

ABS-LIKE

VACUUM CASTING URETHANE
FOR TECHNICAL PARTS AND PROTOTYPES



BASIC PHYSICAL PROPERTIES

Item		Data	Remarks
Appearance	A Comp.	Beige, black, not colored	Polyols
	B Comp.	Clear pale yellow	Isocyanates
Color of Finished Article		Ivory	Adjustable to be white or black
Viscosity (mPa · s, 25°C)	A Comp.	800	Viscometer Type BM
	B Comp.	160	Viscometer Type BM
Specific Gravity (25°C)	A Comp.	1.09	Standard Hydrometer
	B Comp.	1.19	Standard Hydrometer
Mixing Ratio	A:B	100:200	Parts by weight
Pot Life	25°C	5 minutes	Resin 100 g
Specific Gravity of Finished Article	25°C	1.21	JIS K-7112
Hardness	Shore D	80-85	JIS K-7113
Tensile Strength	MPa	73	JIS K-7113
Elongation	%	16	JIS K-6911
Young's modulus in flexure	MPa	1790	JIS K-7171
Bending Strength	MPa	78	JIS K-7171
Impact strength	kJ/m ²	12	Izod V Notch
Shrinkage Factor	%	0.3	
Coefficient of Thermal Expansion	°C-1	6X 10 ⁻⁵	JIS K-6911
Deflection Temperature Under Load	°C	100	JIS K-7207 (18.5kg/cm ²)

UL94V0 RATED

VACUUM CASTING URETHANE
FOR TECHNICAL PARTS AND PROTOTYPES



BASIC PHYSICAL PROPERTIES

Item		Data	Remarks
Appearance	A liquid	Light yellow transparent	Polyols
	B liquid	Light yellow transparent	Isocyanates
Color of Finished Article		White & Non-transparent	Long-term exposure to sunlight will turn yellow
Viscosity (mPa · s, 25°C)	A liquid	1000	Viscometer Type BM
	B liquid	160	
Specific Gravity (25°C)	A liquid	1.31	Standard Hydrometer
	B liquid	1.19	Standard Densimeter
Mixing Ratio	A: B	100:150	Parts by weight
Pot Life	25°C	5 min and 30 sec	Resin 100g
Specific Gravity of Finished Article		1.30	JIS K-6911
Hardness	Shore D	80~85	
Tensile Strength	MPa	68	JIS K-6911
Elongation	%	15	
Bending Strength	MPa	93	
Young's modulus in flexure	MPa	2200	
Impact strength	kJ/m ²	10	
Shrinkage	%	0.3	Own method
Coefficient of thermal expansion	°C ⁻¹	8 X 10 ⁻⁵	JIS K-6911
Deflection temp. under load	°C	80	JIS K-7207(18.5 kg/cm ²)
Demould Time	Minutes	45~60	Mold temp > 60°C

RUBBER-LIKE

VACUUM CASTING URETHANE
FOR TECHNICAL PARTS AND PROTOTYPES



BASIC PHYSICAL PROPERTIES

Item		Value		Remarks
Appearance	A Comp.	Black	Colorless, transparent	Polyol
	B Comp.	Light Yellow transparent		Isocyanates
	C Comp.	Light Yellow transparent		Polyol
Color of Finished Article		Black	Milky white	N-type can be colored
Viscosity (mPa · s, 25°C)	A Comp.	600		BM-type viscometer
	B Comp.	40		
	C Comp.	160		
Specific Gravity (25°C)	A Comp.	1.11		Standard hydrometer
	B Comp.	1.17		
	C Comp.	0.98		

Material		Shore 90A	Shore 80A	Shore 70A	Shore 60A
Pot Life	25	5~6minutes	5~6minutes	5~6minutes	5~6minutes
Hardness	Shore A	90	80	70	60
Tensile Strength	MPa	18	14	8	7
Elongation	%	200	240	260	280
Tear Strength	N/mm	70	60	40	30
Elastic Rebound	%	50	52	56	56
Shrinkage	%	0.6	0.5	0.5	0.4

Material		Shore 50A	Shore 40A	Shore 30A
Pot Life	25	5~6minutes	5~6minutes	5~6minutes
Hardness	Shore A	50	40	30
Tensile Strength	MPa	5	2.5	2
Elongation	%	300	310	370
Tear Strength	N/mm	20	13	10
Elastic Rebound	%	60	63	58
Shrinkage	%	0.4	0.4	0.4

HIGH-TEMP

VACUUM CASTING URETHANE
FOR TECHNICAL PARTS AND PROTOTYPES



BASIC PROPERTIES

		PART A	PART B	MIXING
Composition		ISOCYANATE	POLYOL	
Mixing ratio by weight at 25°C		100	80	
Aspect		liquid	Liquid	liquid
Colour		colorless	black	black
Viscosity at 25°C (mPa.s)	BROOKFIELD LVT	1.100	300	850
Density of parts before mixing at 25°C	ISO 1675 :1975	1.17	1.12	-
Density of cured mixing at 23°C	ISO 2781 :1988	-	-	1.14
Pot life at 25°C on 90g (min.)	-			6 - 7

MECHANICAL PROPERTIES AT 23°C ⁽¹⁾

Flexural modulus of elasticity	ISO 178 :2001	MPa	2,300
Flexural strength	ISO 178 :2001	MPa	80
Tensile strength	ISO 527 :1993	MPa	60
Elongation at break in tension	ISO 527 :1993	%	11
Charpy impact resistance	ISO 179/2D :1994	kJ/m ²	> 60
Hardness - at 23°C - at 120°C	ISO 868 :1985	Shore D	80 > 65

THERMAL & SPECIFIC PROPERTIES ⁽¹⁾

Glass transition temperature	T.M.A.-Mettler	°C	> 120
Coefficient of linear thermal expansion (C _L TE) [+15, +120]°C	T.M.A.-Mettler	ppm/K	115
Linear shrinkage	-	mm/m	4
Maximal casting thickness	-	mm	5 - 10

(1) Average values obtained on standardized specimens / Hardening 1 hr at 70°C + 1 hr at 100°C + 12 hr at 110°C

CLEAR HIGH-TEMP

VACUUM CASTING URETHANE
FOR TECHNICAL PARTS AND PROTOTYPES



BASIC PROPERTIES

Composition		UPX 5210 ISOCYANATE	UPX 5210 POLYOL	UPX 5210-S POLYOL	MIXED
Mix ratio by weight		150	100	100	
Aspect		liquid	liquid	liquid	liquid
Colour		Transparent	Light blue - purple		Transparent
Viscosity at 23°C (mPa.s)	BROOKFIELD LVT	100 - 150	600 - 800	600 - 800	500 - 650
Specific gravity at 23°C		1.06	1.01	1.01	-
Specific gravity of cured product at 23°C		-	-	-	1.10
Pot life at 20 - 25°C on 100g (min)			10	20	

MECHANICAL PROPERTIES AT 23°C ⁽¹⁾

Flexural modulus	ISO 178 : 2001	MPa	2,000-2,2000
Flexural strength	ISO 178 : 2001	MPa	90-95
Tensile strength	ISO 527 : 1993	MPa	65-70
Elongation at break in tension	ISO 527: 1993	%	15-20
Impact strength	ISO 179/1 eU : 1994	kJ/m ²	60-70
Final hardness	ISO 868 : 2003	Shore D	87

THERMAL & SPECIFIC PROPERTIES ⁽¹⁾

Glass temperature transition (T _g)	ISO 11359 : 2002	°C	80
Heat deflection temperature (HDT 1.8 MPa)	ISO 75 Ae :1993	°C	100
Maximal casting thickness		mm	50
Demoulding time at 70°C (thickness 3 mm)		min.	60-90

(1) Average values obtained on standard specimens/Hardening 4 hrs at 80°C + 16 hrs at 100°C

(2) PX 522 is available in orange (PX 522HT OE Part B) and in red (PX 522HT RD Part B)

PP-LIKE

VACUUM CASTING URETHANE
FOR TECHNICAL PARTS AND PROTOTYPES



BASIC PROPERTIES

		UP 5690 AW or AK	UP 5690 B	UP 5690 C	MIXED
Composition		Polyol	Isocyanate	Polyol	
Mix ratio by weight		100	100	0 - 50	
Aspect		liquid	liquid	liquid	liquid
Colour		AW= White AK= Black	Colourless	Milk white	AW/B/C=White AK/B/C=Black
Viscosity at 23°C (mPa.s)	BROOKFIELD LVT	1000 - 1500	140 - 180	4500 - 5000	500 - 700
Viscosity at 40°C (mPa.s)	BROOKFIELD LVT	400 - 600	-	2300 - 2500	300 - 500
Specific gravity at 25°C Specific gravity of cured product at 23°C	ISO 1675 :1975 ISO 2781 :1988	1.06 -	1.15 -	1.06 -	- 1.13
Pot life at 25°C on 100 g (min)					10 - 15
Pot life at 40°C on 100 g (min)					5 - 7

MECHANICAL PROPERTIES AT 23°C ⁽¹⁾

A/B/C			100/100/0	100/100/20	100/100/30	100/100/50
Hardness	ISO 868 : 2003	Shore D	83	80	78	75
Tensile strength	ISO 527 : 1993	MPa	35	30	28	25
Flexural strength	ISO 178 : 2001	MPa	50	35	30	20
Flexural modulus	ISO 178 : 2001	MPa	1300	1000	900	600
Elongation at break	ISO 527 : 1993	%	50	60	65	90
Impact strength (CHARPY) <i>Unnotched specimens</i>	ISO 179/2D : 1994	KJ/m ²	100	90	85	75

THERMAL & SPECIFIC PROPERTIES

A/B/C			100/100/0	100/100/20	100/100/30	100/100/50
Glass transition temperature (T _g) ⁽¹⁾		°C	85	78	75	65
Linear shrinkage		%	0.35	0.35	0.35	0.35
Demoulding time (2 - 3mm) at 70°C		min	60 - 90			

(1) Average values obtained on standard specimens / Hardening 16hr at 80°C after demoulding.