

# HLH

## **Vacuum Casting (Urethane) Specification Sheets**

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## DPI 8150

### Product Description:

DPI8150 is an ABS-type casting resin featuring excellent heat resistance, fast curing speed and high dimensional precision for finished parts.

### Physical Properties

ITEM	PART A	PART B	AFTER MIXING
Appearance	Beige / Black / Colourless	Colourless	Beige / Black / White
Chemical Composition	Polyol	Isocyanate	
Viscosity @25°C (mPas) (Test Standard: MO-051)	750	180	320
Specific Gravity @25°C (Test Standard: MO-032)	1.12	1.20	1.18

### Processing Parameters

- ◆ Mixing Ratio (By Weight) : A : B = 100 : 200
- ◆ Pot Life (100g mixed resin @23°C, Test Standard: MO-062) : 5 mins
- ◆ Demould Time (2mm specimen @60°C) : 45~60 mins

### Operation Precautions

- ◆ Shake each component thoroughly before use.
- ◆ For vacuum casting machine application only.
- ◆ Preheat mould to 70°C.
- ◆ If stored under low temperature, warm material up to above 20°C prior to use.
- ◆ When Component B crystallizes and turns cloudy, heat at 70°C to melt; heating duration shall not exceed 4 hours to avoid deterioration.
- ◆ Degas under vacuum for minimum 10 mins inside vacuum equipment, then mechanically stir for 2 mins until the mixture becomes fully transparent.

## DPI 8150

### Physical & Mechanical Properties

Property	Parameter
Hardness (MO-063 / ISO 868)	83 Shore D
Heat Distortion Temperature (HDT, MO-117)	100°C
Elongation at Break (ISO 527-2:1993)	16 %
Flexural Modulus (ISO 178:2001)	2140 MPa
Flexural Strength (ISO 178:2001)	100 MPa
Tensile Elongation at Max Load (ISO 527:1993)	8 %
Tensile Strength at Break	85 MPa
Charpy Notched Impact Strength (ISO 179:1994)	12 KJ/m <sup>2</sup>
Linear Shrinkage (Test Specimen:500x50x5mm)	0.3%
Demould Time (Mold Temp>60°C)	45~60 mins

### Storage Condition

Store sealed containers in dry environment at 25°C~30°C; shelf life: 6 months.

### Packaging

Component A: 1kg per can;

Component B: 2kg per can

## PX5118

### Product Description:

PX-5118 is a low-shrinkage polyurethane resin for vacuum casting. It is designed for casting with silicone rubber molds, and suitable for manufacturing high-strength prototypes with superior mechanical properties. Its overall performance is comparable to ABS plastic. This resin features low viscosity, excellent fluidity and adjustable pot life.

Physical Property					
		PX-5118 A	PX-5118 AL	PX-5118 B	After Mixing
Component		Polyol	Polyol	Isocyanate	
Mixing ratio(weight)		100	100	100	
Appearance		Liquid	Liquid	Liquid	
Color		Black/White/ Cream yellow	Black/ Colorless/ Cream yellow	Dark amber	Black/White/ Beige
Brookfield Viscosity (at 25°C, Unit: mPa.s)		300	300	80	180
Density before reaction (at 25°C) Density after reaction (at 23°C)	ISO1675-75 ISO2781-88	1.00-1.04	1.00-1.04	1.13-1.17	1.05-1.08
Pot life (200g, at 25°C)		5 minutes	12 minutes		

### Operating Procedure (using vacuum RT machines):

- Heating the Constituent A and B respectively at 23 °C.
- Please shake Constituent A well before use until the color and the appearance of the product is homogeneous and transparent.
- Compounding the ingredients in proportion.
- Degassing the two constituents for 10 minutes respectively and mixing them together for at least 1 minute inside the vacuum RT machines.
- Casting the mixture into the silicone molds preheated to 70 °C under vacuum.
- demold.

## PX5118

### Physical & Mechanical Properties (Tested at 23°C)

Item	Standard	Unit	Value
Tensile Strength	ISO 527-84	MPa	55
Elongation at Break	ISO 37-77	%	8
Flexural Strength	ISO 178-93	MPa	78
Flexural Modulus	ISO 178-93	MPa	1800
Impact Strength	ISO 179/ID-94	kJ/m <sup>2</sup>	65
Hardness (Shore D)	ISO 868-85	Shore D	78

### Thermal & Special Properties

Item	Test Method	Unit	Value
Glass Transition Temperature	T.M.A-Mettler	°C	65
Linear Shrinkage	-	mm/m	2
Maximum Casting Wall Thickness	-	mm	10
Demolding Time (70°C)	PX-5118	min	PX-5118 45 minutes   PX-5118L 120 minute
Full Curing Time (23°C)		day	4

## Hei-Cast 8150

### [Description]

Hei-Cast 8150 is an ABS grade urethane resin used for vacuum casting application. Hei-Cast 8150 offers the properties so far unobtainable with conventional urethane cast material. Well-balanced physical properties, excellent cure properties and superior dimensional stability of Hei-Cast 8150 make it possible to use urethane resin for the manufacture of proto-types and for the monitoring of strength of general injection molded parts as a new cast material with sufficiently high practical strength. Hei-Cast 8150 is also suited for use in the parts which are produced in small lot.

### [Basic Properties]

Item		Value	Remarks
Appearance	A Comp	Beige/Black/White	Polyols
	B Comp	Clear, pale yellow	Isocyanates
Color of Article		Beige/Black/Milky white	
Viscosity(mPa.s,25°C)	A Comp	800	Viscometer Type BM
	B Comp.	160	
Specific Gravity(25°C)	A Comp.	1.09	Specific Gravity Cup
	B Comp	1.19	Standard Hydrometer
Mixing Ratio	A : B	100 : 200	Parts by weight
Pot Life	25°C	5 minutes	Resin 100g
S. G. of Finished Article		1.21	JIS K-7112

### [Basic Physical Properties]

Item		Value	Remarks
Hardness	Shore D	84	Wallace Hardness Tester
Tensile Strength	MPa	73	JIS K-7113
Elongation	%	16	
Bending strength	MPa	78	JIS K-7171
Young's modulus in flexure	MPa	1790	
Impact strength	kJ/m <sup>2</sup>	12	JIS K-7110 Izod V Notch
Shrinkage	%	0.3	Inhouse specification
Deflection temp. under load	°C	100	JIS K-7191(1.80 MPa)
Coefficient of thermal expansion	/°C	6×10 <sup>-5</sup>	JIS K-6911
Difficult-inflammability	UL-94	HB approved product	
Demold Time	Minute	45 ~ 60	Mold temp. :over 60°C

Remarks: Color of cured material changes yellow on exposure to sun light or UV ray.  
Curing condition : Mold temperature:60°C 60°C×60 min. +25°C×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.

## Hei-Cast 8150

### [Physical properties vs. Temperature]

Temperature°C	Bending strength (MPa)	Young's modulus in flexure(MPa)	Impact strength (kJ/m <sup>2</sup> )
-20	112	2060	7.8
±0	98	1840	9.1
+20	86	1700	8.6
+40	74	1650	9.8
+60	59	1490	8.3
+80	36	1250	9.5

Remarks: Measurement of physical properties at each environmental temperatures.

### [Chemical resistance]

Chemicals	Weight change (%)	Loss of gloss	Discoloration	Crack	Warpage	Swelling	Degradation	Dissolution
Distilled water	0.14	○	○	○	○	○	○	○
10%Sulfuric acid	0.13	○	○	○	○	○	○	○
10%Hydrochloric acid	0.14	○	○	○	○	○	○	○
10%Sodium hydroxide	0.11	○	○	○	○	○	○	○
10%Ammonia water	0.17	○	○	○	○	○	○	○
Acetone*1	20	○	○	○	○	×	×	○
Toluene	0.00	○	○	○	○	○	○	○
Methylene chloride*2	13	△	○	×	○	×	×	×
Trichloroethane	0.02	○	○	○	○	○	○	○
Ethyl acetate	5.9	△	○	○	○	×	○	○
Ethanol	1.3	○	○	○	○	△	○	○
Gasoline	0.02	○	○	○	○	○	○	○
Benzine	0.00	○	○	○	○	○	○	○

Tested according to JIS K-6911. Changes after 24 hrs. immersion in each chemicals were observed. Those marked with \*1 mark and \*2 mark were immersed for 40 min. and 15 min. respectively.

○:Good, △:Slightly No good, ×: Bad

### [Electrical properties]

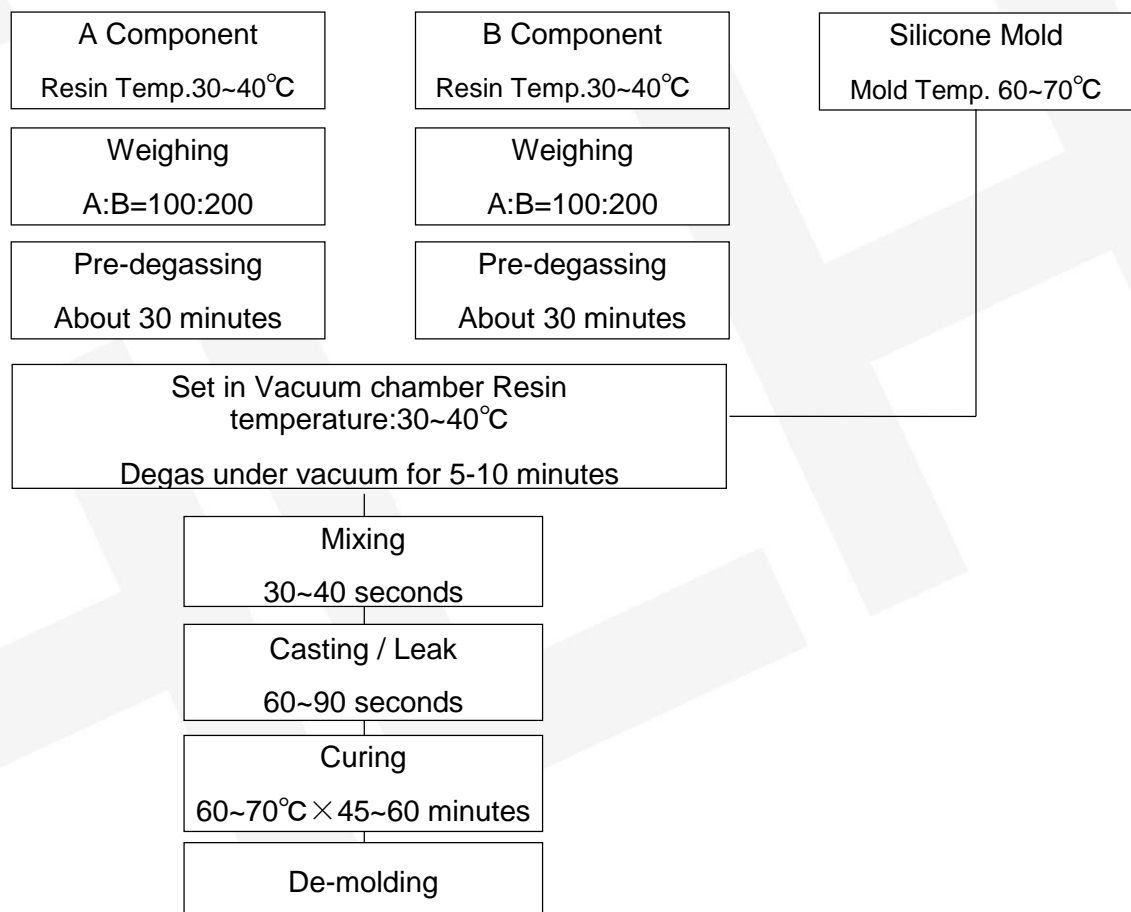
Measurement	Unit/Condition		Value
Surface resistivity	Ω		10 <sup>15</sup>
Volume resistivity	Ω · cm		10 <sup>15</sup>
Dielectric breakdown voltage	KV/mm		19
Dielectric constant ε	25°C	60Hz	4.1
		10MH	3.7
	80°C	60Hz	4.8
		10MH	4.1
Dielectric loss tangent tanδ	25°C	60Hz	0.015
		10MH	0.035
	80°C	60Hz	0.051
		10MH	0.046

## Hei-Cast 8150

[Vacuum Casting Process]

- **Pre-degassing**  
Degass both A and B components in a de-gassing chamber for about 30 minutes. Degass material as much as you need. We recommend to degas the material which has been pre-heated to temperature of 40~60°C.
- **Temperature of resin**  
Keep a temperature of 30~40°C for both A and B component during casting. The higher, the liquid temperature, the shorter is the pot life and the lower, the liquid temperature, the longer is the pot life. Extremely too low temperatures may cause insufficient mixing and improper curing.
- **Mold temperature**  
Keep the temperature of silicone mold to 60~70°C 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.
- **Casting**  
Containers are set in such a way that A component is added to B component. Apply vacuum to the chamber and de-gass B component for 5~10 minutes while it is stirred from time to time. Add A component to B component and stir for 30~40 seconds and then cast the mixture quickly into the silicone mold. Release vacuum in 1 to 1 and half a minute after commencement of the mixing.
- **Curing condition**  
Place filled mold in thermostatic oven of 60~70°C for 45 to 60 minutes and demold the article.  
Perform post curing at 70~80°C for 2-3 hours depending on the requirements.

[Flow chart of vacuum casting]



## Hei-Cast 8150

### [Precautions in handling]

- As both A and B components are sensitive to water, don't allow water get into material or don't allow moisture in the air come into prolonged contact with the material. Close container tight after use.
- Penetration of water into A component may lead to generation of much air bubbles in the cured product. If this should happened, we recommend to heat A component to 100°C and degas it under vacuum for about 30 minutes.
- 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.
- B component in part or in whole may freeze when it is stored for longer period of time at temperatures below 5°C. Frozen material can be used after melting. Warm up container to 60 ~70°C for 1~2 hours and use the material after stirring it well.
- B component is prone to deteriorate by the prolonged heating at temperatures over 50°C and the cans can be inflated by the increased inner pressure.
- 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°C.

### [Precautions in Safety and Hygiene]

- B component contains more than 1% of 4,4'-Diphenylmethane diisocyanate. Install local exhaust within the work shop to secure good ventilation of the air.
- 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.
- If raw materials get into eyes, rinse with flowing water for 15 minutes and call a doctor.
- Install duct for vacuum pump to ensure that air is exhausted to the outside of the work shop.

### [Delivery Form]

- A Component: 1 kg tin can.
- B Component: 1 kg tin can.

## PX 223HT

### Product Description:

PX-223HT is a low-shrinkage vacuum casting resin, featuring excellent mechanical properties comparable to ABS thermoplastics.

### Physical Properties

ITEM	PART A	PART B	MIXED COMPOUND
Composition	Polyol	Isocyanate	-
Viscosity @ 25°C (mPas) (Test Method: MO-051)	400	1200	800
Specific Gravity @ 25°C (Test Method: MO-032)	1.12	1.18	1.15
Color	Black/Tan	Transparent	Black/Tan

### Operating Parameters

- Mixing Ratio (By Weight) : A / B = 80 / 100
- Pot Life (160g resin @ 25°C)  
(Test Method: MO-062) : 7 minutes
- Demolding Time (2 mm specimen @ 70°C)  
(Test Method: MO-116) : 70 minutes
- Mix PX-223 strictly in the specified ratio at an ambient temperature above 20°C.
- Thoroughly stir Component A (Polyol) before each use.
- Post-Curing Treatment
  - 1 hour at 100°C
  - 2 hours or longer at 110°C

Note: Remove molded parts from the mold prior to post-curing. It is recommended to support the parts with brackets to prevent deformation.

## PX 223HT

### Physical & Mechanical Properties

ITEM	TEST STANDARD	VALUE
Hardness	MO-063 / ISO 868	80 Shore D
Glass Transition Temperature (Tg)	MO-117	> 120°C
Tensile Strength	MO-066 / ISO 527	60 MPa
Elongation at Break	ISO 37	11%
Flexural Strength	ISO 178	80 MPa
Modulus of Elasticity	ISO 178	2300 MPa
Charpy Impact Strength	ISO 178	> 60 KJ/m <sup>2</sup>
Linear Shrinkage (3 mm test specimen)	-	4 mm/m

### Storage

Store the unopened containers in a dry place at 20°C ~ 30°C.

Shelf Life: 6 months

## 6160

### Product Description:

Model 6160 is a high-temperature resistant vacuum casting resin.

### Physical Properties

ITEM	PART A	PART B	MIXED COMPOUND
Composition	Polyol	Isocyanate	-
Viscosity @ 25°C (mPas) (Test Method: MO-051)	280-380	250-350	220-320
Specific Gravity @ 25°C (Test Method: MO-032)	0.98-1.0	1.21	1.20
Color	Pale Yellow	Transparent	Pale Yellow

### Operating Parameters

- Mixing Ratio (By Weight) : A / B = 100 / 200
- Pot Life (160g resin @ 25°C)  
(Test Method: MO-062) : 5-6 minutes
- Demolding Time (2 mm specimen @ 70°C)  
(Test Method: MO-116) : 40-60 minutes
- Mix Model 6160 in the specified ratio at an ambient temperature above 20°C.
- Stir Component A (Polyol) thoroughly before each use.
- Post-Curing Treatment  
1 hour at 100°C + 2 hours at 120°C + 2 hours at 160°C

### Physical & Mechanical Properties

ITEM	TEST STANDARD	VALUE
Hardness	MO-063 / ISO 868	80 Shore D
Glass Transition Temperature (Tg)	MO-117	>200°C
Tensile Strength	MO-066 / ISO 527	58 MPa
Elongation at Break	ISO 37	15%
Flexural Strength	ISO 178	115 MPa
Modulus of Elasticity	ISO 178	2100 MPa
Charpy Impact Strength	ISO 178	35 KJ/m <sup>2</sup>
Linear Shrinkage (3 mm test specimen)	-	8-9 mm/m

## 8400

### Introduction:

Hei-Cast 8400 and 8400N are three-component polyurethane rubbers for vacuum casting, featuring the following advantages:

1. Hardness can be freely adjusted within the range of Shore A 20 ~ 90 by changing the dosage of Component C.
2. Low viscosity and excellent fluidity.
3. Fast curing speed with superior elasticity.

### Physical Properties

ITEM		Technical Specifications		REMARKS
Product Name		8400	8400N	
Appearance	Component A	Black	Colorless & Transparent	Polyol
	Component B	Pale yellow & Transparent		-
	Component C	Pale yellow & Transparent		-
Color of Cured Product		Black	Milky white	Type N is paintable
Viscosity (mPas, 25°C)	Component A	600		Measured by BM viscometer
	Component B	40		
	Component C	900		
Specific Gravity (25°C)	Component A	1.11		Measured by standard density cup
	Component B	1.17		
	Component C	0.98		

## 8400

### Performance by Mixing Ratio (A:B:C)

Mixing Ratio (A:B:C)	Pot Life @ 25°C	Hardness (Shore A)	Tensile Strength (kg/cm <sup>2</sup> )	Elongation (%)	Tear Strength (kg/cm)	Rebound Resilience (%)	Shrinkage Rate (%)
100:100:0	5~6 min	90	180	200	70	50	0.6
100:100:50	5~6 min	80	140	240	60	52	0.5
100:100:100	5~6 min	70	80	260	40	56	0.5
100:100:150	5~6 min	60	70	280	30	56	0.4
100:100:200	5~6 min	50	50	300	20	60	0.4
100:100:300	5~6 min	40	25	310	13	63	0.4
100:100:400	5~6 min	30	20	370	10	58	0.4
100:100:500	5~6 min	20	15	490	7	55	0.4

### Test Standards

Physical strength: JIS K-6301

Shrinkage rate: Internal enterprise standard

### Vacuum Casting Procedure

#### 1. Weighing

Weigh equal amounts of Component A and Component B respectively.

Add an appropriate quantity of Component C into Component A as required.

#### 2. Pre-degassing

Place the mixture in a vacuum chamber for vacuum degassing for 10 to 20 minutes.

Prepare materials only for immediate use.

It is recommended to heat the resin to 60°C before pre-degassing.

#### 3. Resin Temperature

Adjust the temperature of Component A (mixed with C) and Component B to 25 ~ 35°C.

Higher temperature shortens pot life; lower temperature extends pot life.

#### 4. Mold Temperature

Preheat the silicone mold to 60 ~ 70°C.

Excessively low mold temperature will cause incomplete curing and poor physical properties.

Strictly control mold temperature to ensure dimensional accuracy of finished parts.

**8400****5. Casting**

Position the two containers to allow Component B to be poured into Component A (mixed with C).

After evacuating the chamber to vacuum, stir Component A (mixed with C) intermittently for 5 ~ 10 minutes for degassing.

Pour Component B into Component A (mixed with C), stir for 30 ~ 40 seconds, then pour the mixture into the silicone mold immediately.

Restore atmospheric pressure within 1 minute and 30 seconds after mixing starts.

**6. Curing Conditions**

Cure in a constant temperature oven at 60 ~ 70°C:

Demold after 60 minutes for Shore A 90 hardness

Demold after 120 minutes for Shore A 20 hardness

Secondary curing at 60°C for 2 ~ 3 hours is recommended if necessary.

**Handling Precautions**

1. Moisture will adversely affect Component A, B and C. Prevent water contamination strictly. Do not leave containers uncovered for long to avoid contact with ambient moisture.
2. If Component A or C absorbs moisture, numerous pores will form in the cured product. In this case, heat the affected component to 80°C and perform vacuum degassing for 10 minutes.
3. Component B reacts with moisture and will turn cloudy or solidify. Discard the product if it becomes opaque or fully cured.
4. Component A will turn cloudy or solidify when stored below 15°C. Heat it in a 40 ~ 50°C constant temperature oven to melt, shake thoroughly and mix evenly before use.

**Health & Safety Instructions**

1. Component B contains more than 1% of 4,4'-Methylenediphenyl Diisocyanate. The working area must be equipped with exhaust facilities and kept well ventilated.
2. Avoid direct skin contact. In case of contact, wash thoroughly with soap and plenty of running water immediately, otherwise skin rashes may occur.
3. In case of eye contact, flush eyes with tap water for over 15 minutes and seek medical attention promptly.
4. Install exhaust pipes to vent vacuum pump exhaust outdoors.

## T-0387

### 1. Description

Trial Product T0387 is a three component transparent polyurethane elastomer designed for vacuum casting.

(1) Cured material is transparent.

(2) Any desired hardness in a range from Shore A 30 to 80 can be obtained through the combined use of "component C" in different ratio.

### 2. Basic Properties

Item	Value		Remarks
Product No.	T0387		
Appearance	Comp. A	Colorless transparent	Polyol(Freezes at temp. below 15°C)
	Comp. B	Pale yellow transparent	Isocyanate
	Comp. C	Pale yellow transparent	Polyol
Color of Finished Article	Transparent		
Viscosity (mPa.s,25°C)	Comp. A	450	Viscometer Type BM
	Comp. B	200	
	Comp. C	700	
Specific Gravity (25°C)	Comp. A	0.99	Standard Hydrometer
	Comp. B	1.19	
	Comp. C	1.18	
Pot Life	25°C	5 min. 30 sec.	Resin 100g

Remarks): A component will freeze at temp. below 15°C. Melt it by heating and use after shaking well.

### 3. Basic Properties for A80, A70 and A60. Physical properties tested acc. to JIS K-7312

Mixing Ratio	A : B : C	100 : 95 : 0	100 : 95 : 20	100 : 95 : 30
Hardness	Shore A	80	70	60
Tensile Strength	MPa	40	21	10
Elongation	%	300	300	300
Tear strength	N/mm	44	28	28
S. G. of Finished Article	g/cm <sup>3</sup>	1.14	1.14	1.14

### Basic Properties for A50, A40 and A30. Physical properties tested acc. to JIS K-7312

Mixing Ratio	A : B : C	100 : 95 : 80	100 : 95 : 150	100 : 95 : 200
Hardness	Shore A	50	40	30
Tensile Strength	MPa	4.0	2.0	1.5
Elongation	%	270	300	260
Tear strength	N/mm	17	13	10
S. G. of Finished Article	g/cm <sup>3</sup>	1.15	1.16	1.16

Remarks) Curing condition: Mold temperature: 60°C 60°C x 120 min. + 25°C x 1 day.

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.

## 8263

### Product Description:

High-Cast 8263 is a flame-retardant polyurethane resin dedicated to vacuum casting. It delivers superior properties that conventional polyurethane casting materials cannot achieve.

With well-balanced physical performance, reliable flame resistance and excellent dimensional stability, this new flame-retardant casting material features sufficient practical strength. It is applicable to prototype molding, strength testing and low-volume production of parts that require UL94 V-0 flame retardancy.

### Basic Characteristics

ITEM		SPECIFICATION	REMARKS
Appearance	Component A	Pale yellow & transparent	Polyol
	Component B	Pale yellow & transparent	Isocyanate
Cured Product Color		Opaque milky white	-
Viscosity (mPa·s, 25°C)	Component A	1000	Measured by BM viscometer
	Component B	160	
Specific Gravity (25°C)	Component A	1.30	Measured by density cup
	Component B	1.19	standard hydrometer
Mixing Ratio	A : B	100 : 150	By weight
Pot Life	25°C	5 minutes	100 g resin
		4 min 50 sec	300 g resin
	35°C	3 minutes	100 g resin
Specific Gravity of Cured Product		1.30	Compliant with JIS K-7112

**8263**

### Fundamental Physical Properties

Curing condition for test specimens: Mold temperature 60 °C, cure at 60 °C for 60 minutes + cure at 25 °C for 24 hours.

ITEM	Unit	Value	Remarks
Hardness	Shore D	83	Wallace durometer
Tensile Strength	MPa	68	JIS K-7113
Elongation at Break	%	15	-
Flexural Strength	MPa	93	JIS K-7171
Flexural Modulus	MPa	2200	-
Impact Strength	kJ/m <sup>2</sup>	10	JIS K-7110, Izod V-notch
Shrinkage Rate	%	0.3	Internal standard
Heat Deflection Temperature	°C	80	JIS K-7207 (1.80 MPa)
Coefficient of Thermal Expansion	/°C	8×10 <sup>-5</sup>	JIS K-6911
Flame Retardancy	UL94	V-0 certified	-
Demolding Time	-	60 minutes	Mold temperature ≥ 60 °C

## MU55

### Product Features:

- Properties similar to ABS resin
- Excellent low-temperature curing performance
- Good workability (long pot life, low viscosity)
- Low sensitivity to moisture

*Note: Liquid B may develop partial or extensive crystallization when stored at low temperatures (below 5°C). If crystallization occurs, heat the material to 70~80°C to fully dissolve the crystals, stir thoroughly before use.*

### Main Applications

- Vacuum infusion & rapid prototyping
- Small-batch production

### Properties Before Curing (Measured Values)

Note: Whitening time of mixed compound

ITEM	Condition & Unit	MU-55-1A	MU-55-1B
Appearance	Standard	Colorless, Milky white, Black	Pale yellow transparent
Specific Gravity	25°C	1.13	1.19
Viscosity	25°C, mPa·s	800	280
Mixing Ratio	By weight	100 : 200	
Pot Life	25°C, 100g	5 minutes	

### Standard Curing Conditions:

- Liquid temperature: 25~40°C
- Mold temperature: 60~70°C
- Curing: Hold at 60~70°C for 30~60 minutes

Note: Curing can also be achieved at mold temperatures below 60°C. Adjust curing parameters according to actual product geometry.

## MU55

### Properties After Curing (Measured Values):

Curing conditions: Liquid temperature 25°C, mold temperature 60°C, cure at 60°C for 60 minutes, then stand at 25°C for 24 hours prior to property testing.

Note: All data listed are measured values, not official specifications.

ITEM	Test Condition	Unit	Measured Value
Cured Product Appearance	Visual inspection	-	White, Milky white, Black
Specific Gravity of Cured Resin	JIS K-7112, 25°C	-	1.10~1.20
Hardness	JIS K-7215, 25°C	Shore D	82
Flexural Strength	JIS K-7171	MPa	95
Flexural Modulus	JIS K-7171	MPa	2100
Impact Strength	JIS K-7110, Izod V-notch	kJ/m <sup>2</sup>	16
Heat Deflection Temperature	JIS K-7191, Load: 1.8 MPa	°C	94
Shrinkage Rate	Internal Standard t=4	%	0.3

### Room Temperature (25°C) Curing Properties:

Curing conditions: Liquid temperature 25°C, mold temperature 25°C, cure at 25°C for 60 minutes, then stand at 25°C for 24 hours prior to property testing.

ITEM	Unit	MU-52	Competitor H (No.8)	MU-55-1 (This Product)
Flexural Strength	MPa	28	29	30
Flexural Modulus	MPa	2380	2150	1900
Heat Deflection Temperature	°C	54	52	55

### Pot Life of MU-55-1LP (Developmental Product):

Note: Whitening time of mixed compound; All data listed are measured values, not official specifications.

ITEM	Condition	MU-55-1	MU-55-1 LP	MU-52 LP (For Reference)
Pot Life	25°C, 100g	5 minutes	6 minutes	7~8 minutes
Time until complete loss of fluidity		6~7 minutes	8~9 minutes	10~11 minutes

## PX520

### Product Description:

PX-520 is a vacuum casting resin featuring high transparency and low shrinkage.

### Product Properties

ITEM	Component A	Component B	After Mixing
Composition	Polyol	Isocyanate	-
Viscosity (25°C, mPa·s) (Test Method: MO-051)	300	200	250
Specific Gravity (25°C) (Test Method: MO-032)	1.13–1.17	1.06–1.10	1.10–1.15
Color	Pale purple transparent	Transparent	Transparent

### Operating Parameters

- ◆ Mixing Ratio (By Weight) : A : B = 100 : 100
- ◆ Pot Life (160g resin @25°C, Test Method: MO-062) : 12 minutes
- ◆ Demolding Time (10 mm-thick sample, 70°C)  
(Test Method: MO-116) : 120 minutes

Note: Mix Component A and B in the specified ratio at a temperature above 20°C.

### Operating Instructions

- For use exclusively with vacuum casting machines.
- Preheat the mold to 70°C.
- If stored at low temperature, warm the material to over 20°C before use.
- Place Component A in the upper feeding cup and Component B in the mixing cup.
- Degas each component separately in the vacuum machine for 10 minutes, then mix and stir for 2 minutes until the mixture is fully transparent.
- Pour the resin into the silicone mold.
- Place the mold in an oven at 70°C for 120 minutes.
- Start demolding after the mold cools down.

## PX520

### Physical & Mechanical Properties

ITEM	Test Standard / Method	Value
Hardness	MO-063 / ISO 868	82 Shore D
Heat Deflection Temperature (HDT)	MO-117	70°C
Elongation at Break	ISO 527-2:1993	10 %
Flexural Modulus	ISO 178:2001	2000 MPa
Maximum Flexural Strength	ISO 178:2001	100 MPa
Ultimate Tensile Elongation	ISO 527:1993	7 %
Tensile Modulus	ISO 527:1993	2200 MPa
Tensile Strength at Break	-	50 MPa
Izod Impact Strength	ISO 179:1994	20 kJ/m <sup>2</sup>
Linear Shrinkage (Test specimen: 500 × 50 × 5 mm)	-	0.5 %

### Storage Conditions

Store unopened containers in a dry environment at 25°C ~ 30°C. The shelf life is 6 months.

### Packaging

1 kg Component A + 1 kg Component B

### Remarks

Crystallization may occur when the resin is exposed to low temperatures, which is a normal phenomenon. Loosen the bottle cap, then place the container in an oven at 60°C ~ 70°C for 4 to 6 hours, and the resin will return to its normal state.

## 5690

### Product Description:

DPI 5690 is a three-component vacuum casting polyurethane resin. It is cast into silicone rubber molds to produce prototypes with properties similar to PP plastics. This product features easy operation, high impact strength, high elongation at break and excellent flexibility.

### Basic Properties

ITEM		Technical Specifications		Remarks
Product Name		DPI5690	DPI5690N	-
Appearance	Component A	Black	White	Polyol
	Component B	Colorless		Isocyanate
	Component C	Milky white		-
Finished Product Color		Black	White	Type N is paintable
Viscosity (mPa·s, 25°C)	Component A	1200		BROOKFIELD-LVT Viscometer
	Component B	160		
	Component C	4600		
	After Mixing	500–700		
Specific Gravity (25°C)	Component A	1.06		Standard hydrometer
	Component B	1.15		
	Component C	1.06		
	After Mixing	1.13		
Pot Life	25°C	10–15 minutes		100 g resin sample
Demolding Time	70°C	60–90 minutes		3 mm thick sample

Mixing Ratio (A:B:C)	100:100:0	100:100:20	100:100:30	100:100:50
Hardness (Shore D)	83	80	78	75
Tensile Strength (MPa)	35	30	28	25
Flexural Strength (MPa)	50	35	30	20
Flexural Modulus (MPa)	1300	1000	900	600
Elongation at Break (%)	50	60	65	90
Impact Strength (kg/m <sup>2</sup> )	100	90	85	75
Glass Transition Temperature (°C)	85	78	75	65
Linear Shrinkage (%)	0.4	0.4	0.4	0.4

## 1819

### Product Features:

This is a transparent polyurethane casting resin, designed for manufacturing prototypes with properties similar to PMMA or PC plastics.

- Excellent UV resistance
- Tintable
- Good thermal performance
- Compliant with EU Directives: 2002/96/EC, 2000/53/EC, 2000/11/EC, 2011/65/EU and 2017/2102/EC (RoHS)

### Product Properties

ITEM	Condition / Unit	PRC 1719-PRC 1819 Polyol SL121000	PRC 1810-1819 Isocyanate SL000221	PRC 1819 Mixed System
Appearance	Standard	Colorless transparent liquid	Colorless transparent liquid	Colorless transparent liquid
Viscosity (Test Method: MO-051)	25 °C, mPa·s	450	450	450
Density (Test Method: MO-032)	25 °C	1.08	1.10	1.10

### Curing Parameters

ITEM	Condition / Unit	PRC 1819 P	PRC 1819 I	PRC 1819 Mixed System
Mixing Ratio (by weight)	wt%	56	100	-
Mixing Time	25 °C, second	-	-	210 s
Pot Life	25 °C, 100 g sample	-	-	19 min
Demolding Time	70 °C, 3mm thickness	-	-	180 min

## 1819

### Post-Curing Properties:

Average test data: Curing regime – 70°C for 3 hours + 100°C for 16 hours + 24 hours at room temperature

ITEM	Unit	Test Standard	Test Value
Hardness	Shore D	ISO 868-2003	85
Heat Deflection Temperature	°C	ISO 75-2:2013	86
Glass Transition Temperature	°C	ISO 6721-10:2015	95
Flexural Modulus	MPa	ISO 178:2011	2100
Maximum Flexural Strength	MPa	ISO 178:2011	80
Tensile Modulus	MPa	ISO 527-1:2012	2100
Ultimate Tensile Strength	MPa	ISO 527-1:2012	60
Elongation at Break	%	ISO 527-1:2012	14
Impact Strength	kJ/m <sup>2</sup>	ISO 179-1/1eUb:201	90
Refractive Index (20 °C)	-	ISO 489:1999	1.51
Staining Degree (50mm thickness)	-	ISO 2211:1973	< 30
QUV-B (313nm) Accelerated Aging	-	-	Under testing (tested every additional 1000 hours)