

***** Hei-Cast 8636-75 *****

1. Description

Hei-Cast 8636 is a polyurethane resin developed for low-pressure casting and has the following characteristics.

- (1) It has good fluidity and fills the details of the mold with resin.
- (2) It has excellent curability and can be de-molded for 30 minutes at a mold temperature of 40 to 60°C.
- (3) Excellent heat resistance and impact resistance, and strong molded products with good surface gloss can be obtained.

2. Basic Properties

Item		Value	Remarks
Appearance	A comp.	Not colored / Black	Polyols
	B comp.	Pale yellow transparent	Isocyanates
Color of Article		White / Black	
Viscosity (mPa·s, 25°C)	A comp.	1200	Viscometer Type BM
	B comp.	200	
Specific Gravity (25°C)	A comp.	1.04	Standard Hydrometer
	B comp.	1.19	
Mixing Ratio	A : B	100 : 125	Ratio by weight
		100 : 110	Ratio by Volume
Pot Life	25°C	75s	Resin 100g
S.G. of Finished Article	25°C	1.17	JIS K 7112

3. Basic Physical Properties

Item		Value	Remarks
Hardness	Type D	77	JIS K 7215
Tensile Strength	MPa	35	JIS K 7113
Elongation	%	80	
Bending strength	MPa	48	JIS K 7171
Young's Modulus in flexure	MPa	1150	
Impact strength	kJ/m ²	12	JIS K 7110 Izod V Notch *1
Shrinkage (2mm thickness, %)	40°C Mold	0.3	Inhouse specification 2mm/3mm thickness Mold 150mm length
	60°C Mold	0.4	
Shrinkage (3mm thickness, %)	40°C Mold	0.4	
	60°C Mold	0.5	
Heat deflection temperature	°C	85	JIS K 7207(1.80 MPa) *2
Heat resistance	°C	130	Tg TMA method
Coefficient of thermal expansion	/°C	8×10 ⁻⁵	JIS K-6911
Demolding time	min	40~60°C×30min	

Remarks : Curing condition: Mold temperature: 60°C 60°C×30min+25°C×24hr

Physical properties listed above are typical values measured in our laboratory and not the values for specification. When using our product, it must be noted that physical properties of final product may differ depending on the contour of article and the molding condition.

*1: 4mm thickness *2: 12.7mm thickness

4. Physical properties vs. Temperature

Temperature°C	Bending strength (MPa)	Young's modulus in flexure(MPa)	Impact strength (KJ/m ²)
-20	70	1300	110
0	60	1200	116
20	50	1100	120
25	48	1150	122
40	40	1000	124
60	30	900	126
80	20	800	130

Remarks: Measurement of physical properties at each environmental temperatures.

5. Electrical properties

Measurement	Unit/Condition		Value
Surface resistivity	Ω		5.03×10 ¹⁵
Volume resistivity	Ω · cm		4.67×10 ¹⁴
Dielectric breakdown voltage	KV/mm		15.4
Dielectric constant ε	25°C	60Hz	4.8
		100kHz	4.2
	60°C	60Hz	5.2
		100kHz	4.5
Dielectric loss tangent tanδ	25°C	60Hz	0.021
		100kHz	0.042
	60°C	60Hz	0.098
		100kHz	0.035

Electrical properties : JIS K6911 Compliant

6. Chemical resistance

Chemicals	Weight change(%)	Loss of gloss	Discoloration	Crack	Warpage	Swelling	Degradation	Dissolution
Distilled water	0.39	○	○	○	○	○	○	○
10%Sulfuric acid	0.77	○	○	○	○	○	○	○
10%Hydrochloric acid	0.67	○	○	○	○	○	○	○
10%Sodium hydroxide	0.53	○	○	○	○	○	○	○
10%Ammonia water	0.52	○	○	○	○	○	○	○
Acetone *	10.6	○	○	○	○	△	○	○
Acetone	55	○	○	×	○	×	○	○
Toluene	1.3	○	△	○	×	○	○	○
Methylene chloride *	52	○	△	×	○	×	○	○
Methylene chloride	-	○	△	×	×	×	×	○
Trichloroethane	0.13	○	○	○	○	○	○	○
Ethyl acetate	19	○	○	○	○	△	○	○
Ethanol	2.6	○	○	○	○	○	○	○
Gasoline	0.14	○	○	○	○	○	○	○
Benzine	0.20	○	○	○	○	○	○	○

Tested according to JIS K-6911. Changes after 24 hrs. immersion in each chemicals were observed. Those marked with *1 mark were immersed for 60 min. ○:Good, △:Slightly No good, ×: Bad

7. Low Pressure Casting Process

(1) Dispensing machine(Automatic casting machine)

Use 2 component PU dispensing machine which can perform the process from weighing of A component and B component and mixing with a stirrer to cleaning of mix-head automatically. The properties of this material may be affected negatively depending on the material of the parts of dispensing machine contacted with this material.

More information is available from our sales staff.

(2) Temperature of resin

Keep a temperature of 25~30°C for both A and B components

Higher liquid temperature means shorter pot life and lower liquid temperature means longer pot life.

(3) Mold temperature

Keep the temperature of mold at 40~60°C beforehand.

Extremely too low mold temperatures may cause improper curing to result in lower physical properties.

(4) Weighing

Mixing ratio is 100:125(by weight). Adjust the output of dispensing machine to the tolerance of $\pm 5\%$.

(5) Mixing

A and B component will be mixed on a dynamic stirring system. Mixing efficiency will differ depending on the quantity to be dispensed and the number of rotation of the dispensing machine. It is suggested to find optimum casting condition of the machine before casting.

(6) Casting

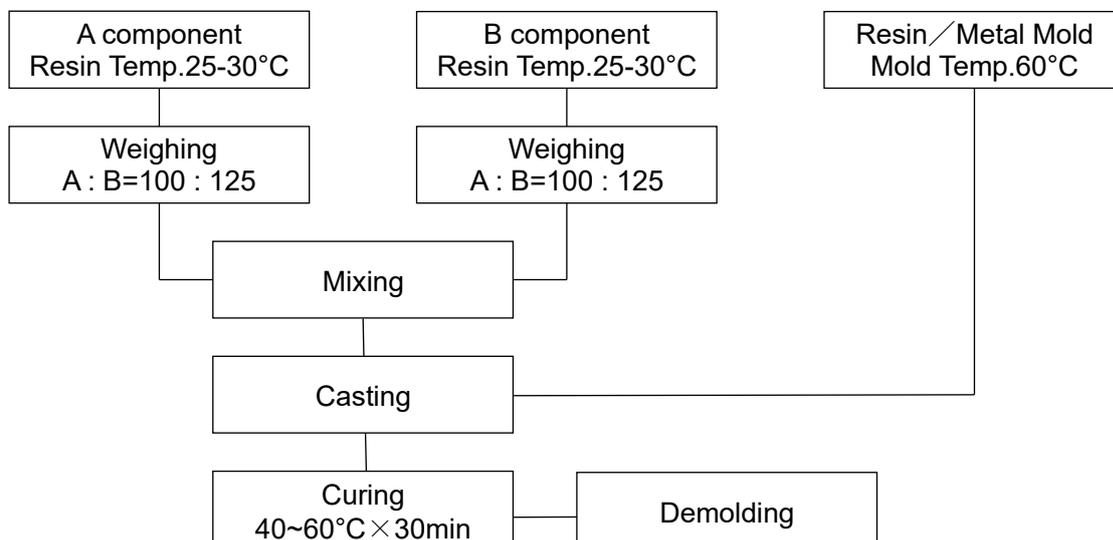
Cast the resin into the mold which has been given a coat of mold release agent beforehand and prepared appropriately with air venting, seals for parting line, etc.

(7) Curing condition

Place filled mold in thermostatic oven of 40~60°C.

Articles just after demolding may deform depending on the shape when it is post cured at temperatures higher than the mold temperature. We ask you to place it in a suitable jig to avoid deformation during the post cure at high temperatures.

8. Flow chart of low pressure casting



9. Precautions in handling

- (1) Both A and B components are sensitive to water. Don't allow water get into material and don't allow moisture come prolonged contact with the material. Close container tight after use.
Let nitrogen gas or dry air flow in the working tank of the dispensing machine for A and B component to seal the moisture from the air.
- (2) Penetration of water into A component may lead to generation of much air bubbles in the cured product.
- (3) B component will react with moisture to become turbid or to cure into solid material. Don't use the material when it has lost the transparency or it has shown any hardening as these materials will lead to much lower physical properties.
- (4) B component in part or in whole may freeze when it is stored for longer period of time at temperatures below 5°C. Frozen material can be used after melting. Warm it up at 60~70°C for 1-2 hours, stir it well and use after warming it up to 25-30°C.
- (5) Prolonged heating of B component at temperatures over 50°C will affect quality of B component and the cans may be inflated by the increased inner pressure.
- (6) When B component is stored in a frozen state, it deteriorates more quickly.
We recommend to melt frozen material completely and store it at 20-25°C.

10. Precautions in Safety and Hygiene

- (1) B component contains more than 1% 4,4'-Diphenylmethane diisocyanate.
Install local exhaust within the work shop to secure good ventilation of the air.
- (2) Take care that hands or skin are not coming in direct contact with raw materials. In case of contact, wash with soap and water immediately. It may irritate hands or skin if they are left in contact with raw materials for longer period of time.
- (3) If raw materials get into eyes, rinse immediately with flowing water for 15 minutes and see a doctor.

11. Dangerous materials classification according to the Fire Services Act

A component Fourth Class Petroleum Group, Dangerous Materials Third Group

B component Fourth Class Petroleum Group, Dangerous Materials Fourth Group

12. Delivery Form

A component 17kg

B component 17kg

In using our products based on the technical information contained herein, you are requested to thoroughly test our products as to their suitability for your intended application and determine their validity with your own responsibility.

As the applications and processing conditions of our products to be applied by users are beyond our control, we can not bear any responsibility for this technical information in terms of accuracy, the results obtained from their use and the possible infringement of patent rights of any third parties.