

***** Hei-Cast 8570 *****

1. Description

High-cast 8570 is a polyurethane resin for vacuum casting developed for prototype production of tough PP products. It has the following features.

- (1) Because of its high flexural modulus, it is suitable for prototype manufacture of interior and exterior parts for automobiles
- (2) The heat-resistant temperature is 90°C
- (3) It has a long service life and is suitable for making large cast products.
- (4) Flexibility can be imparted by adding C component.

2. Basic properties

Item		Value	Remarks
Appearance	Part A	Translucence liquid , Black	Polyols
	Part B	Translucence liquid	Isocyanates
	Part C	Cloudiness liquid	Polyols
Color of article		Milky white , Black	
Viscosity (mPa.s,25°C)	Part A	1000	Viscometer Type BM
	Part B	300	
Specific gravity (25°C)	Part A	1.11	Specific gravity cup
	Part B	1.17	

3. Basic physical properties

Item		Value	Remarks
Mixing ratio	(A+C) : B	100: 200	Parts by weight
Pot life	25°C	10 minutes	Resin 100g
	35°C	6 minute 30 seconds	
Specific gravity, cured	25°C	1.21	JIS K 7112
Hardness	Type D	85	JIS K 7215
Tensile strength	MPa	50	JIS K 7113
Elongation	%	35	
Poisson ratio		0.44	JIS K 7161
Bending strength	MPa	65	JIS K 7171
Young's modulus in flexure	MPa	1600	
Impact strength	kJ/m ²	11	JIS K 7110
Shrinkage	%	0.4	Company standard
Heat Deflection Temperature	°C	90	JIS K 7191 (1.80MPa)
	°C	90	JIS K 7191 (0.45MPa)
Coefficient of thermal expansion	°C ⁻¹	8×10 ⁻⁵	JIS K 6911
De-mold time	Minute	60-90	Mold temp. above 60°C

Remarks: Curing condition : Mold temperature: 60°C×60 min. + 25°C×24 hours.

Above physical properties are given from our laboratory measurements as typical values and not for specification. When using our product, it must be noted that physical properties of final product may vary depending on its contour and molding conditions

4. Chemical resistance

	Weight change (%)	Appearance change (visual)
Ion exchange water	0.5	None
10%Sulfuric acid	0.3	None
10%Hydrochloric acid	0.4	None
10%Sodium hydroxide	0.3	None
10%Ammonia water	0.4	None
Acetone*1	25	Swelling
Toluene	<0.1	None
Methylene chloride*2	19	Swelling
Ethyl acetate	9.4	Swelling
Ethanol	1.3	None
Gasoline	<0.1	None
Benzene	<0.1	None

Remarks: JIS K 6911

3 mm thickness of the test piece

After immersion in each chemical solution for 24 hours, the change is observed.

However, * indicates immersion for 60 minutes. The test results are based on our measurement results and are not standard values.

5. Vacuum Molding Process

(1) Weighing

Decide the amount of "C component" according to the hardness you desire and add it to A component.

Weigh the same amount by weight of B component as A component in a separate cup taking into account the amount which may remain in the cup.

(2) Pre-degassing

Perform pre-degassing in degassing chamber for about 5 minutes.

Degass as much as you need.

We recommend to degass after heating material to a liquid temperature of 40°C.

(3) Temperature of resin

Keep temperature of 30 ~ 40°C for both A (containing C component) and B component.

When the temperature of material is high, the pot life of mixture will become short and when the temperature of material is low, the pot life of mixture will become long.

(4) Mold temperature

Keep temperature of silicone mold pre-heated to 60 ~ 70°C.

Too low mold temperatures may cause improper curing to result in lower physical properties. Mold temperatures should be controlled precisely as they will affect the dimensional accuracy of the article.

(5) Casting

Containers are set in such a way that B component is added to A component (containing C component).

Apply vacuum to the chamber and de-gass A component for 5 ~ 10 minutes while it is stirred from time to time.

Add B component to A component (containing C component) and stir for 30 ~ 40 seconds and then cast the mixture speedily into the silicone mold.

Release vacuum in 1 and half a minute after commencement of the mixing.

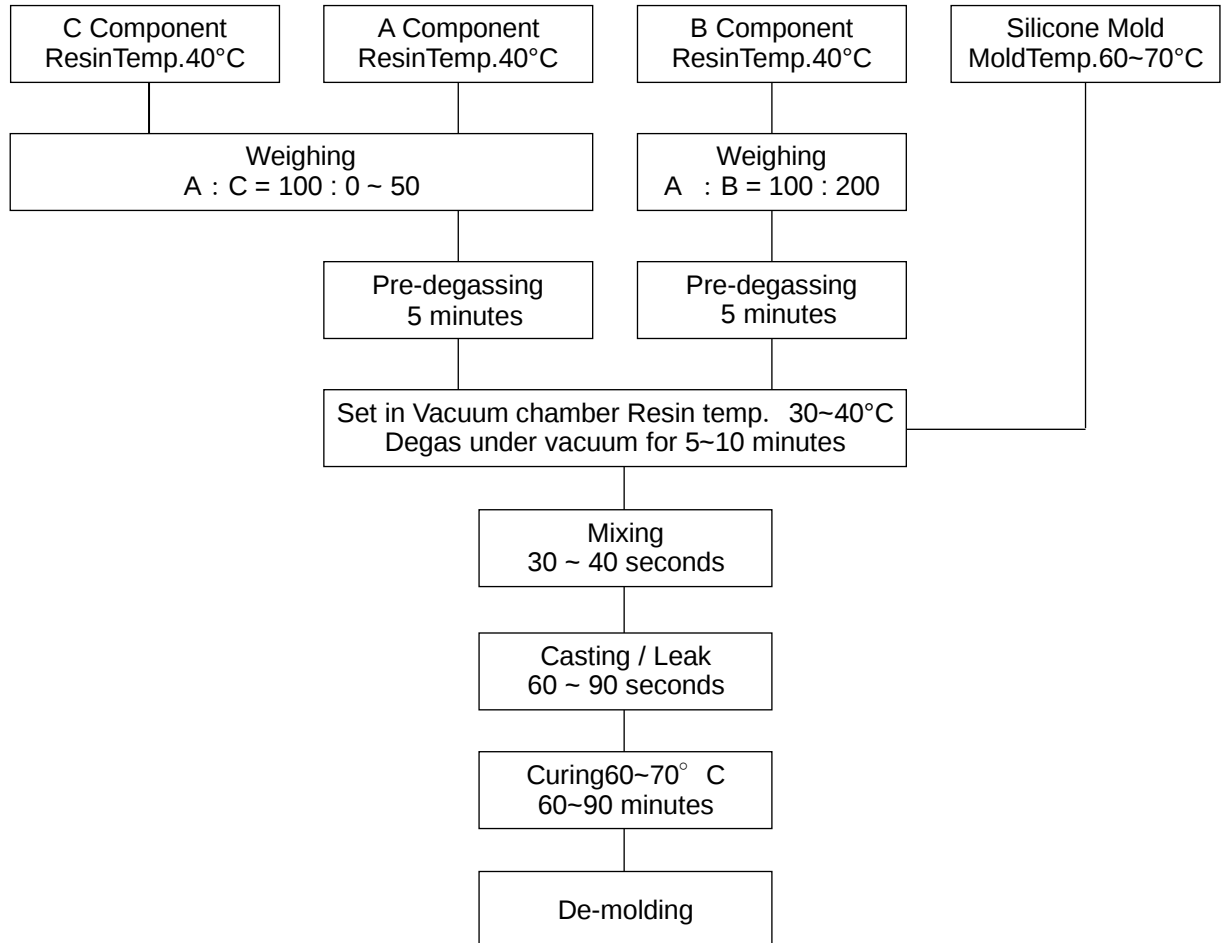
(6) Curing condition

Place filled mold in thermostatic oven of 60 ~ 70°C for 60 minutes for Type A hardness 60

and for 120 minutes and demold.

Perform post curing at 70°C for 2 ~ 3 hours depending on the requirements.

6. Flow Chart of Vacuum Casting



7. Characteristics and physical properties when 3400C is added to 8570

Item		Value				
Mixing ratio	(A + C):B	(100+10):200	(100+20):200	(100+30):200	(100+40):200	(100+50):200
Hardness	Type D	80	80	75	65	60
Specific Gravity		1.20	1.19	1.19	1.18	1.18
Tensile Strength	MPa	40	35	30	25	25
Elongation	%	80	80	60	55	55
Bending strength	MPa	50	45	40	25	20
Young's modulus in flexure	MPa	1200	1100	1000	650	500
Impact strength	kJ/m ²	14	12	11	11	10
Heat Deflection Temperature	°C	75	70	70	65	60

Remarks: Curing condition : Mold temperature: 60°C×60 min. + 25°C×24 hours.

Above physical properties are given from our laboratory measurements as typical values and not for specification. When using our product, it must be noted that physical properties of final product may vary depending on its contour and molding conditions

Adjustments

- (1) Add a predetermined amount of 3400 C solution to 8570 A solution and mix in advance.
- (2) The 8570A solution and 3400C solution are separated after leaving them. The specified physical properties are not obtained even if the solution is reacted with the solution B in a separated state.
- (3) Add the calculated amount of solution B, and create a cured product by vacuum casting.

8. Characteristics and physical properties when 3434C is added to 8570

Item		Value				
Mixing ratio	(A + C):B	(100+10):200	(100+20):200	(100+30):200	(100+40):200	(100+50):200
Hardness	Type D	80	80	75	70	65
Specific Gravity		1.20	1.19	1.18	1.18	1.17
Tensile Strength	MPa	40	40	35	30	25
Elongation	%	65	65	60	55	55
Bending strength	MPa	55	45	45	30	20
Young's modulus in flexure	MPa	1300	1100	1000	750	550
Impact strength	kJ/m ²	13	13	11	11	10
Heat Deflection Temperature	°C	75	75	75	70	60

Remarks: Curing condition : Mold temperature: 60°C×60 min. + 25°C×24 hours.

Above physical properties are given from our laboratory measurements as typical values and not for specification. When using our product, it must be noted that physical properties of final product may vary depending on its contour and molding conditions

Adjustments

- (1) Add a predetermined amount of 3434 C solution to 8570 A solution and mix in advance.
- (2) The 8570A solution and 3434C solution are separated after leaving them. The specified physical properties are not obtained even if the solution is reacted with the solution B in a separated state.
- (3) Add the calculated amount of solution B, and create a cured product by vacuum casting.

9. Handling Precautions

- (1) Part A, Part B and Part C components are both sensitive to water. Do not mix with water and do not expose to moisture for a long time. Ensure containers are sealed after use.
- (2) Part B component may become turbid or cured by reacting with moisture. If transparency is lost drastically or if it is already cured, cured article may have lowered transparency and physical properties. Do not use if such being the case.
- (5) Part B component may deteriorate if heated for a long time at above 50°C, which may inflate container with increased inner pressure.
- (6) If frozen material is stored at room temperature, it deteriorates faster. Melt completely and store at 20 ~25°C.

10. Safety and Hygienic Precautions

- (1) Part B component contains more than 1% of 4,4'-Diphenylmethane diisocyanate. Provide local exhausting unit in workshop and take good care for ventilation.
- (2) Be careful so hands or skin do not come in direct contact with raw materials. In case of contact, rinse immediately with soap and water. Skin irritation may occur if kept in contact for a long time.
- (3) In case of contact in eyes, rinse immediately with running water for 15 minutes and seek for medical treatment by ophthalmologist..

11. Dangerous Goods Classification according to Fire Services Act

Part A Component: Dangerous Goods Class No. 4, Petroleum Class No. 4

Part B Component: Dangerous Goods Class No. 4, Petroleum Class No. 4

12. Appearance

Part A Component: 1 kg Royal can

Part 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.