

Hei-Cast 8550

1. Description

Hei-Cast 8550 is a vacuum casting material developed for the manufacture of PE and PP proto-types which offers the following characteristics:

- (1) Hei-Cast 8550 is low in Young's modulus in flexure and high in elongation. It can produce moldings with a feel similar to that of PE and PP articles.
- (2) It provides a color shade similar to that of original PE and PP articles.
- (3) It offers a long pot-life and is therefore suited for the molding of large-sized articles.

2. Basic Properties

Item		Value	Remarks
Appearance	A Comp.	Colorless translucent/Black	Polyol
	B Comp.	Clear, pale yellow	Isocyanate
Color of Finished Article		White translucent/Black	Yellows on exposure to sun light.
Viscosity (mPa.s, 25 ^o C)	A Comp.	700	Viscometer Type BM
	B Comp.	600	
Specific Gravity (25 ^o C)	A Comp.	1.06	Specific Gravity Cup
	B Comp.	1.19	Standard Hydrometer
Mixing Ratio	A : B	100 : 200	Parts by weight
Pot Life	25 ^o C	7 min.	Resin 100g
Specific Gravity of Finished Article	25 ^o C	1.14	JIS K-7112

3. Basic Physical Properties

Item		Value	Remarks
Hardness	Shore D	76	Wallace Hardness Tester
Tensile Strength	MPa	34	JIS K-7113
Elongation	%	72	
Bending strength	MPa	39	JIS K-7171
Young's modulus in flexure	MPa	960	
Impact strength	kJ/m ²	10	JIS K-7110 Izod V Notch
Shrinkage	%	0.3	Own method
Deflection temp. under load	°C	70	JIS K-7207(1.80 MPa)
Coefficient of thermal expansion	/°C	9.8x10 ⁻⁵	JIS K-6911
Possible de-molding Time	Minute	60 ~ 90	Mold temp. : over 60 ^o C

Remarks) Curing condition: Mold temperature, 60^oC 60^oC x 60 min. + 25^oC x 24 hrs.

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.

4. 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.
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.
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.

(3) 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.

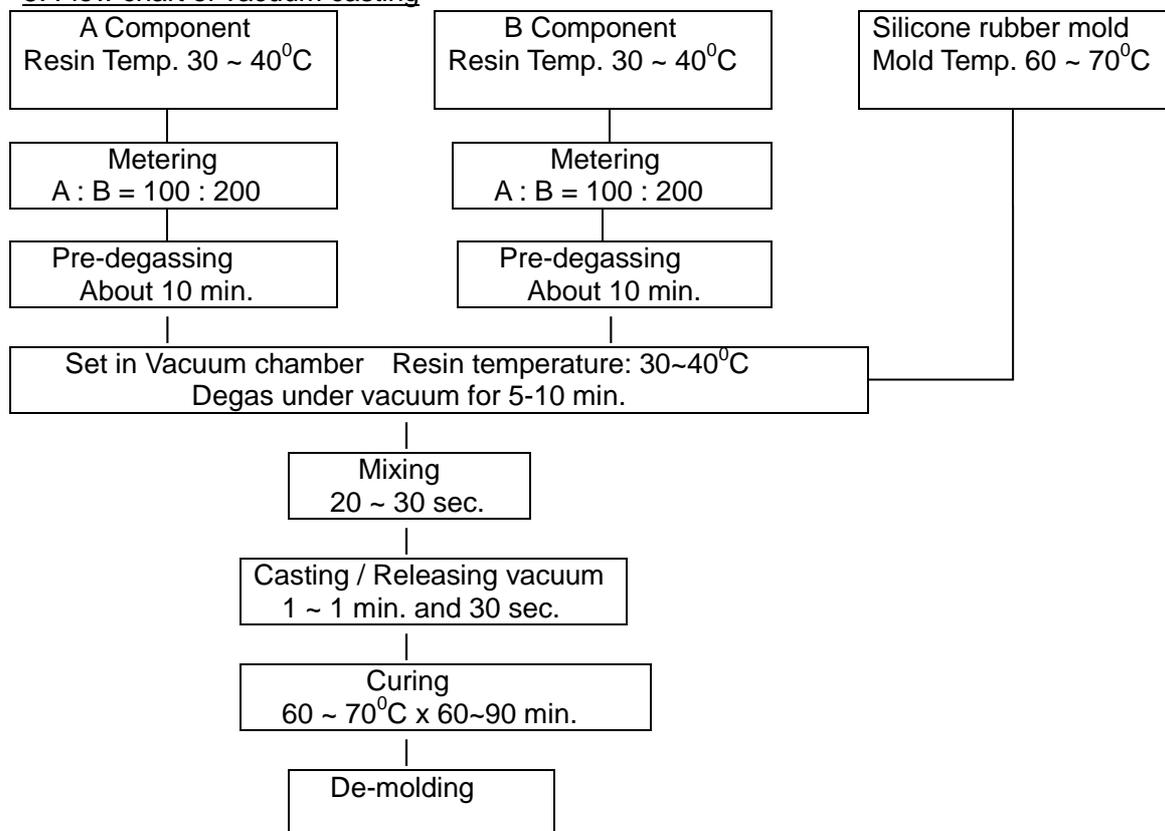
(4) Casting

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.
Add A component to B component and stir for 20 ~ 30 sec. and then cast the mixture
speedily into silicone rubber mold.
Release vacuum in 1 to 1 and 30 sec. after commencement of mixing.

(5) Curing condition

Place filled mold in thermostatic oven at 60 ~ 70°C, cure for 60 to 90 min. and de-mold.
Perform post curing at 60 ~ 70°C for 2 ~ 3 hrs. depending on the requirements.

5. Flow chart of vacuum casting



6. Softer formulation through addition of 3400 C to 8550

It is possible to provide some flexibility to HC 8550 cast material through incorporation of HC 3400 C to 8550. Following table is a guide to select suitable mixing ratio for your desired hardness, Young's modulus in flexure, etc.

Item		Value				
Mixing ratio	A : C : B	100:0:200	100:50:200	100:100:200	100:150:200	100:200:200
Hardness	Shore A	100	100	99	98	97
	Shore D	76	75	67	61	51
Tensile strength	MPa	34	22	20	13	8
Elongation	%	72	80	73	75	80
Bending strength	MPa	39	14	13	6	-
Young's modulus in flexure	MPa	960	560	350	150	-
Izod Impact strength	kJ/m ²	10	10	14	17	-
Deflection temp. under load	°C	70	60	50	45	-

Remarks) Curing condition: Mold temperature, 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. 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.

How to add HC 3400C

- (1) Add necessary amount of 3400 C to A-component of 8550 and mix to make first a polyol mixture. In this case, please note that 3500 A-component and 3400 C will separate from each other if mixture is left for some time. Such separated mixture won't give prescribed physical properties even if it has been reacted with B-component.
- (2) Add necessary amount of 3500 B-component and prepare article by vacuum casting.

7. 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. If this should happen, we recommend to add 1 to 2 % of dehydrating agent to A component to remove water.
- (3) Prolonged heating of A component may shorten the pot life of system. So, store it at room temperature.
- (4) B component will react with moisture to become turbid or to cure into solid material. Do not use material when it has lost transparency or has hardened already as these materials will lead to much lower physical properties.
- (5) B component in part or in whole may freeze when it is stored for longer time at temperatures below 5⁰C. Frozen material can be made usable after melting. Warm up container to 60 ~ 70⁰C for 1~2 hours and stir thoroughly before use.
- (6) Prolonged heating of B component at temperatures over 50⁰C 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 20~25⁰C.

8. 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: No. 4 Petroleum Group, Dangerous Materials No. 4 Group.

B Component: No. 4 Petroleum Group, Dangerous Materials No. 4 Group.

10. 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.

H&K Ltd. 2-19-6 Yanagibashi Taito-ku Tokyo Japan 111-0052 TEL 03-3865-3690 URL:<http://www.heisengp.co.jp/>