

***** Hei-Cast 8751 *****

1. Description

Hei-Cast 8751 is a clear transparent polyurethane resin for vacuum cast molding .

(1) Its main feature is excellent transparency.

(2) It offers good process-ability due to long pot-life and low viscosity.

2. Basic Properties

Item		Value	Remarks
Appearance	A Comp.	Colorless to pale yellow	Polyol
	B Comp.	Colorless to pale yellow	Isocyanate
Color of Finished Article		Transparent	Turns to yellow on exposure to sun light
Viscosity (mPa.s,25°C)	A Comp.	500	Viscometer Type BM
	B Comp.	170	
Specific Gravity (25°C)	A Comp.	1.06	Specific Gravity Cup
	B Comp.	1.19	Standard Hydrometer
Mixing Ratio	A : B	100 : 150	Parts by weight
Pot Life	25°C	7 min. and 30 sec.	Resin 100g
		6 min. and 45 sec.	Resin 300g
	35°C	5 min. and 00 sec.	Resin 100g
S.G. of Finished Article		1.20	JIS K-7112

3. Basic Physical Properties

Item		Value	Remarks
Hardness	Type D	85	JIS K-7215
Tensile Strength	MPa	65	JIS K-7113
Elongation	%	15	
Bending strength	MPa	90	JIS K-7171
Young's modulus in flexure	MPa	2000	
Impact strength	kJ/m ²	7	JIS K-7110 Izod V Notch
Shrinkage	%	0.3	In-house specification
Deflection temp. under load	°C	80	JIS K-7191 (1.80 MPa)
De-moldable Time		60 -90 min.	Mold temp. :over 60°C

Remarks: Curing condition: Mold Temp: 60°C, 60°C x 60 min. + 25°C x 24 hrs.

Physical properties listed above are typical values measured in our laboratory and not the values for specification. Please note that physical properties of final product may differ depending on the contour of article and the molding condition.

4. Optical Properties

Item		Value	Remarks
Index of Refraction		1.572	JIS K 7105
Total luminous Transmittance	%	91.6	
Diffusion Transmittance	%	3.8	
Parallel luminous Transmittance	%	87.9	
Haze	%	4.1	

5. Chemical resistance

Chemicals	Weight change (%)	Loss of gloss	Discoloration	Crack	Warpage	Swelling	Degradation	Dissolution
Distilled water	0.28	○	○	○	○	○	○	○
10% Sulfuric acid	0.29	○	○	○	○	○	○	○
10% Hydrochloric acid	0.23	○	○	○	○	○	○	○
10% Sodium hydroxide	0.20	○	○	○	○	○	○	○
10% Ammonia water	0.26	○	○	○	○	○	○	○
Acetone	22	○	○	○	○	×	△	○
Toluene	0.14	○	○	○	○	○	○	○
Methylene chloride*1	18	△	△	○	○	×	○	○
Ethyl acetate	12	○	○	○	○	×	○	○
Ethanol	1.1	○	○	○	○	△	○	○

Tested according to JIS K-6911. Changes after 24 hrs. immersion in each chemicals were observed. Those marked with *1 were immersed for 60 min. respectively.

○: Good, △: Slightly No good, ×: Bad

6. electrical properties

Item		Unit or Terms	Value
Surface resistivity		Ω	4.85×10^{15}
Volume resistivity		$\Omega \cdot \text{cm}$	2.38×10^{16}
Breakdown voltage		KV/mm	14.1
Permittivity ϵ	60 Hz	25°C	3.72
	10M Hz	25°C	3.34
dielectric loss tangent $\tan \delta$	60Hz	25°C	0.00699
	100kM Hz	25°C	0.00373

7. Vacuum Molding Process

(1) Pre-degassing

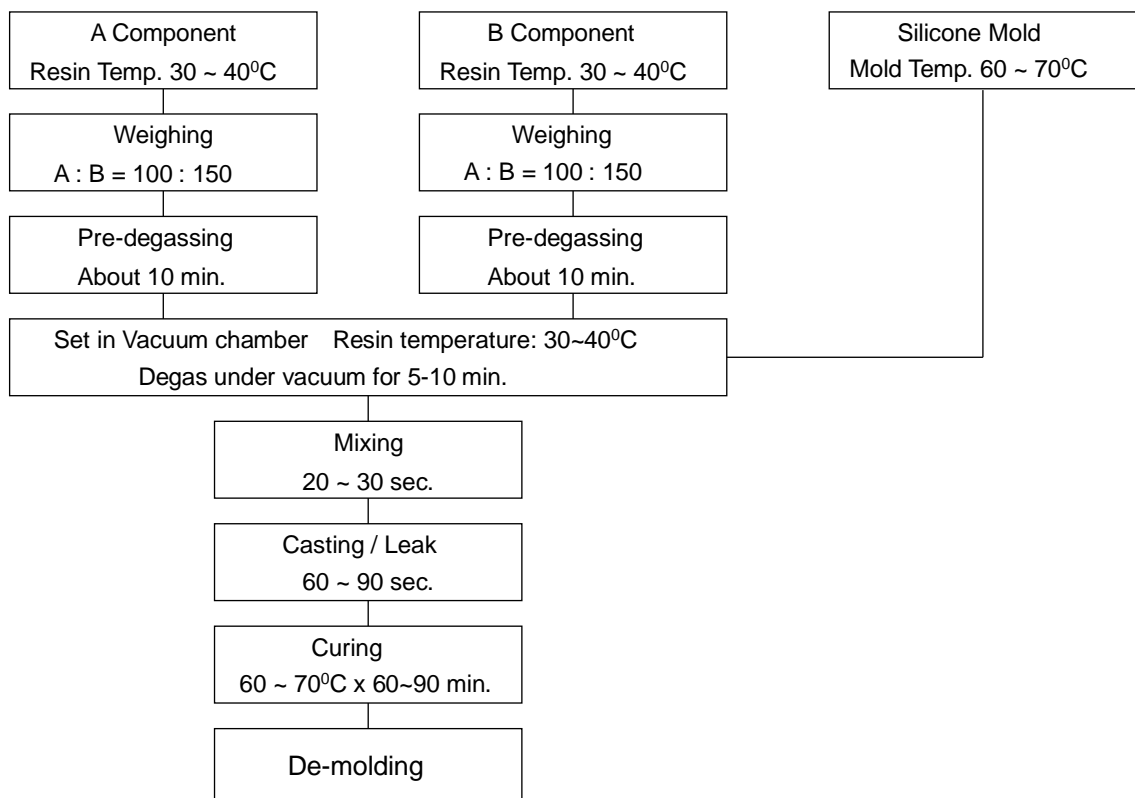
Degas both A and B components in a de-gassing chamber for about 10 min.

Degas material as much as you need.

(2) Temperature of resin

- Keep a temperature of 30 ~ 40°C for both A and B components during casting.
- (3) When the temperature of material is high, the pot life of mixture will become short.
Extremely too low temperatures may cause insufficient mixing and/or improper curing.
Avoid to heat the material too long, as it may cause shorter pot life.
- (4) Mold temperature
Keep temperature of silicone rubber mold pre-heated to 60 ~ 70°C.
Too low mold temperatures may cause improper curing to result in lower physical properties. Mold temperature should be controlled precisely as it will affect the dimensional accuracy of finished article.
- (5) Casting
Containers are set in such a way that A component is added to B component.
Apply vacuum to the chamber and degas B component for 5 ~ 10 min. while it is stirred from time to time. Then add A component to B component and mix under stirring.
Hei-Cast 3752 will stay turbid for a while after mixing A component with B component.
If casting is done while mixture is still turbid, weld mark may occur in the cast article.
To prevent such phenomena, it is recommended to cast Hei-Cast 3752 after its mixture has become transparent. Release vacuum on suitable time.
- (6) Curing condition
Place filled mold in thermostatic oven at 60 ~ 70°C to cure for 60 min and then de-mold.
Perform post curing at 60 ~ 70°C for 2 ~ 3 hours depending on the needs.

8. Flow chart of vacuum casting



9. Precautions in handling

- (1) As both A and B components are sensitive to water, never allow water get into material or air moisture come prolonged contact with material. Close container tight after use.
- (2) Penetration of water into A component may lead to generation of much air bubbles in the cured article. Should this happen, heat A component to 80°C and de-gas it under vacuum for 15 min.
- (3) Prolonged heating may oxidize A component. Please store it at room temperature.
- (4) B component will react with moisture to become turbid or to cure into solid material. Do not use such material which has lost transparency or has hardened already.
- (5) B component in part or in whole may freeze when it is stored for longer time at temperatures below 5°C. Warm up container at 60 ~ 70°C for 1~2 hours and use molten liquid after stirring thoroughly.
- (6) Prolonged heating of B component at temperatures over 50°C will affect its quality and the cans may be inflated by the increased inner pressure.
- (7) When B component is stored in a frozen state, it deteriorates more quickly on storage than a liquid material. 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% of 4,4'-Diphenylmethane diisocyanate.
Install local exhaust within work shop to secure good ventilation of 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 left in contact for longer period of time.
- (3) If raw materials get into eyes, rinse with flowing water for 15 minutes and call a doctor.
- (4) Install duct for vacuum pump to ensure that waste air is exhausted to the outside.

9. Dangerous Materials Classification according to the Fire Services Act

A Component: Fourth Petroleum Group, Dangerous Materials Fourth Group.

B Component: Fourth Petroleum Group, Dangerous Materials Fourth Group.

11. Delivery Form

A Component: 1 kg Royal can.

B Component: 1 kg Royal can.

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.