

PP-R Pipe Grade  
**R200P**  
HYOSUNG PP



# TOPILENE R200P

R200P, produced and marketed by HYOSUNG Corporation is Polypropylene Random Copolymer (PP-R), a result of up-to-date PP manufacturing process and HYOSUNG's polymerization technology through over 35 years experience. R200P is the most suitable material known for all types of pipe application, in particular hot and cold water supplying system, heating system and drinking water system.

## The Advantages of R200P



### The Advantages of R200P

- Long-term service life of over 50 years
- Excellent chemical stability
- Environmental friendliness
- Outstanding installation safety
- Easy manufacturing processibility

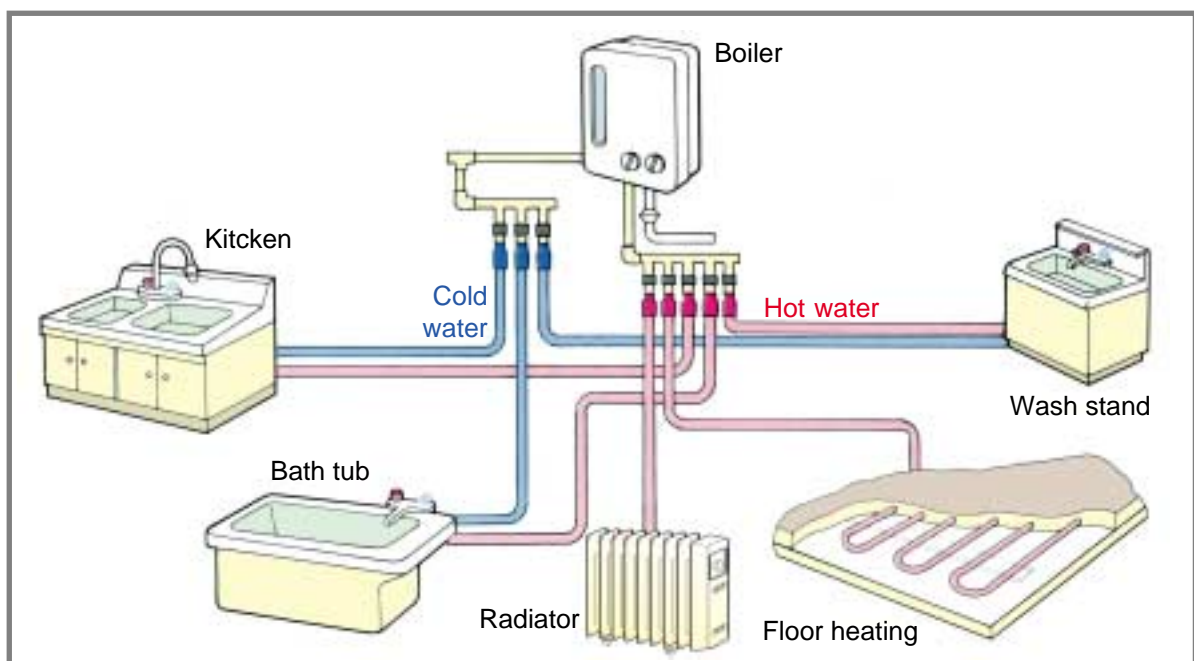
## ● Applications

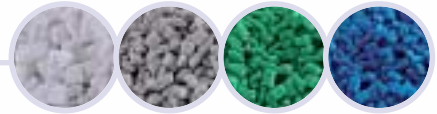
Hot and cold water supplying pipe

Under floor heating pipe

Radiator heating pipe

Pipes for chemical and agricultural uses





## ● Physical Properties

Properties		Test Method	Unit	Data
Density		ASTM D792	g/cm <sup>3</sup>	0.91
Melt Index	230°C, 2.16kg	ASTM D1238	g/10min	0.25
	190°C, 5.0kg			0.45
Tensile Strength	yield point	ASTM D638	kg/cm <sup>2</sup>	270
	break point			230
Elongation		ASTM D638	%	>400
Flexural Modulus		ASTM D790	kg/cm <sup>2</sup>	8,500
Izod Impact Strength	23°C	ASTM D256	kg · cm/cm	30
	0°C			8
	-20°C			3
Vicat Softening Point		ASTM D1525	°C	130
Melting Temperature		HS Method	°C	141
Surface Resistance		HS Method	Ω	>10 <sup>13</sup>
Mean coefficient of linear thermal expansion (0°C - 110°C)		Dilatometer	K <sup>-1</sup>	1.5·10 <sup>-4</sup>

\* The data of table are relative and represent empirical values obtained in various tests.

## ● Resistance to internal hydrostatic pressure

Condition		Required	Typical Value of R200P	Test Method
20°C	16 MPa	1 hr	>10 hrs	ISO 1167
95°C	3.5 MPa	1,000 hrs	>5,000 hrs	ISO 1167
110°C	1.9 MPa	8,760 hrs	>10,000 hrs	ISO 1167



## Color Grade

Grade	Color
R200P - 2702	White
R200P - 3702	Grey
R200P - 4702	Light Green
R200P - 4703	Normal Green
R200P - 5702	Blue

\* Other color grades can be supplied by customer's request.

\* Polypropylene random copolymer for PPR pipe is a high molecular weight polymer with high melt viscosity.

Because of this characteristics it is not easy to mix the natural resin with color master batch during pipe production.

Therefore we would like to recommend to use color grade for better quality pipes.

## Processing Guidelines

### Pipe Extrusion

The actual extrusion conditions will depend on the type of customer's equipment. So, the most suitable processing conditions have to be sought case by case. Normally the following conditions should be used as a guide. And, HYOSUNG can provide rheological data on the customer's request.

· Cylinder	Feeding zone	170 - 180°C
	Melting zone	190 - 210°C
	Metering zone	190 - 220°C
· Head		200 - 220°C
· Die		200 - 220°C
· Cooling Water Bath		20 - 40°C

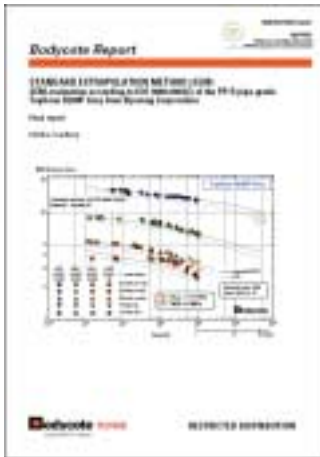
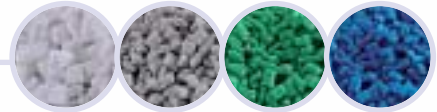
### Injection Molding of Fitting

The most important part in the injection molding of PP-R is to ensure that the mold design is definitely suitable for the PP-R resin with very low flowability.

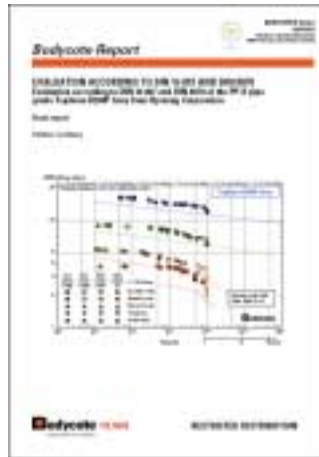
Too much stress on the melted R200P would result in rough surface of the product and some defects during injection process. It is important to set the molding condition to the lowest possible stress and to appropriately adjust the temperature.

· Cylinder / Nozzle	200 - 240°C
· Cycle Time	Above 50 seconds
· Second Pressure	Set as to make no sink mark
· Mold Temperature	30 - 50°C
· Shrinkage Rate after Molding	1.5 - 2.0%

# Certificates for R200P



SEM-evaluation  
According to ISO 9080



Evaluation according to  
DIN 8078



RCC Certificate



Evaluation according to  
Korea standard (KSM3362)



Evaluation according to  
China standard



China Hygienic certificate



Evaluation according to  
Czech Republic standard



Czech Hygienic certificate





***PP/DH Performance Unit***

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Please contact following department if you have  
any plan to develop new grade required special  
properties, or if you encounter the problem on  
processing technology.

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***-Overseas Team***

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