***** Hei-Cast 8266 *****

1.Description

Hei-Cast 8266 is a non-halogen-flame-retardant-grade, vacuum-casting polyurethane that has characteristics not achieved with existing urethane casting materials. Low viscosity, low toxicity, long pot life, and improved flame retardancy compared to existing products. The balanced physical properties, flame retardancy, and excellent dimensional stability of the Hei-Cast 8266 enable the prototype production of molded parts requiring UL94 V-0 certification as new flame retardant casting materials with adequate practical strength, and the application of these materials to small-lot products as well as monitors to verify its own strength.

2.Basic Properties

Item		Value	Remarks
Appearance	Part A	Clear, pale yellow / Black	Polyols
	Part B	Clear, pale yellow	Isocyanates
Color of Article		White / Black	
Viscosity (mPa.s,25℃)	Part A	800	Viscometer Type BM
	Part B	200	
Specific Gravity (25℃)	Part A	1.14	Specific Gravity Cup
	Part B	1.19	Standard Hydrometer
Mixing Ratio	A : B	100 : 150	Parts by weight
Pot Life	25℃	5 minutes 30 seconds	Resin 100g
S. G. of Finished Article		1.23	JIS K-7112

3.Basic Physical Properties

Item		Value	Remarks
Hardness	Type D	83	JIS K-7215
Tensile Strength	MPa	55	JIS K-7113
Elongation	%	20	
Bending strength	MPa	80	JIS K-7171
Young's modulus in flexure	MPa	2000	
Impact strength	kJ/m^2	10	JIS K-7110 Izod V Notch
Shrinkage	%	0.3	Inhouse specification
Heat Deflection Temperature	℃	85	JIS K-7191 (1.80 MPa)
		88	JIS K-7191 (0.45 MPa)
Heatproof temperature（Tg）	℃	94	TMA Method
Flame retardance	UL 94	V-0 Authenticated	UL File Number E92376 Thickness 2.0～3.0mm
Non-halogen Certification	UL 746H	Non-halogen Authenticated	UL File Number E92376
Demold Time	Minute	60	Mold temp. :over 70℃

Remarks: Test piece curing condition: Mold temperature:70℃ 70℃×60 min.＋25℃×24 hours.
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.Physical properties vs. Temperature

Temperature°C	Bending strength (MPa)	Young's modulus in flexture(MPa)	Impact strength (kJ/m^2)
－20	110	2300	10
0	100	2200	10
20	85	2100	10
25	80	2000	10
40	70	1900	10
60	50	1600	10
80	30	1200	10

Remarks: Measurement of physical properties at each environmental temperatures.

5. electrical properties

Item		Unit or Terms	Value
Surface resistivity		Ω	4.4×10^{15}
Volume resistivity		Ω・cm	2.1×10^{16}
Breakdown voltage		KV/mm	18.3
CTI test		C.T.I.	600
Permittivity ε	60Hz	25℃	4.0
		60℃	4.7
	100kHz	25℃	3.6
		60℃	3.9
Dielectric loss tangent tan δ	60Hz	25℃	0.024
		60℃	0.104
	100kHz	25℃	0.022
		60℃	0.029

6.Chemical resistance

Chemicals	Weight change(%)	Loss of gloss	Discol oration	Crack	Warpa ge	Swell ing	Degra dation	Dissolu tion
Distilled water	0.28	○	○	○	○	○	○	○
10%Sulfuric acid	0.29	○	○	○	○	○	○	○
10%Hydrochloric acid	0.21	○	○	○	○	○	○	○
10%Sodium hydroxide	0.21	○	○	○	○	○	○	○
10%Ammonia water	0.39	○	○	○	○	○	○	○
Acetone*1	6.83	○	○	○	○	○	○	○
Acetone	32.00	○	○	×	×	×	△	○
Toluene	0.18	○	○	○	○	○	○	○
Methylene chloride*1	26.10	○	○	×	×	×	△	○
Methylenechloride	70.40	○	○	×	×	×	△	○
Trichloroethane	0.07	○	○	○	○	○	○	○
Ethyl acetate	14.30	○	○	○	○	△	○	○
Ethanol	4.16	○	○	○	○	○	○	○
Gasoline	0.03	○	○	○	○	○	○	○
Benzine	0.03	○	○	○	○	○	○	○

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

7.Vacuum Casting Process

(1) Pre-degassing

Degas both A and B components in a de-gassing chamber for about 5～10 minutes. Degas material as much as you need. We recommend to degas the material which has been pre-heated to temperature of 40~50℃.

(2) Temperature of resin

Keep a temperature of 30~40℃ for both A and B component during casting. The higher the liquid temperature is, the shorter the pot life will be and the lower the liquid temperature is, the longer the pot life will be. Extremely too low temperatures may cause insufficient mixing and improper curing.

(3) Mold temperature

Keep the temperature of silicone mold to 70℃ in advance. Too low mold temperatures may cause improper curing to result in lower physical properties. Mold temperatures should be controlled precisely as they affect the dimensional accuracy of the finished article.

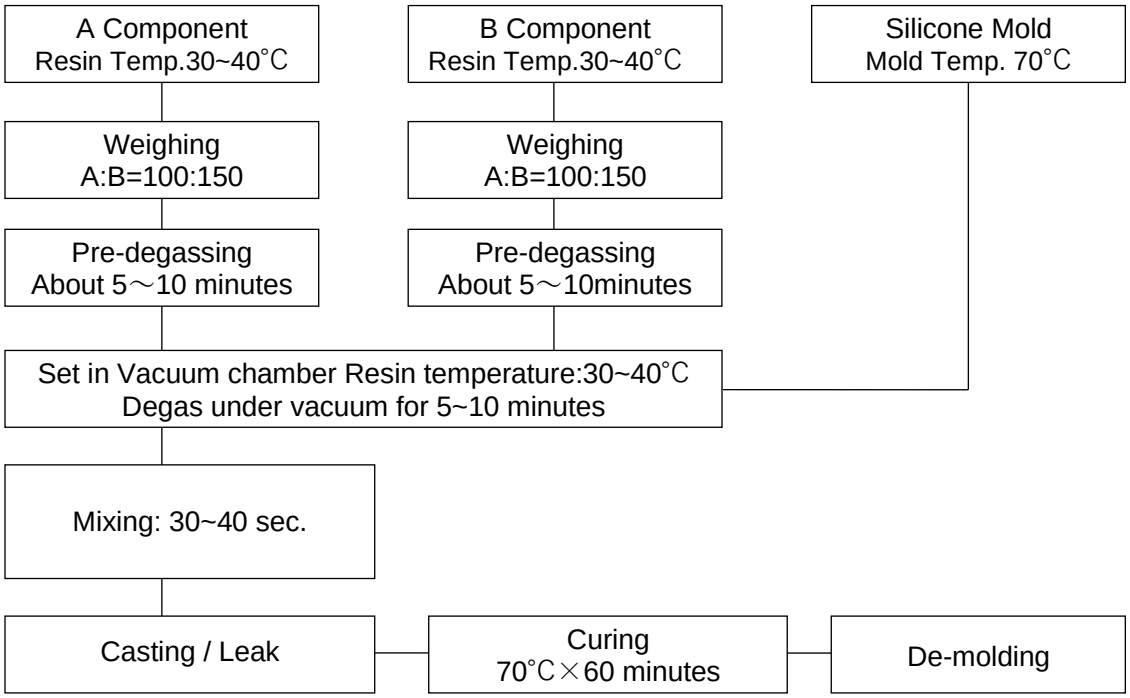
(4) Casting

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 minutes while it is stirred from time to time. Add A component to B component, stir for 30 to 40 seconds, and pour into the silicone mold. After that, check the timing and leak.

(5) Curing condition

Place filled mold in thermostatic oven of 70℃ for 60 minutes and demold the article. Perform post curing at 70~80℃ for 2-3 hours depending on the requirements.

8.Flow chart of vacuum casting



9.Precautions in handling

(1) As both A and B components are sensitive to water, don't allow water to get into material or don't allow moisture in the air to come into prolonged contact with the material. Close container tight after use.

(2) Penetration of water into A component may lead to generation of much air bubbles in the cured product. If this should happen, we recommend to heat A component to 100℃ and degas it under vacuum for about 30 minutes.

(3) If the A component is placed in a thermostatic oven and heated at 40℃ or higher for a long time, the discoloration or deterioration of the component may occur. Therefore, please heat the component just before use.

(4) B component will react with moisture to become turbid or to cure into a solid material. Do not 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.

(5) B component in part or in whole may freeze when it is stored for longer period of time at temperatures below 5℃. Frozen material can be used after melting. Warm up container to 60 ~70℃ for 1~2 hours and use the material after stirring it well.

(6) B component is prone to deteriorate by the prolonged heating at temperatures over 50℃ and the cans can be inflated by the increased inner pressure.

(7) When B component is stored in a frozen state, it deteriorates more quickly on age than a liquid material. We recommend to melt it completely and store at 20~25℃.

10.Precautions in Safety and Hygiene

(1) B component contains more than 1% of 4,4'-Diphenylmethane diisocyanate. Install local exhaust within the workshop 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 with flowing water for 15 minutes and see a doctor.

(4) Install duct for vacuum pump to ensure that air is exhausted to the outside of the workshop.

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.Delivery Form

A Component: 1 kg tin can.

B Component: 1 kg tin can.