

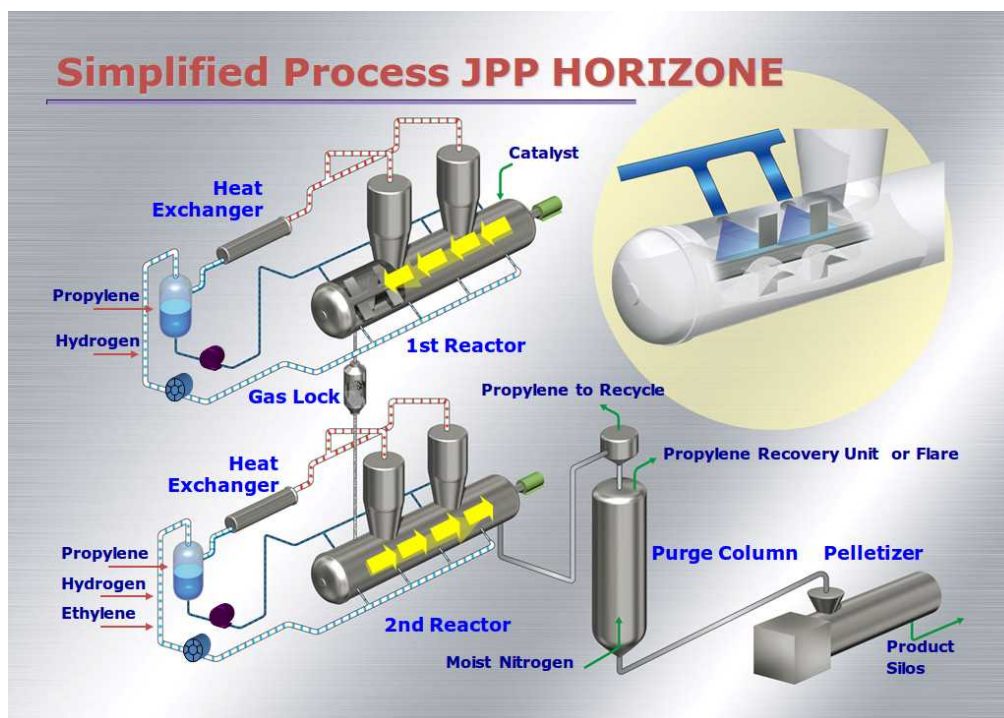
Japan Polypropylene's Polypropylene Manufacturing Technology

Polypropylene (PP):

Polypropylene (PP) is the most popular plastic resin of the world and one of the most consumed propylene derivatives in the industry. PP is manufactured and used approximately 50 million tons per annum in the world. Applications of PP are versatile; it can be used for Automotive industry, Appliance, Film (Package), Fiber, Hygienic Items (Diaper, Napkin), Glossary items, Industrial materials, furniture, stationary, etc.

Introduction of HORIZONE technology:

Japan Polypropylene Corporation is a joint venture company between Mitsubishi Chemical Corporation and JNC Corporation. Both companies have a long and wide experience in the polypropylene business, and have developed an excellent polypropylene manufacturing technology, named HORIZONE technology.



Process Feature:

- A simplified gas phase process that incorporates two horizontal reactors, which bring a narrow residence time distribution of powder in the reactors by a special movement



called “Plug Flow Powder Movement”.

- Accurate and stable control of polymerization reaction temperature achieved by evaporative cooling of liquid propylene supplied from many spray nozzles in the reactors.
- Utilizes a catalyst having high activity, high stereo regularity and excellent particle morphology.

Advantages:

This combination of superior HORIZONE process and proprietary catalyst provides the following advantages.

- High polymer product throughput with a minimum quantity of production transition materials.
- Production of a wide range of superior quality products, especially impact copolymers and In Reactor-TPOs (R-TPO) with stable and reliable operation.
- Low investment requirement and attractive operating costs.

The R-TPO named “NEWCON” which contains high rubber content, up to 60 wt%, is highly suitable for automotive and industrial uses.

Typical Property Ranges of License Grades				
	Homopolymer	Random Copolymer	Impact Copolymer	NEWCON
MFR Range* (g/10 min.)	0.9 - 60	0.25 - 50	0.65 - 65	0.5 - 45
Tensile Strength (MPa)	33 - 39	23 - 31	22 - 28	11 - 21
Flexural Modulus (MPa)	1,350 - 2,000	700 - 1,300	830 - 1,500	300 - 1,050
Heat Deflection Temp. (°C) (@0.45 MPa)	84 - 109	60 - 85	70 - 99	53 - 81
Charpy Impact at 23°C (MPa) [ISO 179]	1.8 - 8.8	2.8 - 20	5.3 - 62	8 - N.B. **



Charpy Impact at -20°C (MPa) [ISO 179]			2.3 - 6.5	2 - N.B. **
<u>Notes</u> * Controlled Rheology (CR) grades are included. ** N.B.; Not break				

Application & Markets:

- Homopolymer - Injection Molding, Blow Molding, Thermoforming, Sheet, Tape (Raffia), Fiber, Cast and BOPP Films, Profile Extrusion.
- Random Copolymer - Thin-Walled Injection Molding, Low temperature Heat Seal and High Transparency Films, Blow Molding, Medical, Packaging Parts.
- Impact Copolymer - Automotive Parts, Appliances, Housewares, Rigid Packaging, Injection Molding, Thermoforming.
- NEWCON - Interior & Exterior Parts for Automobile, Compound Base Resin for Automotive, Thermoforming, Wire & Cable, Pipe, Profile, Tubing, Retort Packaging, Easy-open Packaging, Wrap Film, Decorative Laminated Plastics

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