

***** Resin 8744 • 8744LP *****

1. Description

Resin 8744 and 8744LP are hard-to-yellowing transparent polyurethane vacuum casting materials with the following characteristics.

- (1) It is difficult to yellowing and has excellent transparency.
- (2) Compared with conventional products, molded products that do not burn (discolor) due to heat of curing can be obtained even during large molding.
- (3) Improved hardenability results in a hardened product that is free of sinks.
- (4) It has elongation and excellent impact resistance.
- (5) Excellent defoaming performance compared to conventional products.

2. Basic Properties

Item		8744	8744LP	Remarks
Appearance	Part A	clear liquid		Polyols
	Part B	clear liquid		Isocyanates
Color of Article		Clear		
Viscosity (mPa.s, 25°C)	Part A	1200	1200	Viscometer Type BM
	Part B	140	140	
Specific Gravity (25°C)	Part A	1.05	1.05	Specific Gravity Cup
	Part B	1.09	1.09	Standard Hydrometer
Mixing Ratio	A : B	100 : 150	100 : 150	Parts by weight
Pot Life	Minute	8	18	Resin 25°C 100g
Specific Gravity, cured		1.13	1.13	JIS K-7112

The appearance of solution A may be yellowish due to thermal history. Avoid prolonged heating above 60°C.

3. Basic Physical Properties

Item		8744	8744LP	Remarks
Hardness	Type D	82	82	JIS K-7215
Tensile Strength	MPa	60	60	JIS K-7113
Elongation	%	30	30	
Bending strength	MPa	80	80	JIS K-7171
Young's modulus in flexure	MPa	2000	2000	
Izod Impact strength	kJ/m ²	10	10	JIS K-7110 V Notch
Charpy impact strength	kJ/m ²	2.5	2.5	JIS K-7111 V Notch
		30	30	JIS K-7111 Notch-less
Shrinkage	%	0.3	0.3	In housespec.
Heat Deflection Temperature	°C	80	75	JIS K-7191 (1.80 MPa)
Heatproof temperature (T _g)	°C	90	85	TMA Method
Coefficient of thermal expansion	/°C	9 × 10 ⁻⁵	9 × 10 ⁻⁵	JIS K-6911
Demold Time	Minute	60	60~90	Mold temp. above 70 °C

Remarks: Curing condition : Mold temperature: 70°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. Optical Properties

Item		Value	Remarks
Index of Refraction		1.508	JIS K-7105
Total luminous Transmittance	%	93.1	
Diffusion Transmittance	%	0.6	
Parallel luminous Transmittance	%	91.2	
Haze	%	0.7	

5. Weather Resistant

Item		50 hours	100 hours	500 hours	1000 hours
Color difference (Xenon lamp)	ΔE	0.7	1.2	2.8	3.5

NOTE) Testing machine: ATLAS Ci4000 Weatherometer

Test conditions: No water spray Irradiance: 42.00 w/m²

Black Standards Temperature : 63.0 °C Relative humidity : 50.0%

The test results are based on our measurement results and are not specification values.

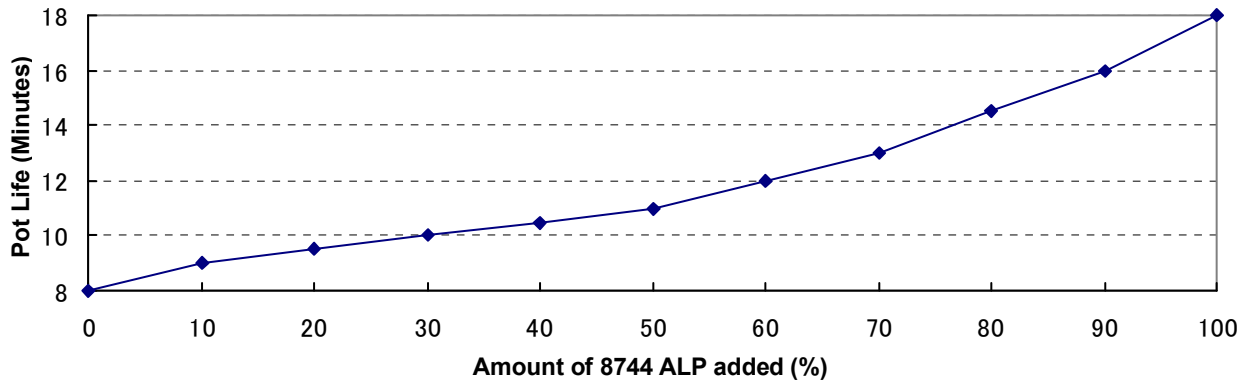
6. Chemical resistance

Chemicals	Weight change (%)	Loss of gloss	Discoloration	Crack	Warpage	Swelling	Degradation	Dissolution
Distilled water	0.27	○	○	○	○	○	○	○
10% Sulfuric acid	0.70	○	○	○	○	○	○	○
10% Hydrochloric acid	2.17	○	○	○	○	○	○	○
10% Sodium hydroxide	0.21	○	○	○	○	○	○	○
10% Ammonia water	0.29	○	○	○	○	○	○	○
Acetone*1	6.99	○	○	○	○	△	○	○
Acetone	31.20	○	○	○	△	×	○	○
Toluene	8.99	○	○	○	○	△	○	○
Methylene chloride*1	45.80	○	○	○	○	△	○	○
Methylene chloride	-	○	○	×	×	×	×	○
Trichloroethane	2.74	○	○	○	○	○	○	○
Ethyl acetate	21.60	○	○	○	○	△	○	○
Ethanol	15.50	○	○	○	○	△	○	○
Gasoline	0.08	○	○	○	○	○	○	○
Benzene	0.04	○	○	○	○	○	○	○

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. Mixing ratio and usability time for 8744 · 8744LP blending



Example: 8744ALP Addition 30% → 8744A : 8744ALP : 8744B = 70 : 30 : 150 → Lifetime 10 minutes

8. Low Pressure Vacuum Casting Method

(1) Degassing

Degas for about 10 minutes in vacuum chamber. Degas materials for use only.

(2) Resin temperature

Keep both Part A and Part B component at 30~40°C when casting. Pot life becomes shorter with higher temperature and longer with lower temperature. If resin temperature is too low, mixing failure or curing failure may occur.

(3) Mold temperature

Keep silicone mold at 70°C prior to casting. If mold temperature is low, curing failure may occur, showing lowered physical properties.

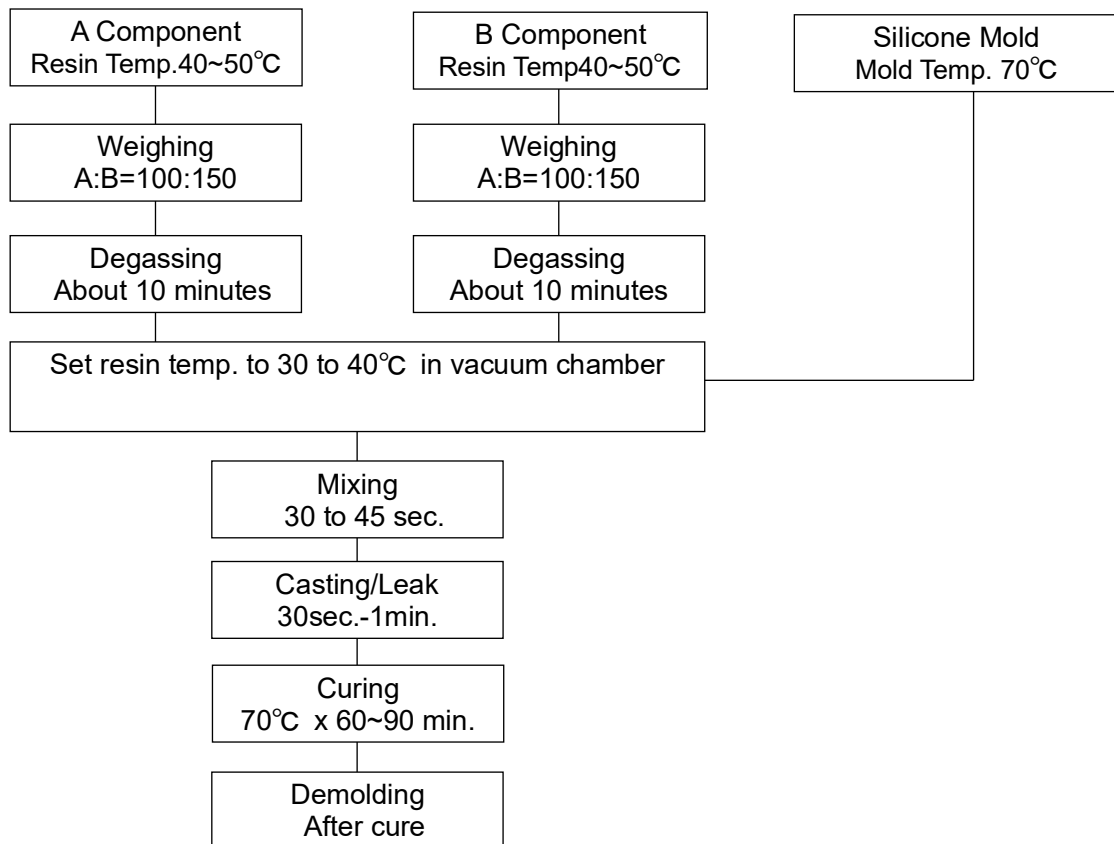
(4) Casting

Set containers so that Part B component can be added to Part A component. While keeping operating chamber under vacuum, degas Part B component for about 5 to 10 minutes by stirring occasionally. Pour Part A component into Part B component and stir for 10 to 15 minutes before casting into silicone mold. Leak vacuum at right timing.

(5) Curing condition

Keep it in oven at 70°C and cure for 60~90 minutes before demolding. In case cured material gets deformed during demolding, take long time before demolding, or try to cool before demolding. If necessary, provide after cure using suitable holding jigs against deformation..

9. Flow Chart of Vacuum Casting



10. Handling Precautions

- (1) Part A and Part B 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) If water is mixed in Part A component, a lot of air bubbles may be generated in cured article. Such being the case, heat Part A component to 80 to 90°C and degass under vacuum for about 30 minutes.
- (3) 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.
- (4) Part B component may be frozen in part or in whole if stored at below 10°C or even at around 20°C depending on condition. Melt by heating at 50 ~60°C for 1~2 hours and then stir evenly before use.
- (5) Storing as frozen at room temperature may facilitate deterioration. Melt completely and store at around 25°C

11. 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. In case of contact with skin, mucous membrane, etc., irritation or inflammation (redness, swelling etc.) may occur (highly irritant).

(3) In case of contact in eyes, rinse immediately with running water for 15 minutes and seek for medical treatment by ophthalmologist.

(4) Ensure to arrange so that discharge from vacuum pump is piped out for ventilation to Outside.

12. 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. 3

13. 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.