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I-PET - IP252BR1 -

Injection molding PET for cosmetics package

Bell Polyester Products,Inc.

URL : http://www.bellpet.co.jp/english/index.html

■Plant , Head Office
4-1 Kanebo-cho, Hofu-shi, Yamagichi, 747-0823 JAPAN
TEL:+81-835-25-6500 FAX:+81-835-25-6667

■Tokyo Sales Branch (Oversea sales Dept.)
8F, JP Tower. 2-7-2 Marunouchi Chiyoda-ku
Tokyo, 100-7008 JAPAN
TEL:+81-3-6212-9832 FAX:+81-3-6212-9833

BPP Bell Polyester Products,Inc.

1. Corporate profile

We(BPP) are one of the leading PET manufacturer in JAPAN with more than 30 years history.
With outstanding polymer-technology inherited from Kanebo, our BELLPET will be the most attractive material for packaging industry.

- Founded
  October 1, 2005 (Originally started in 1976)
- Capacity
  40,000mt/year

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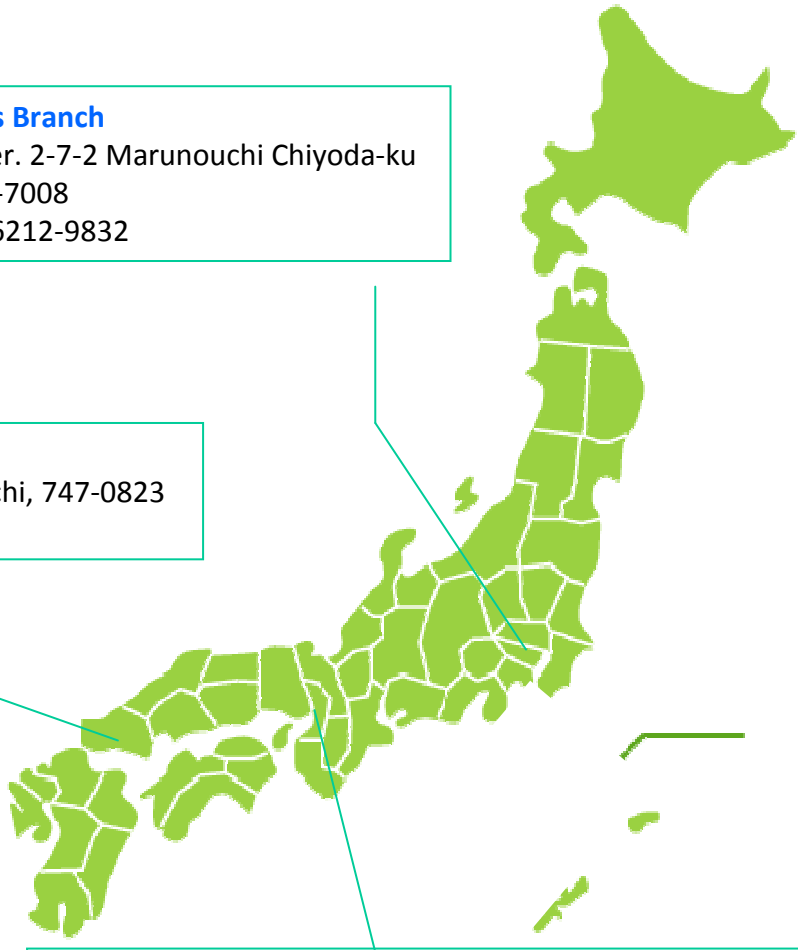
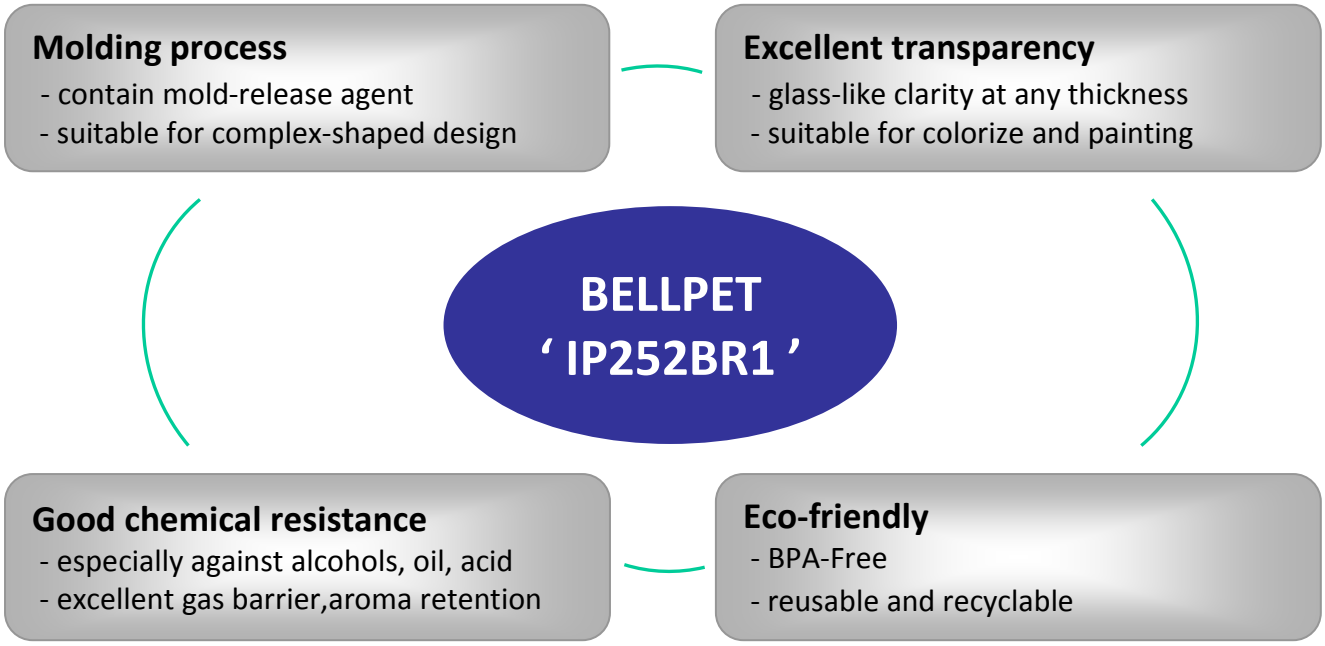


Osaka sales Branch
4F 403, Yamaguchikosan nagahori Bldg. 1-3-9 Semba Chuoku
Osaka, 542-0081 Japan
TEL:+81-6-4964-5985

2. Why IP252BR1 ?

IP252BR1 is the amorphous copolyester resin,
specially designed for injection molding, with thickness and high transparency.
It has been well adapted mainly to the cosmetic market for its outstanding qualities, which are widely known amongst the designers in JAPAN.



IP252BR1 can make your cosmetics packaging concepts more luxury and unique, and flexible !!

3-1. Applications

face treatments

Make up

Hair treatment

Newly designed compact case !!
by JILL STUART

3-2. Applications – potential market

Glass market

- Light
- Safety handle
- Easy to design
- original profile

etc…

PMMA jar market

- Better Chemical resistance
- Luxury looks

etc…

4-1. Properties

Properties	Method	Units	IP252BR1	PMMA	PS
1. Physical properties					
intrinsic viscosity(IV)	（BPP method）	dl/g	**0.68**	—	—
specific gravity	ISO 1183	g/cm3	**1.34**	1.19	1.05
thermal conductivity	JIS K-7123	10-4cal/s·cm·℃	**5.3**	—	—
thermal expansion	ASTM D-177	10-5K-1	**7.1**	—	—
2. Mechanical properties					
tensile strength	ISO 527	Mpa	**57**	77	45
tensile elongation	ISO 527	%	**>300**	6	2
flexural modulus	ISO 178	Gpa	**2.5**	3.3	3.3
flexural strength	ISO 178	Mpa	**83**	140	95
Charpy impact (notched)	ISO 179	KJ/m2	**2**	1.4	2
3.Thermal properties					
melting point	DSC method	℃	—	—	—
heat deflection temperature	—	℃	**72**	91	88
specific heating	ASTM D-648	KJ/℃·Kg	**1.26**	—	—
vicat point	ISO 306	℃	**76**	107	94
thermal conductivity	JIS K-7123	10-4cal/s·cm·℃	**5.3**	—	—
thermal expansion	ASTM D-177	10-5K-1	**7.1**	—	—

* Above properties are based upon tests and information believed to be reliable.
Although properties will vary with processing conditions,therefore please do not rely completely for specific applicadtions.

4-2. Properties - Clarity

IP252BR1 is the amorphous PET resin which does not haze at any thickness. Hence, transparency of IP252BR1 stays clear. Whereas standard PET resin become hazy at 4 mm thickness.

Plate Haze (%)

Thickness	PET	IP252BR1
9mm	**92.2**	**2.0**
7mm	75.5	0.4
5mm	20.0	0.4
3mm	0.7	0.3

Test Method : ASTM D1003

- ***Consumer likes clear and heavy, luxury package.***
- ***IP252BR1 make it glass-like packages !***

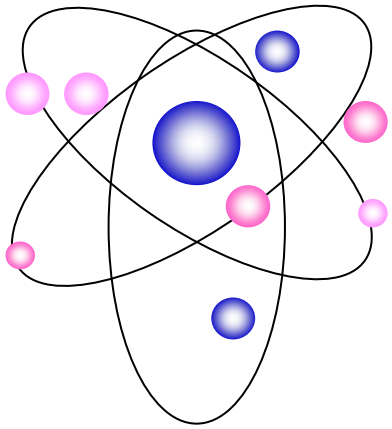
4-3. Properties - Chemical resistance

IP252BR1 shows excellent resistance against water, oil,alcohol and acid. As good as Homo PET.

Chemical products	IP252BR1	PMMA	PCTA
Water	★	★	★
Oil	★	◎	★
Alcohol	★	×	○
Acid	○	○	◎

★= excellent ◎ = good ○ = average × = bad

products	absorption (%)
Water	0.5
Oil	0.5
Alcohol	0.3



- ***IP252BR1 perform high chemical-resistance.***
- ***Suitable for almost all cosmetic packages.***

cream jar, mascara, foundation, lip stick, perfume cap etc…

5-1. Technical Guide - Injection condition

Drying Conditions :

IP252BR1 has been already dried and packed in inner-Aluminum 25 kg paper bag, drying before molding will not be required.
In case unsealed and kept in open air, we recommend you to dry **6 hours with 60-65℃**.
During molding, drying in hopper-dryer is also recommended.

Molding standard conditions :

Example model : condition with J150SA. mold 210mm ϕ, thickness 2.5mm、120g/shot

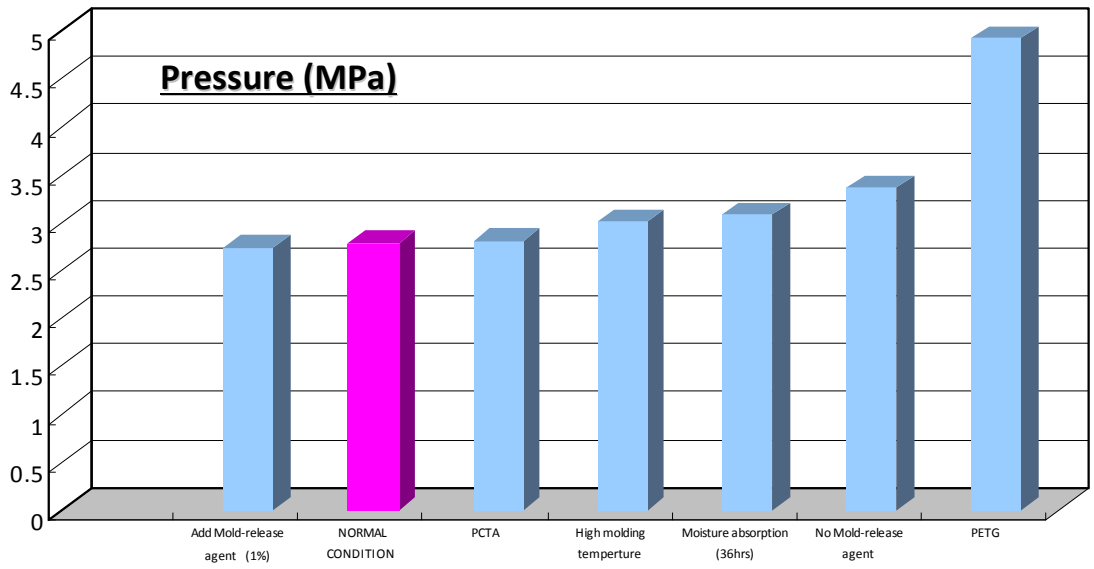
Item	Units	IP252BR1
Cylinder temperature	℃	200～250
Nozzle temperature	℃	210～250
Mold temperature	℃	< 40

Cylinder temperature		
C1	℃	210
C2	℃	230
C3	℃	240
NH	℃	240
Mold temperature	℃	30
Injection Pressure	%	60 (960kg/cm2)
Injection Speed	%	20 (mid-range)
Cooling Time	Sec	25

5-2. Technical Guide – Mold-release pressure

Mold-release pressure :

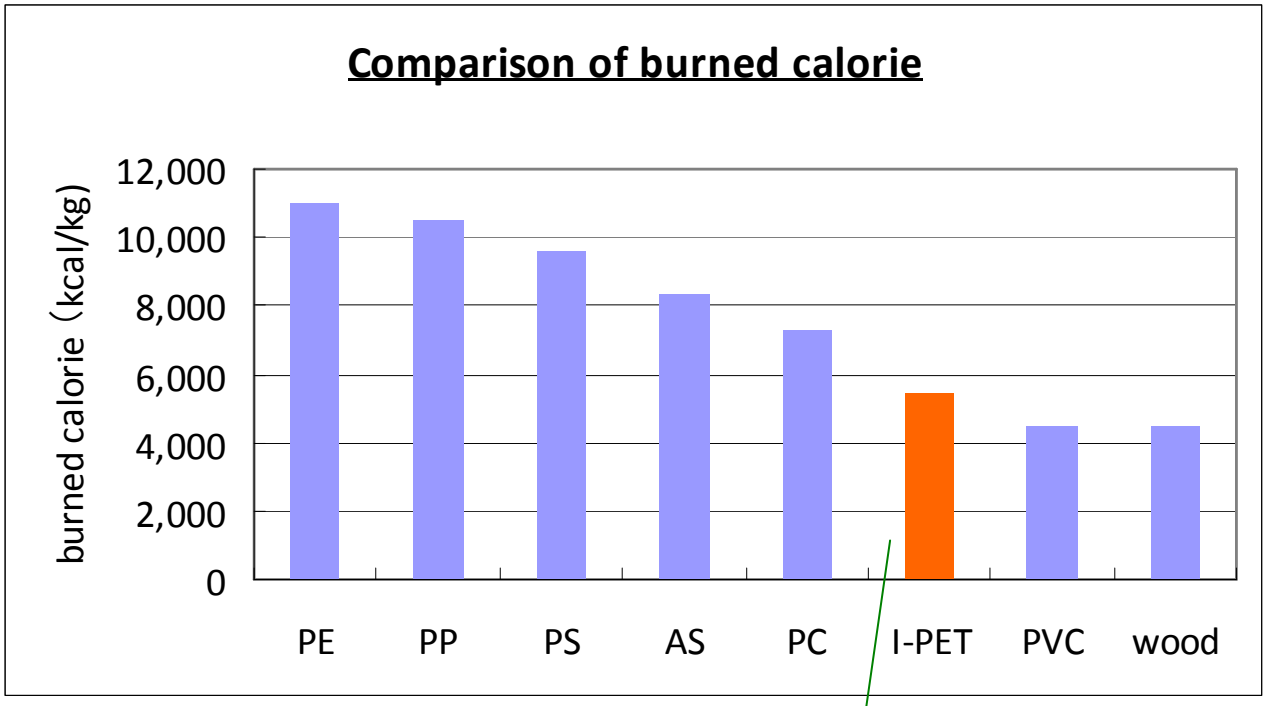
		Mold-release pressure			Molding condition	
No.	material	condition	pressure (Mpa)	result	Temperture cylinder	mold
1	IP252BR1	NORMAL CONDITION	2.78	good	220	30
2	IP252BR1	Moisture absorption (36hrs)	3.08	good	220	30
3	IP252BR1	High molding temperture	3.01	good	250	30
4	IP252BR1	Add Mold-release agent (1%)	2.73	good	220	30
5	IP252B	No Mold-release agent	3.36	good	220	30
6	PETG	-	4.92	short,crack	250	30
7	PCTA	-	2.81	short	250	30



- ***You can mould lower, easier with IP252BR1.***
- ***You may as well mould in …***
  - *Not to abort moisture.*
  - *Lower cylinder temperature as possible (around 200 to 230℃)*

6. Eco-friendly

PET is one of the most eco-friendly material among the plastic materials.
Also most advanced in re-cycle system among the world.
Our Copolyester Material **IP252BR1** will have no effect on the re-cycle system of PET.



Lower calorie than other resin !