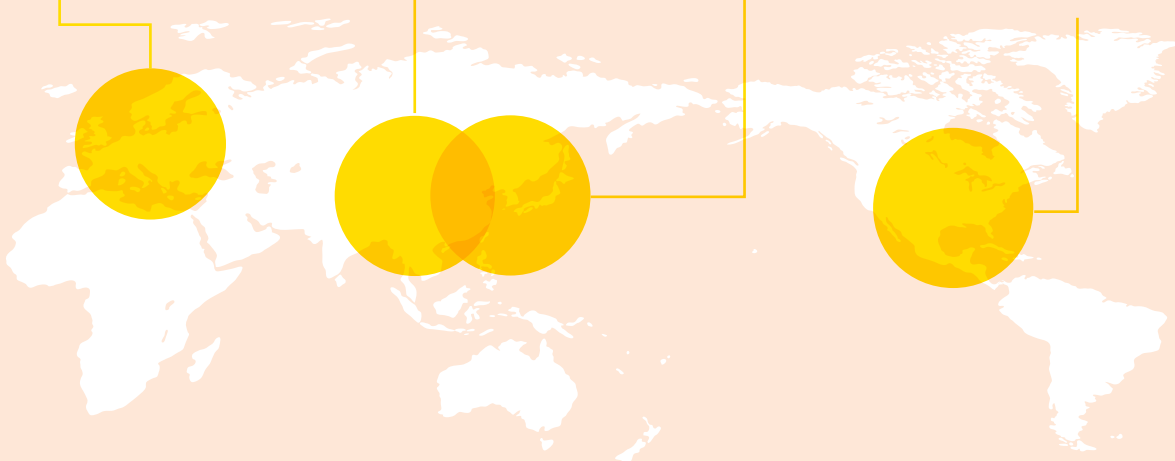
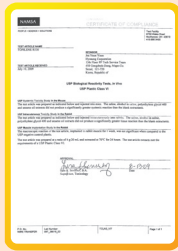
CFDA(China)



KP(Korea)



USP Class VI (United States)



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