

***** Hei-Cast 8550 *****

1. Description

Hei-Cast 8550 is a vacuum casting material developed for the manufacture of PE and PP prototypes 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°C) | A Comp. | 700 | Viscometer Type BM |
| | B Comp. | 600 | |
| Specific Gravity (25°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°C | 7 min. | Resin 100g |
| Specific Gravity of Finished Article | 25°C | 1.14 | JIS K-7112 |

3. Basic Physical Properties

| Item | | Value | Remarks |
|----------------------------------|-------------------|----------------------|------------------------------------|
| Hardness | Type D | 76 | JIS K-7215 |
| 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 |
| Flammability | UL94 | Equivalent to HB | UL94HB Combustion Preliminary Test |
| Possible demolding Time | min. | 60 ~ 90 | Mold temp. :over 60°C |

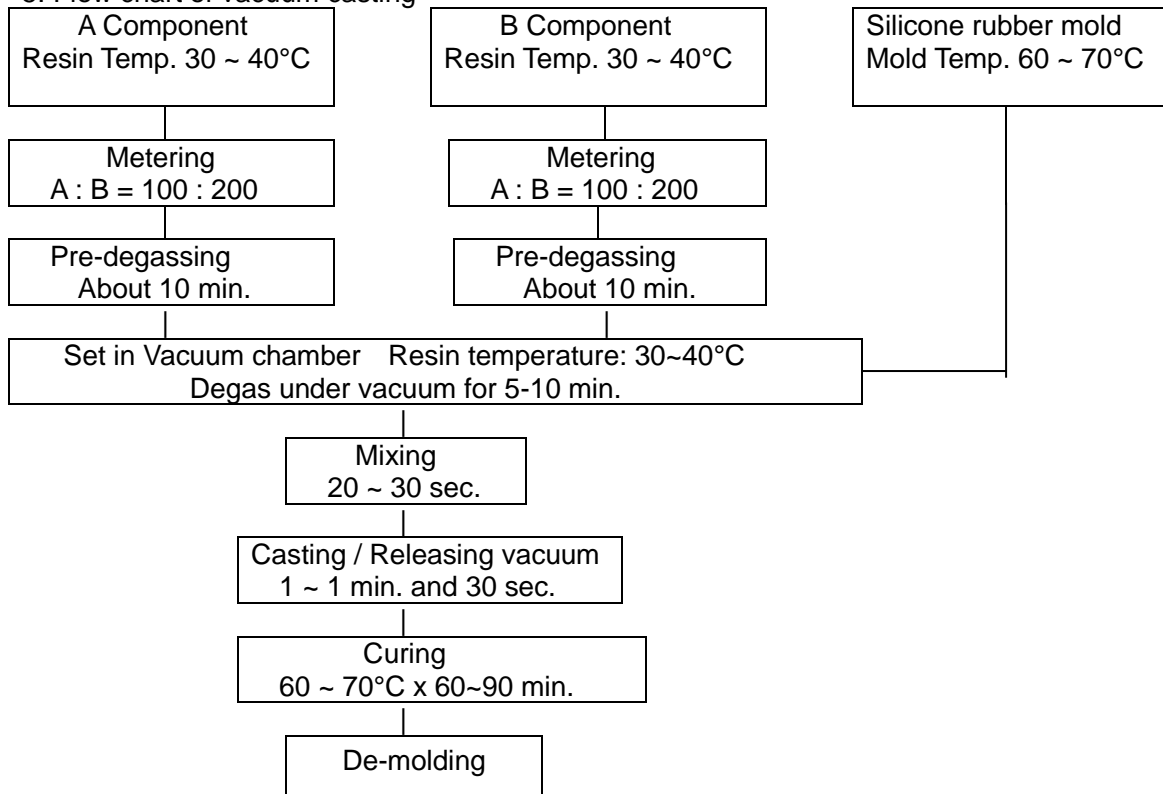
Remarks) Curing condition: Mold temperature, 60°C 60°C x 60 min. + 25°C x 24 hrs.

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.

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.
- (3) 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.
- (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.
- (6) Add A component to B component and stir for 20 ~ 30 sec. and then cast the mixture speedily into silicone rubber mold.
(ア) Release vacuum in 1 to 1 and 30 sec. after commencement of mixing.
- (7) 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 8400 C to 8550

It is possible to provide some flexibility to HC 8550 cast material through incorporation of H/C 8400 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 | Type A | 100 | 100 | 99 | 98 | 97 |
| | Type 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 H/C 8400C

- (1) Add necessary amount of 8400 C to A-component of 8550 and mix to make first a polyol mixture. In this case, please note that 3500 A-component and 8400 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 5°C. Frozen material can be made usable after melting. Warm up container to 60 ~ 70°C for 1~2 hours and stir thoroughly before use.
- (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.

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.

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