BIMODAL
バイモーダル

DELPET

Acrylic resin molding material

BIMODAL Grades

80NE 80NEN 80EB

Asahi Kasei Corp.

URL:https://www.asahi-kasei.co.jp/delpet/en/

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1 Features of Bimodal grades

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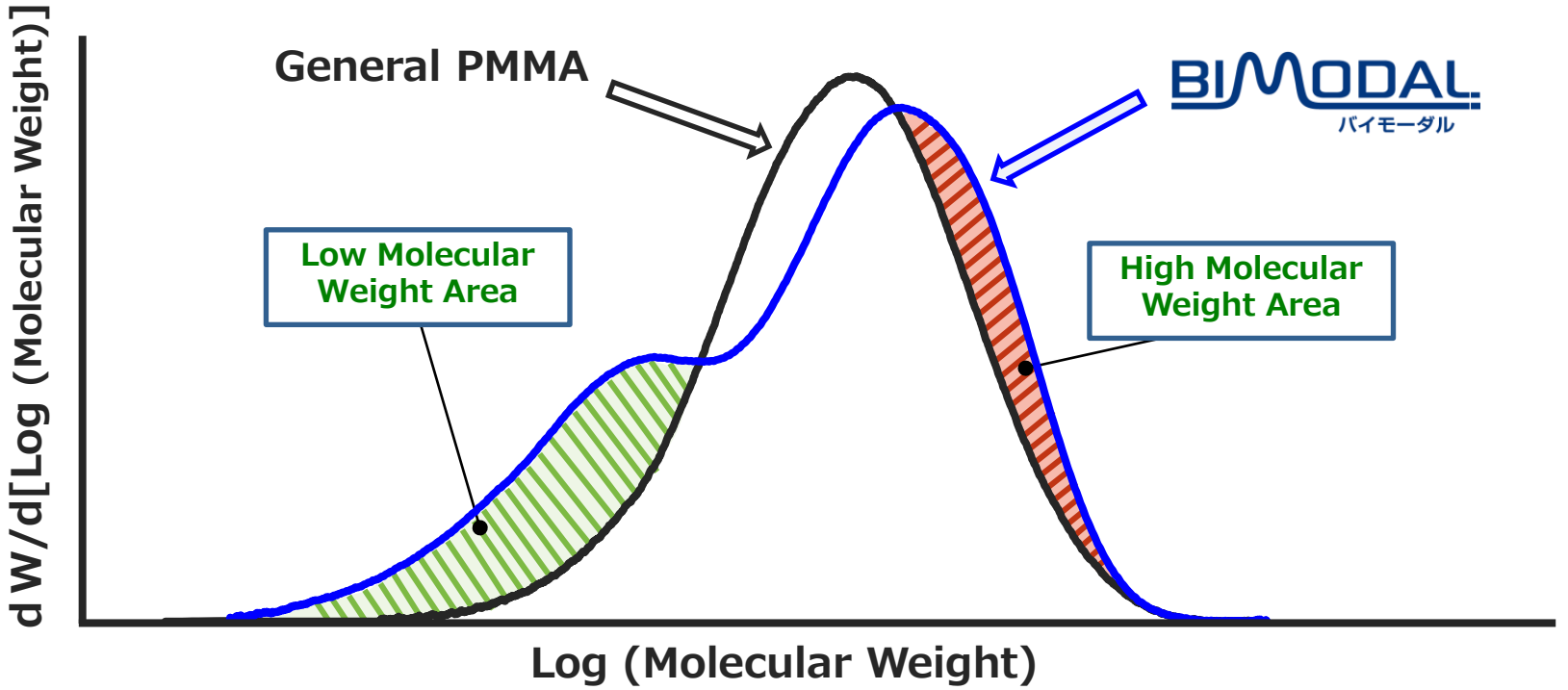
Good balance between mechanical strength and high fluidity, due to the molecular weight distribution of the bimodal structure.



1) It has similar to heat resistance, optical characteristics, and weather resistance as general grades.
2) A molding material with extremely excellent fluidity during injection molding.
3) Since it can be molded at low temperature, it can be expected to shorten the molding cycle and improve solvent resistance.
4) We have a wide lineup of high flow to solvent resistant grades.

2 General properties of DELPET™ Bimodal

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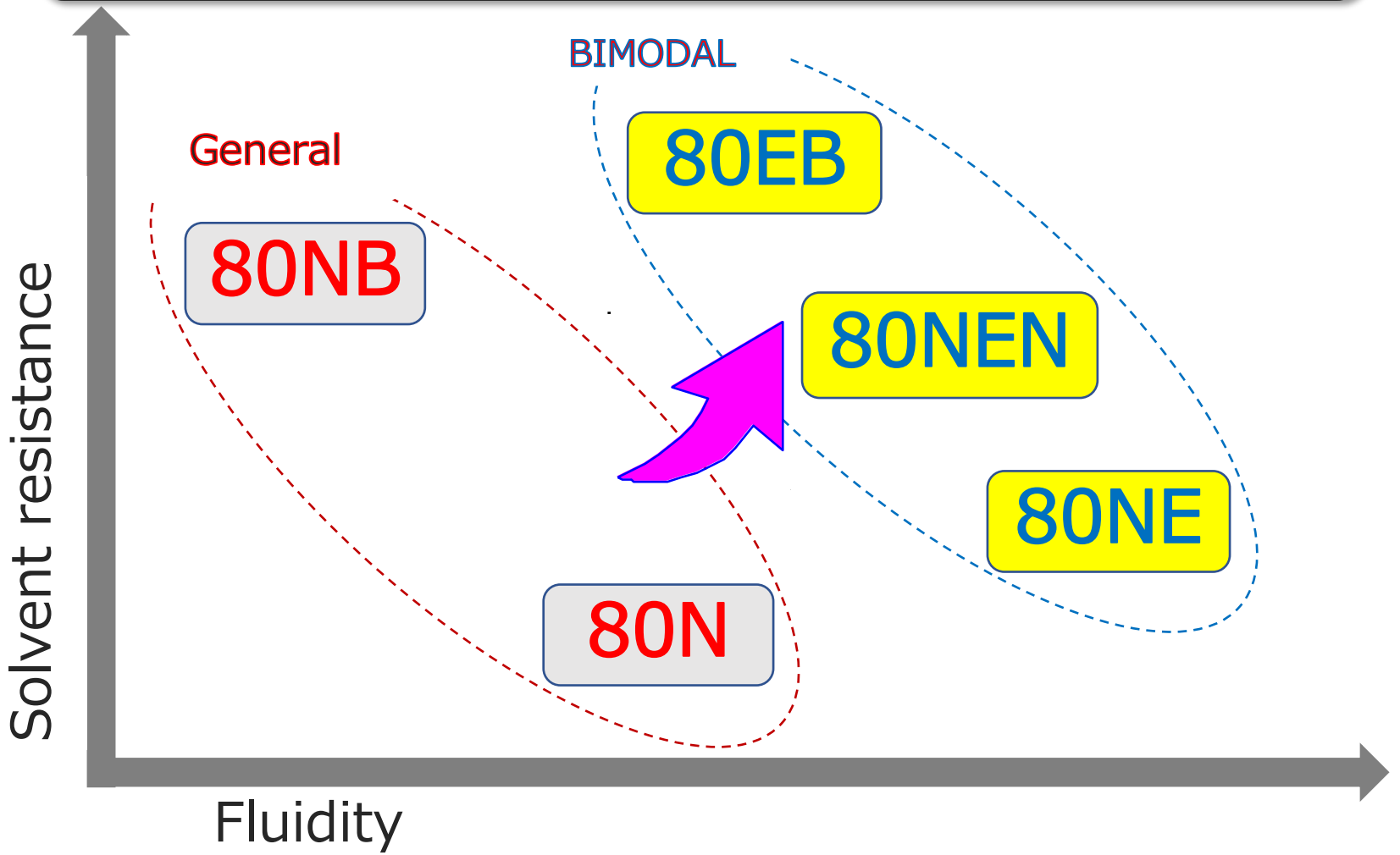
Item	ISO Method	Unit	BIMODAL			(Standard)	
			80NE High Flow	**80NEN** Good Flow	**80EB** Solvent resistant	**80N** High Heat	**80NB** Solvent resistant
1. Rheological Properties							
Melt mass-flow rate (230℃、37.3N)	1133	g/10min	1.8	1.0	0.6	2.0	0.5
Spiral flow length Thickness : 2 mm Cylinder Temp : 250 ° C Mold Temp : 60 ° C Pressure : 75 MPa	ASAHIKASEI PMMA method	cm	33	30	27	27	22
2. Mechanical Properties							
Tensile modulus	527-2/1A/1	MPa	3300	3300	3300	3300	3300
Tensile strength at break	527-2/1A/5	MPa	77	77	77	77	77
Tensile strain at break	527-2/1A/5	%	5	7	8	6	8
Flexural modulus	178	MPa	3300	3300	3300	3300	3300
Flexural strength	178	MPa	130	130	130	130	130
Charpy impact strength (Unnotched)	179/1eU	kJ/m^2	22	24	24	22	24
Charpy impact strength (Notched)	179/1eA	kJ/m^2	1.3	1.4	1.4	1.4	1.4
3. Thermal Properties							
Temperature of deflection under load (1.8 MPa)	75-1 75-2	° C	100	98	98	100	96
VICAT softening temperature	306 B 50	° C	109	107	107	109	104
4. Other Properties							
Water absorption (23 ° C, 24 hr)	62 method 1	%	0.3	0.3	0.3	0.3	0.3
Density	1183	g/cm^3	1.19	1.19	1.19	1.19	1.19
Refractive index	489	-	1.49	1,49	1.49	1.49	1.49
Total luminous transmittance	13468-1	%	92	92	92	92	92
Rockwell hardness M scale	2039-2	-	100	98	95	100	95
Mold shrinkage	ASAHIKASEI PMMA method	%	0.2～0.6	0.2～0.6	0.2～0.6	0.2～0.6	0.2～0.6
AMECA List of Acceptable Plastics for Optical Lenses and Reflex Reflectors			Registered	Registered	Registered	Registered	Registered

NOTE: The above values are representative values of natural colors and are not standard values or guaranteed. The test piece preparation conditions, annealing conditions, and test conditions in accordance with the conditions specified or recommended by the PMMA resin standard of ISO8257-2. Please use these values as a reference when selecting the most suitable grade for each respective use. In addition, these values may change due to the improvement of properties.

3 Bimodal grade design concept

Good balance between fluidity and solvent resistance compared to General grades



4 Injection moldability of Bimodal

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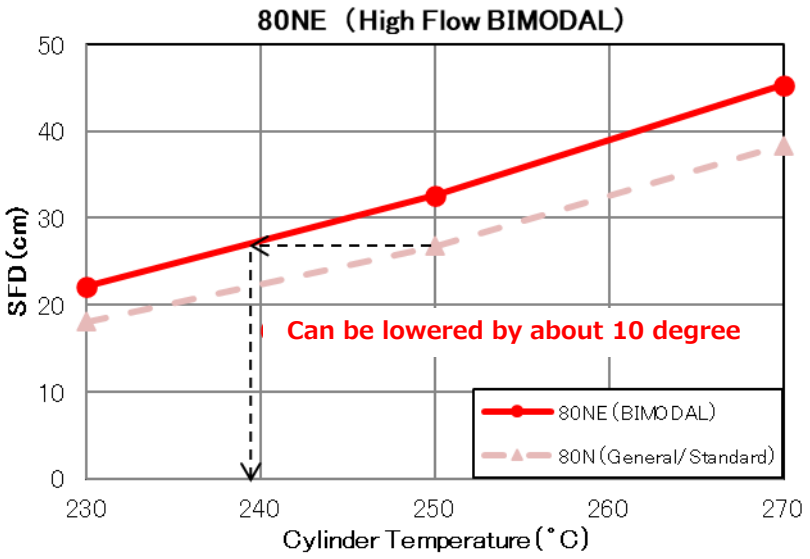
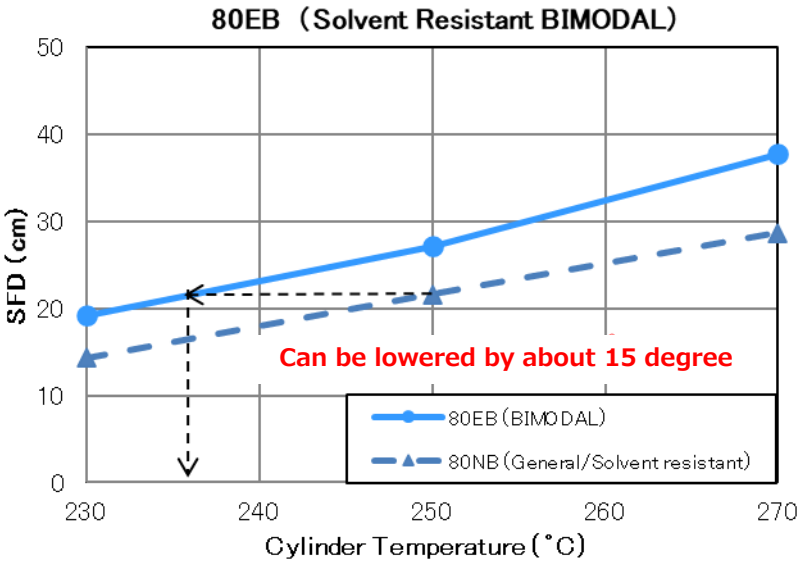
Lowered processing temperature and shortened molding cycles





(Molding conditions)

Mold	**:**	**Spiral mold (t=2 mm)**
Filling pressure	**:**	**75 MPa**
Mold temperature	**:**	**60 °C**

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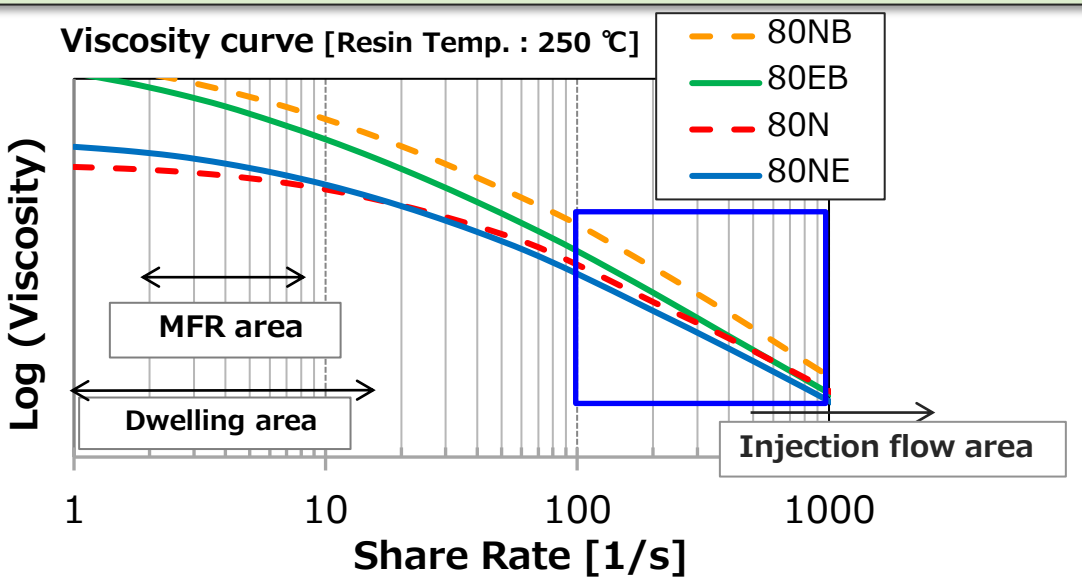
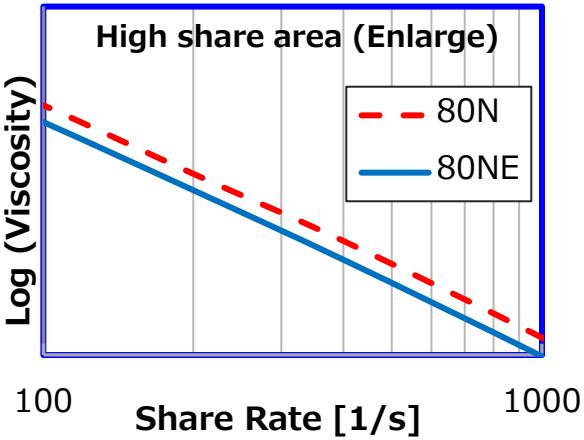
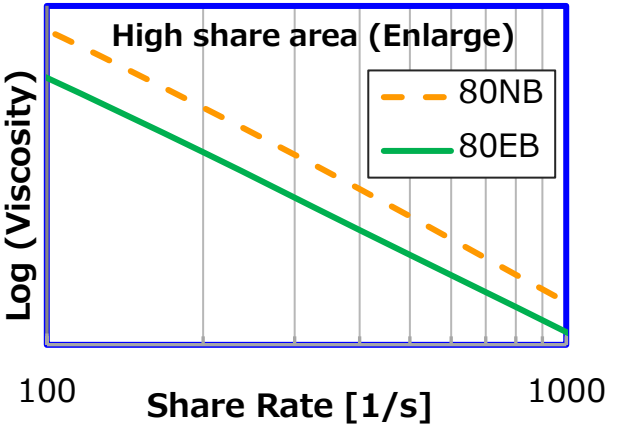
Molded Spiral piece

5 Viscosity properties of Bimodal

In the high share area, the viscosity is lower than that of general grades and the fluidity is improved.







6 Solvent resistance of Bimodal

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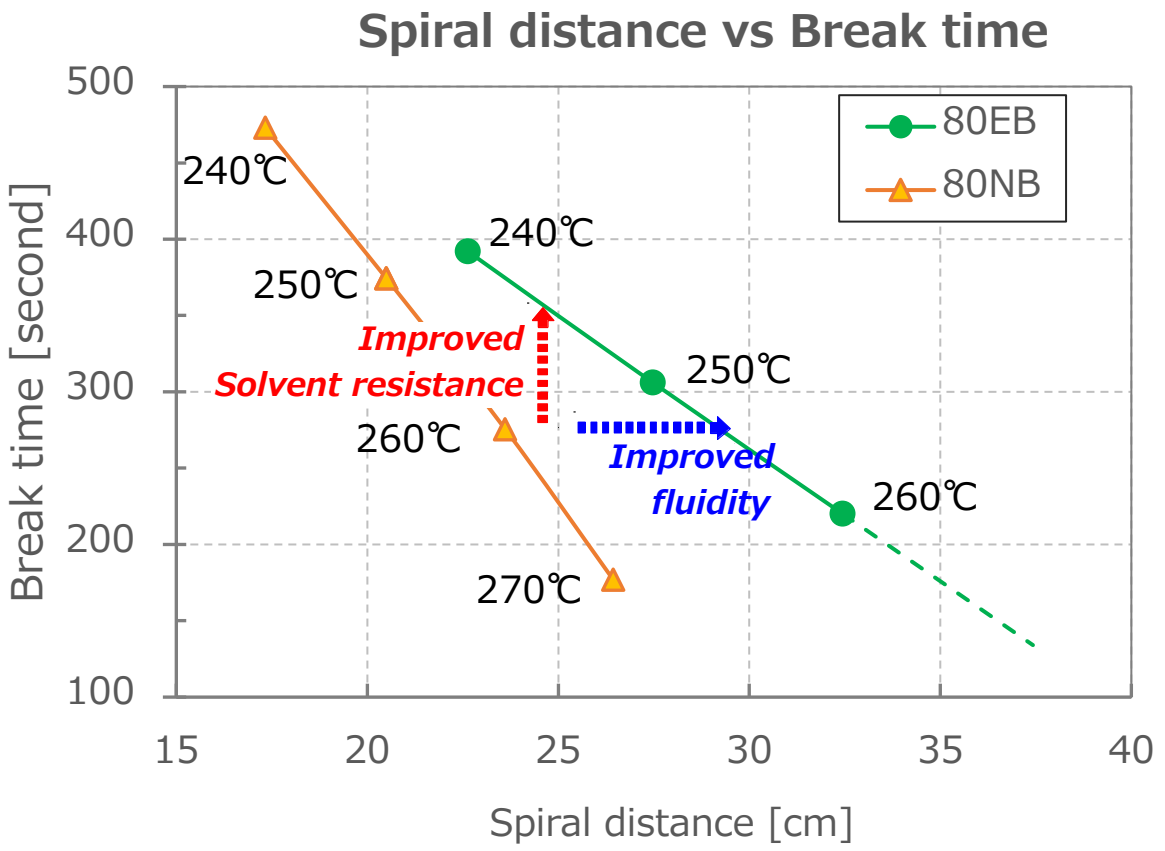
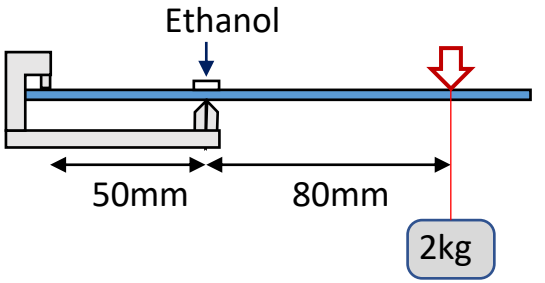
The fluidity and solvent resistance can be improved compared to general grades.



【Solvent resistance test conditions】
(Cantilever method)

- Jig : Cantilever
- Test piece : ISO 3167
  Tensile test piece A type
- Load : 2 kgf
- Solvent : Ethanol
- Dripping : Every 30 seconds
- Evaluation : Break time



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7 Recommended molding conditions

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Grades		Drying conditions		Molding conditions		Annealing conditions	
		Temp. ℃	Time Hr	Cylinder ℃	Mold ℃	Temp. ℃	Time Hr
Bimodal	80NE	80～85	3～6	220～260	50～90	80～85	2～5
	80NEN						
	80EB						
General	80N	80～85	3～6	220～260	50～90	80～85	2～5
	80NB			230～260		75～80	

1. Pre-drying	DELPET ™ is hygroscopic. In addition, even if the bag is unopened, it gradually absorbs moisture, so it is necessary to pre-dry the pellets before molding. If the drying is insufficient, poor appearance is likely to occur. The drying condition also changes depending on the drying equipment.
2. Dustproof	If foreign matter gets mixed in, it will spoil the appearance of the molded product, so please be careful about dust protection in the room and dust protection when opening the pellets package. Also, pay attention to cleaning the hopper and dryer of the molding machine.
3. Resin switching	Mixing with a small amount of other resin tends to cause appearance defects such as white turbidness and haze. Thoroughly clean the hopper, cylinder, nozzle, etc. of the molding machine so that other resins do not adhere to them. Also, please note that mixing with other companies' methacrylic resins or mixing with different grades may cause molding defects.

8 Precautions for handling DELPET™

These data are based on the documents, information and data now available and may be changed when new knowledge or information is acquired.

(1) Safe Handling

Safety Data Sheets (SDS) on DELPET™ are available from Asahi Kasei Corporation. Please be sure to read the DELPET™ Handling Precautions listed in the separate Product Safety Data Sheet before using DELPET™. The main points when handling DELPET™ are as follows. Please use them for the safe handling of DELPET™. Please investigate the safety of additives, etc., used by your company aside from DELPET™.

① **Precautions for safety and health**

The main component of the gas generated when DELPET™ is melted and when the resin is decomposed is methyl methacrylate, which is a raw material monomer. Be careful to avoid contact with eyes and skin and inhalation. Also, do not touch the high temperature resin directly. For each work such as melting, it is necessary to install a local exhaust ventilation and wear protective equipment (protective glasses, protective gloves, etc.).

② **Precautions regarding combustion**

DELPET™ is flammable, so handle and store it away from heat and ignition sources. During a fire , irritating and highly toxic gases such as carbon-monoxide may be generated by thermal
decomposition or incomplete combustion. Use water, foam and dry chemical extinguishants as extinguishing media.

③ **Precautions for disposal**

In principle, dispose of by incineration or landfill. When incinerating, use incineration facilities to treat and incinerate in accordance with relevant regulations. When landfilling, treat in accordance with relevant regulations. Or consign to a specialized disposal contractor approved by the prefectural governor. Dispose of empty bags properly without reuse or diversion.

④ **Precautions for storage**

It is a combustible material (synthetic resin) and should be handled in accordance with the relevant regulations.

⑤ **Precautions for molding**

Please note the following points to avoid decomposition of the resin.

- Do not allow the resin to stay in the processing machine at high temperature for a long time.
- If pellets are scattered on floors, they should be collected immediately because they are slippery.

(2) Conforming standards

DELPET™ is available in grades that comply with various standards including UL (Underwriters Laboratories Inc.), SAE (Society of Automotive Engineers), and Electrical Appliance and Material Safety Law, etc. There are grades that have received a confirmation certificate (Japan Hygienic Olefin And Styrene Plastics Association type) (or an equivalent confirmation certificate). Conformance to these standards is determined by specific test methods. Safety as a product should be verified after conducting appropriate tests for the application of use.

(3) Others

Please give heed to industrial property rights when using.

[Inhibited Applications]

Do not use DELPET™ on medical devices and products that come into contact with human tissues or fluids for a long period of time (more than 30 days), or on anything that touches or may be swallowed by infants. In addition, please be sure to contact our acrylic resin sales department in advance when using for medical purposes that do not fall under the above, applications that come into contact with food and drinking water, applications such as cosmetics, toys, sports equipment, etc.
We will consult with you individually.

If you need information on the product safety of DELPET™, please contact Asahi Kasei Corporation MMA Division / Acrylic Resin Sales Department.

ASAHIKASEI CORPORATION Acrylic Resin Sales & Marketing Department
〒100-0006 1-1-2 Yurakucho, Chiyoda-ku, Tokyo （Hibiya Mitsui Tower） TEL：+81-3-6699-3286 FAX：+81-3-6699-3460

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Creating for Tomorrow

THE COMMITMENT OF THE ASAHI KASEI GROUP:

To do all that we can in every era to help the people of the world
make the most of life and attain fulfillment in living.
Since our founding, we have always been deeply committed
to contributing to the development of society,
boldly anticipating the emergence of new needs.
This is what we mean by “Creating for Tomorrow.”