Technical data

Shin-Etsu Silicone

Silicone Rubber

Performance Test Results

Contents

1. Silicone rubber: general properties

Classification		For general purpose, FDA (21CFR177 2600), BfR								JIS B2401 4-C
Grade		**KE-931-U**	**KE-941-U**	**KE-951-U**	**KE-961-U**	**KE-971-U**	**KE-981-U**	**KE-961T-U**	**KE-971T-U**	**KE-871C-U**
Appearance		Milky white translucent			Grayish white			Milky white translucent		Grayish white
Density 23°C g/cm³		1.07	1.11	1.14	1.22	1.30	1.42	1.17	1.20	1.29
Williams plasticity (10 min after remix)		160	190	240	280	330	420	280	340	260
Curing agent	Curing agent name	C-8	C-8	C-8	C-8	C-8	C-8	C-8A	C-8	C-8
	Standard addition quantity*1	2.0	2.0	2.0	2.0	2.0	2.0	0.5	2.0	1.0
Linear shrinkage*2 %		4.0	3.9	3.9	3.4	3.0	2.7	3.6	3.4	2.9
Physical strength	Hardness Durometer A	31	43	52	63	71	84	62	71	72
	Tensile strength MPa	4.7	6.5	8.2	7.3	7.5	8.8	9.7	8.8	6.9
	Elongation at break %	480	370	330	320	220	100	310	260	190
	Tear strength crescent piece kN/m	15*3	15*3	23*3	20*3	20*3	8	25*3	25*3	9
Compression set 180°C x 22 h		15	11*4	11*4	11*4	9*4	12*4	11*4	11*4	10
Dielectric breakdown strength Normal state kV		—	23	24	25	25	24	24	23	—
Volume resistivity Normal state TΩ·m		—	7	8	6	3	4	4	4	—

(Not specified values)

Classification		Dynamic fatigue durability		Vibration control		For power connector				Anti-static silicone rubber compound
Grade		**KE-9511-U**	**KE-5151-U**	**KE-5550-U**	**KE-501EM-U**	**KE-7211-U**	**KE-7212-U**	**KE-7213-U**	**X-30-3893-U**	**KE-9590-U**
Appearance		Milky white translucent		Pale yellow	Milky white translucent	Light gray	Gray	Blue-white	Black	Milky white translucent
Density 23°C g/cm³		1.12	1.10	1.25	1.10	1.15	1.20	1.97	1.09	1.15
Williams plasticity (10 min after remix)		200	170	370	170	220	250	190	290	220
Curing agent	Curing agent name	C-8A	C-8B	C-8	C-15	C-3	C-3	C-8	C-8A	C-8
	Standard addition quantity*1	0.6	1.0	2.0	1.5	1.3	1.3	2.0	1.0	2.0
Linear shrinkage*2 %		3.3	3.9	5.2	3.9	—	—	—	—	3.9
Physical strength	Hardness Durometer A	50	54	52	53	54	58	45	40	51
	Tensile strength MPa	6.6	7.7	9.3	7.7	11.0	9.2	2.5	7.4	8.8
	Elongation at break %	310	450	730	520	780	680	320	680	400
	Tear strength crescent piece kN/m	6	15	38	19	31	35	8	26	22*3
Compression set 180°C x 22 h		8	20	13	22	9	10	—	17	14*4
Dielectric breakdown strength kV	Normal state	—	—	—	—	28	28	—	—	22
	Submerged	—	—	—	—	190	100	0.1	—	0.4
Remarks		Middle fatigue durability	High fatigue durability	High decrement	Low motion magnification	Tracking property 3.5 kV	Tracking property 4.5 kV	High dielectricity	Specific resistance 0.2 Ω·m	—

Measurement: in accordance with JIS K 6249 Test pieces: 165°C x 10 min (press cure), 200°C x 4 h (post cure) (Not specified values)

*1 Standard addition quantity is the quantity of curing agent added to 100 parts compound.
*2 Linear shrinkage values differ according to the curing agent used.
*3 Angle piece
*4 Measured values at 150°C x 22 h.

[Unit conversion] tensile strength: 10 kgf/cm^2 = 0.98 MPa; tear strength: 1 kgf/cm = 0.98 kN/m; volume resistivity: 10^{14} Ω·cm = 1 TΩ·cm.

Classification		For general extrusion molding, FDA, BfR										For tubing			
Grade		KE-541-U*3		KE-551-U*3		KE-561-U*3		KE-571-U*3		KE-581-U*3		KE-153-U	KE-174-U	KE-1551-U*3	KE-1571-U*3
Appearance		Milky white translucent										Milky white translucent			
Density 23°C g/cm³		1.10		1.14		1.17		1.22		1.24		1.16	1.21	1.16	1.19
Williams plasticity (10 min after remix)		150		200		250		360		430		260	370	270	320
Curing agent	Curing agent name	C-23N	C-25A/B	C-23N	C-25A/B	C-23N	C-25A/B	C-23N	C-25A/B	C-23N	C-25A/B	C-25A/B	C-25A/B	C-23N	C-23N
	Standard addition quantity*1	1.0	0.5/2.0	1.0	0.5/2.0	1.0	0.5/2.0	1.0	0.5/2.0	1.3	0.5/2.0	0.5/2.0	0.5/2.0	0.8	0.7
Linear shrinkage*2 %		—		—		—		—		—		—	—	3.3	—
Physical strength	Hardness Durometer A	40	40	50	50	63	62	70	68	79	77	53	71	56	74
	Tensile strength MPa	8.0	8.2	10.5	9.8	11.5	11.5	11.0	11.0	10.5	10.5	10.0	8.1	10.5	9.5
	Elongation at break %	550	690	530	590	450	470	430	450	310	430	650	520	530	370
	Tear strength crescent piece kN/m	10	22	13	26	15	24	19	26	13	23	36	37	16	23
Compression set 180°C x 22 h		12*4	9*5	8*4	9*5	11*4	9*5	13*4	9*5	14*4	9*5	—	—	—	35*5
Dielectric breakdown strength Normal state kV		—	—	26	—	25	—	26	—	29	—	26	28	28	25
Volume resistivity Normal state TΩ·m		30	—	70	—	300	—	500	—	700	—	900	650	600	600

(Not specified values)

Classification		High strength		Low hardness, high elongation			Flame retardance			
Grade		KE-555-U★	KE-575-U	KE-520-U	KE-530B-2-U	KE-540B-2-U	KE-5620W-U	KE-5620BL-U	KE-5612E-U	KE-5634-U
Appearance		Pale yellow		Milky white translucent			White	Black	Charcoal	Translucent
Density 23°C g/cm³		1.17	1.21	1.06	1.13	1.13	1.40	1.38	1.49	1.20
Williams plasticity (10 min after remix)		310	320	150	170	180	240	230	230	330
Curing agent	Curing agent name	C-8	C-8	C-8	C-8A	C-15	X-93-1609*6/C-3		C-3	C-25A/B
	Standard addition quantity*1	2.0	2.0	2.0	0.5	1.5	0.3/1.3		1.3	1.0/2.0
Linear shrinkage*2 %		4.0	4.0	4.5	3.8	4.1	3.1	3.2	2.7	3.4
Physical strength	Hardness Durometer A	53	70	23	35	39	59	57	60	70
	Tensile strength MPa	11.0	9.4	5.0	9.7	9.7	6.5	7.0	7.2	7.7
	Elongation at break %	650	550	770	880	700	410	430	290	370
	Tear strength crescent piece kN/m	35	41	10	34	17	12	11	13	14
Compression set 180°C x 22 h		31	18	22	20*5	9*5	21	27	16	20
Dielectric breakdown strength Normal state kV		27	27	—	—	—	27	28	27	29
Volume resistivity Normal state TΩ·m		100	200	—	—	—	50	80	240	300
Flame retardance UL94		—	—	—	—	—	V-0	V-0	V-0	V-1

Measurement: in accordance with JIS K 6249 Test pieces: 165°C x 10 min (press cure), 200°C x 4 h (post cure) (Not specified values)

*1 Standard addition quantity is the quantity of curing agent added to 100 parts compound.
*2 Linear shrinkage values differ according to the curing agent used.
*3 Test pieces: 120°C x 10 min (press cure), 200°C x 4 h (post cure)
*4 Measured values at 100°C x 22 h
*5 Measured values at 150°C x 22 h
*6 X-93-1609 is a flame retardant.
★ Not available in U.S..

[Unit conversion] tensile strength: 10 kgf/cm^2 = 0.98 MPa; tear strength: 1 kgf/cm = 0.98 kN/m; volume resistivity: 10^{14} Ω·cm = 1 TΩ·cm.

Silicone rubber: general properties

Classification		Heat resistance		Hermetic heat resistance	Steam resistance			Electrically conductive			Heat conductive
Grade		**KE-552-U**[*3]	**KE-582-U**[*4]	**KE-552B-U**[*5]	**KE-7511-U**	**KE-7611-U**	**KE-7711-U**	**KE-3601SB-U**	**KE-3711-U**	**KE-3801M-U**	**KE-6801-U**[*3]
Appearance		Light brown		Pale yellow	Pale yellow			Black			Dark blue
Density 23°C g/cm³		1.16	1.25	1.17	1.14	1.15	1.21	1.17	1.14	1.20	1.90
Williams plasticity (10 min after remix)		270	470	280	220	220	230	450	480	630	500
Curing agent	Curing agent name	C-23N	C-23N	C-23N	C-15	C-8A	C-8A	C-8A	C-8A	HC-101/CAT-PL-2	C-23N
	Standard addition quantity[*1]	1.0	1.0	1.0	1.3	0.6	0.6	1.0	1.0	2.7/0.1	0.8
Linear shrinkage[*2] %		2.7	3.3	2.4	3.8	3.9	3.9	4.2	—	—	—
Physical strength	Hardness Durometer A	52	80	52	55	61	72	62	66	73	85
	Tensile strength MPa	10.0	7.0	9.8	9.5	9.1	8.8	7.0	6.5	5.3	4.0
	Elongation at break %	550	250	550	410	330	300	290	170	190	110
	Tear strength crescent piece kN/m	15	20	14	12	11	15	10	—	15[*6]	—
Compression set 180°C x 22 h		18[*7]	23	24[*7]	9	9	10	—	12	18[*7]	—
Dielectric breakdown strength Normal state kV		27	25	28	—	—	—	—	—	—	26
Volume resistivity Normal state TΩ·m		900	900	500	—	—	—	0.05[*8]	0.05[*8]	0.03[*8]	30

(Not specified values)

Classification		For industrial rollers		For electric wire			Fire resistance	Voltage resistance	Oil bleed		Low temperature	Super low temperature
Grade		**KE-765-U**	**KE-785-U**	**KE-1265-U**	**KE-5615-U**	**KE-6080-U**	**KE-1734-U**	**KE-655-U**	**KE-503-U**	**KE-505-U**	**KE-136Y-U**[*3]	**KE-186-U**
Appearance		Pale yellow	Grayish white	Grayish white	White	Umber brown	Charcoal	Grayish white	White	Grayish white	Pale yellow	Milky white translucent
Density 23°C g/cm³		1.17	1.58	1.21	1.30	1.18	1.54	1.22	1.10	1.19	1.16	1.19
Williams plasticity (10 min after remix)		270	370	230	300	270	420	300	170	210	220	250
Curing agent	Curing agent name	C-8	C-8	C-23N	C-23N	C-23N	C-23N	C-8A	C-8	C-8	C-23N	C-23N
	Standard addition quantity[*1]	2.0	1.5	1.3	1.3	1.3	1.3	0.7	2.0	2.0	0.7	0.7
Linear shrinkage[*2] %		3.7	2.4	—	—	—	—	3.8	4.0	3.4	3.6	—
Physical strength	Hardness Durometer A	63	83	66	62	55	74	60	32	48	52	61
	Tensile strength MPa	10.0	8.5	8.0	7.8	8.5	5.8	10.5	6.5	7.3	10.2	11.0
	Elongation at break %	340	110	280	330	390	140	400	650	330	620	690
	Tear strength crescent piece kN/m	—	—	12	11	13	13	28	18	19	32	34
Compression set 180°C x 22 h		8	11	—	—	—	17[*9]	15[*7]	15	17[*10]	16[*11]	—
Dielectric breakdown strength Normal state kV		27	26	28	28	27		28	24	23	29	—
Volume resistivity Normal state TΩ·m		10	10	51	70	80		50	50	8	200	—
Remarks		Heat resistance		For general	Flame retardancy	High heat resistance	Flameretardancy Sintering	—	—	—	—	—

Measurement: in accordance with JIS K 6249 Test pieces: 165°C x 10 min (press cure), 200°C x 4 h (post cure) (Not specified values)

*1 Standard addition quantity is the quantity of curing agent added to 100 parts compound.
*2 Linear shrinkage values differ according to the curing agent used.
*3 Test pieces: 120°C x 10 min (press cure), 200°C x 4 h (post cure)
*4 Test pieces: 120°C x 10 min (press cure), 150°C x 1 h + 250°C x 24 h (post cure)
*5 Test pieces: 120°C x 10 min (press cure), 150°C x 1 h (post cure)
*6 Angle piece *7 Measured values at 150°C x 22 h *8 Ω·m *9 Measured values at 100°C x 22 h *10 Measured values at 150°C x 70 h *11 Measured values at 105°C x 70 h

[Unit conversion] tensile strength: 10 kgf/cm^2 = 0.98 MPa; tear strength: 1 kgf/cm = 0.98 kN/m; volume resistivity: 10^{14} Ω·cm = 1 TΩ·m.

Silicone rubber: other properties

Classification			For general purpose						Oil resistance
Grade			KE-941-U	KE-951-U	KE-961-U	KE-971-U	KE-981-U	KE-971T-U	KE-871C-U
Heat resistance	Rate of change (RC) at 220°C x 96 h	Hardness Point	-4	-1	-1	+3	0	—	-2*1
		Tensile strength %	-20	-10	-10	+2	-5	—	+9*1
		Elongation at break %	-8	-22	-30	-35	-13	—	-10*1
Oil resistance	RC at 150°C x 72 h IRM 903 Oil	Hardness Point	—	-15	-15	-15	—	-19	—
		Tensile strength %	—	-25	-15	-15	—	-6	—
		Elongation at break %	—	-30	-20	-10	—	-16	—
		Volume change %	—	+30	+30	+26	—	+28	—
	RC at 175°C x 70 h IRM 901 Oil	Hardness Point	—	—	—	-3	—	—	-7
		Tensile strength %	—	—	—	+14	—	—	+7
		Elongation at break %	—	—	—	-20	—	—	-3
		Volume change %	—	—	—	+6	—	—	+5
Flame retardance		UL94	HB	HB	HB	HB	HB	HB	—
Low temperature characteristics		T10 Gehman test °C	—	-46	—	-47	—	—	—

(Not specified values)

Classification			For general extrusion molding			Voltage resistance	Oil bleed	
Grade			KE-551-U*2	KE-561-U*2	KE-571-U*2	KE-655-U	KE-503-U	KE-505-U
Heat resistance	RC at 220°C x 96 h	Hardness Point	+4	+6	+8	+5*3	0*1	-4*1
		Tensile strength %	-19	-27	-28	-25*3	-5	-10*1
		Elongation at break %	-40	-41	-56	-30*3	-15	+8*1
Oil resistance	RC at 150°C x 72 h IRM 903 Oil	Hardness Point	—	—	—	-20	-10	—
		Tensile strength %	—	—	—	-40	-45	—
		Elongation at break %	—	—	—	-40	-50	—
		Volume change %	—	—	—	+55	+55	—

(Not specified values)

Classification			Flame retardance			Heat resistance		Hermetic heat resistance
Grade			KE-5620W-U	KE-5620BL-U	KE-5634-U	KE-552-U*4	KE-582-U*4	KE-552B-U*4
Heat resistance	RC at 220°C x 96 h	Hardness Point	+4	+3	—	+15*5	+8*5	+5
		Tensile strength %	+10	+13	—	-48*5	-35	-10
		Elongation at break %	-28	-28	—	-59*5	-60	-30
Flame retardance		UL94	V-0	V-0	V-1	—	—	—

Measurement: in accordance with JIS K 6249 Test pieces: 165°C x 10 min (press cure), 200°C x 4 h (post cure) (Not specified values)

Classification			Steam resistance		
Grade			KE-7511-U	KE-7611-U	KE-7711-U
Heat resistance	RC at 220°C x 96 h	Hardness Point	+2*1	+3	+2*1
		Tensile strength %	-15	-10	-8*1
		Elongation at break %	-10	-15	-11*1

Measurement: in accordance with JIS K 6249 Test pieces: 165°C x 10 min (press cure), 200°C x 4 h (post cure) (Not specified values)

*1 Measured values at 230°C x 72 h
*2 Relavant data id for addition cure (C-25A/B=0.5/2.0)
*3 Measured values at 200°C x 72 h
*4 Test pieces: 120°C x 10 min (press cure), 200°C x 4 h (post cure)
*5 Measured values at 300°C x 72 h

2. Fluorosilicone rubber

Fluorosilicone rubber is highly resistant to high and low temperatures and solvents, and has excellent workability. In IRM 903, a standard oil, there is less than 5% swelling (150°C x 70 h). Fluorosilicone rubber also has excellent resistance to silicone fluid. Shin-Etsu's fluorosilicone rubber products include the FE-201-U Series for general molding (hardness: 25-80), and the FE-301-U Series of high strength rubbers (hardness: 40-80). We also produce FE-451-U, a copolymer type that exhibits oil resistance midway between that of dimethyl silicone rubber and fluorosilicone rubber. This copolymer material has oil resistance while also having superior cold resistance, and maintains a greater degree of rubber elasticity at low temperatures than typical silicone rubbers.

Applications: Rubber parts including diaphragms, check valves, and connectors, specifically in applications requiring oil and solvent resistance.

General properties

Grade		FE-251-U	FE-261-U	FE-271-U	FE-351-U	FE-361-U	FE-451-U*2
Appearance		Pale yellow	Pale yellow	Grayish white	Pale yellow	Pale yellow	Pale yellow
Density 23°C	g/cm³	1.41	1.42	1.50	1.44	1.46	1.23
Prescribed curing agent	Curing agent name	C-8A	C-8A	C-8A	C-8A	C-8A	C-8A
	Standard addition quantity	0.8	0.8	0.8	0.8	0.8	0.8
Normal state data	Hardness Durometer A	54	63	73	49	62	50
	Elongation at break %	430	400	300	520	520	300
	Tensile strength MPa	9.8	9.8	9.0	13.3	12.7	6.4
	100% modulus MPa	1.9	2.7	5.3	0.98	1.2	1.8
	200% modulus MPa	4.4	5.8	6.6	2.5	2.7	3.7
	Tear strength Crescent kN/m	15	16	16	38	45	10
	Linear shrinkage %	3.5	3.5	3.3	3.3	3.2	3.8
	Rebound resiliency %	43	43	34	24	21	74
	Compression set*1 %	8	8	9	17	14	6
Heat resistance 200°C x 72 h	Hardness change Point	+2	+3	+3	+5	+5	+2
	Elongation change %	-7	-5	-16	±0	-2	-7
	Tensile strength change %	-16	-12	-17	-7	-8	-7
IRM 903 oil immersion 150°C x 70 h	Hardness change Point	-5	-5	-5	±0	±0	-11
	Elongation change %	-15	-5	-10	±0	+1	-18
	Tensile strength change %	-20	-10	-10	-2	±0	-19
	Volume change %	+4	+4	+4	+3	+3	+14
Fuel C 25°C x 72 h	Hardness change Point	-9	-9	-10	-12	-15	—
	Elongation change %	-44	-45	-23	-33	-14	—
	Tensile strength change %	-48	-40	-17	-46	-27	—
	Volume change %	+24	+23	+21	+23	+22	+140
Remarks		For fuel diaphragms and check valves			High tear strength		Copolymer

Measurement: based on JIS K 6249 Test pieces: 165°C x 10 min (press cure), 200°C x 4 h (post cure) (Not specified values)

*1 Measured values at 180°C x 22 h *2 FE-451-U is produced in response to orders received.

3. SEP Rubber (silicone-modified EPDM)

SEP rubber is produced by modifying ethylene propylene rubber (EPDM) with silicone. This improves EPDM's properties of heat resistance and weather resistance, and low temperature characteristics. These performance characteristics lie between those of EPDM and silicone rubber, but SEP rubber has the additional favorable properties of chlorine resistance and sponge foaming characteristics. In high temperature conditions over 100°C, SEP rubber has higher mechanical strength, in particular tear strength, than EPDM, and is comparable to high-strength silicone rubber. In terms of resistance to steam, hot water, acids and alkalis, SEP rubber is more durable than silicone rubbers. SEP rubbers are available in several grades: general grade (SEP-1411-U/SEP-1711-U), heat-resistant grade (SEP-1421-U/SEP-1721-U), extrusion grade (SEP-1731-U) and flame-resistant grade (SEP-363-U).

Applications: Rubber parts for high-temperature applications requiring high strength, including plug boots.

General properties

Grade		SEP-1411-U	SEP-1711-U	SEP-1421-U	SEP-1721-U	SEP-1731-U	SEP-363-U
Appearance		Pale yellow	Yellow	Pale yellow	Pale yellow	Gray	Black
Density 23°C	g/cm³	0.99	1.11	1.01	1.15	1.21	1.40
Prescribed curing agent	Curing agent name	C-12/SEP-BM	C-12	C-12	C-12	C-12/SEP-BM	C-12
	Standard addition quantity	2.0/0.1	2.0	2.0	2.0	4.0/0.2	1.5
Mooney viscosity ML 1+4 100°C		36	75	17	66	50	50
Normal state data	Hardness Durometer A	47	70	41	72	70	70
	Elongation at break %	820	600	930	550	600	400
	Tensile strength MPa	7.8	17.0	6.2	11.0	14.0	4.8
	Tear strength Crescent kN/m	12	35	12	30	30	25
	Rebound resiliency %	62	50	62	50	51	50
	Compression set* %	40	40	50	45	28	28
	Linear shrinkage %	—	2.5	—	2.7	—	—
	Flame retardance	—	—	—	—	—	1.6 mm UL94 V-0
Remarks		For general molding Sulfur cure possible	For general molding Sulfur cure possible	For general molding Heat-resistant grade	For general molding Heat-resistant grade	For extrusion General grade	Flame retardance Halogen-free

Measurement: based on JIS K 6249 Test pieces: 170°C x 10 min (press cure), 150°C x 2 h (post cure) (Not specified values)

✻ Measured values at 150°C x 22 h

● We also offer a range of trial products in grades other than those listed above.

4. Curing agents

Shin-Etsu's silicone rubbers typically do not include a curing agent. These are called "U-types," and expressed such as KE-951-U. With U-type products, choose a suitable curing agent (from C-1A to C-25A/B) in accordance with the curing method. We also offer curing agents other than those listed here. Please contact Shin-Etsu for details.

Types

	Grade	Applications	Appearance Main vulcanizing ingredient
C-1A	General molding, thin sections	White paste	Benzoyl peroxide Approx. 50% content
C-3	General molding, steam curing, flame retardance	White putty	Dicumyl peroxide Approx. 20% content
C-4	General molding	Grayish white paste	Ditertiarybutyl peroxide Approx. 20% content
C-8 **C-8A** **C-8B**	General molding, thick sections	Grayish white paste (C-8) Translucent paste (C-8A, C-8B)	2.5 dimethyl-2.5 bis (tertiarybutylperoxy) hexane Approx. 25% content (C-8), approx. 80% content (C-8A), approx. 40% content (C-8B)
C-12	SEP General molding, SEP Steam curing	White powder	Dicumyl peroxide Approx. 40% content
C-15	General molding, for transparent products	Translucent paste	2.5 dimethyl-2.5 bis (tertiarybutylperoxy) hexane Approx. 12.5% content
C-23N	Hot Air Vulcanization (HAV)	White paste	Paramethylbenzoilperoxide Approx. 50% content
C-25A/B	Vulcanization of addition-cure rubbers	Transparent paste (C-25A) Translucent paste (C-25B)	Contains metal complex (C-25A) Contains cross-linker (C-25B)

Suitability by application

Grade	Application					Curing method			
	Thin sections	Thick sections	Sponge*	Carbon compound products	Low compression set	HAV	CV	Mold	Coating
C-1A	●		●				●	●	●
C-3		●	●	●	●		●	●	
C-4		●			●			●	
C-8 **C-8A** **C-8B**	●	●		●	●		●	●	
C-15	●	●		●	●			●	
C-23N			●			●	●	●	●
C-25A/B		●	●	●	●	●		●	

* Use sponge curing agents as a combination of C-1A with C-3, or C-23N with C-3.

Standard addition quantity

Grade	C-1A	C-3	C-4*1	C-8*2	C-8A	C-8B	C-15	C-23N
KE-931-U	0.75	3.2	4.0	2.0	0.5	1.0	—	1.8★
KE-941-U						1.0	—	
KE-951-U	0.65	3.0				1.0	—	1.5★
KE-961-U	0.6	2.3	3.5			1.0	—	1.4★
KE-971-U	0.55	1.9	3.0		0.4	1.0	—	1.3★
KE-981-U	0.5	1.6				1.0	—	1.2★
KE-961T-U	0.65	2.5	4.0		0.5	1.0	—	1.5
KE-971T-U	0.6	2.3	3.5			1.0	—	1.4
KE-871C-U	—	—	—	1.0	0.3	0.5	—	—
KE-9511-U	—	—	—	2.0	0.5	1.0	—	—
KE-5151-U	—	—	—	—	0.5	1.0	—	—
KE-5550-U	—	—	—	2.0	0.5	1.0	—	—
KE-501EM-U	—	—	—	—	—	—	1.5	—
KE-7211-U	—	1.3	—	—	—	—	—	—
KE-7212-U	—	1.3	—	—	—	—	—	—
KE-7213-U	—	—	—	2.0	0.5	1.0	—	—
X-30-3893-U	—	—	—	—	1.0	2.0	—	—
KE-9590-U	—	—	—	2.0	0.5	1.0	—	—
KE-541-U	0.8	3.0	4.0	2.0	0.6	1.0	—	1.0
KE-551-U								
KE-561-U	0.7							
KE-571-U	0.6							
KE-581-U								1.3
KE-153-U	C-25A/B=0.5/2.0							
KE-174-U								
KE-1551-U	0.8	3.2	4.0	2.0	0.5	1.0	—	0.8
KE-1571-U	0.7	2.0	3.0		0.4	1.0	—	0.7
KE-555-U*3	0.8	2.5	—	2.0	0.5	1.0	—	1.3
KE-575-U					0.4			

Grade	C-1A	C-3	C-4*1	C-8*2	C-8A	C-23N
KE-520-U	0.8	3.5	4.0	2.0	0.5	1.8★
KE-582-U		2.5	3.0	2.0	0.4	1.2
KE-552B-U		3.4	4.0		0.5	1.0
KE-7511-U	—	3.0	—	—	0.6	—
KE-7611-U		—				
KE-7711-U						
KE-3601SB-U	—	5.0	5.0	4.0	1.0	—
KE-3711-U		—	—	—		
KE-3801M-U						
KE-6801-U	0.5	2.0	3.0	2.0	0.4	0.8★
KE-765-U	0.7	2.8	3.0	2.0	0.5	1.3★
KE-785-U	0.6	2.6		1.5	0.4	1.2★
KE-1265-U	—	—	—	—	—	1.3
KE-5615-U	—	—	—	—	—	1.3
KE-6080-U	—	—	—	—	—	1.3
KE-1734-U	—	—	—	—	—	1.3
KE-655-U	—	3.0	4.0	2.0	0.7	—
KE-503-U	—	3.0	4.0	2.0	0.6	—
KE-505-U						
KE-136Y-U	0.75	3.0	—	2.0	0.5	0.7
KE-186-U	—	—	—	2.0	0.5	0.7

Standard addition quantity is the quantity of curing agent added to 100 parts compound.

★ Note: Please contact Shin-Etsu separately for information regarding Hot Air Vulcanization (HAV).

*1 C-4 is volatile, so the silicone rubber should be used soon after mixing.
*2 C-8 has qualities nearly identical to C-4, but has the advantage of lower volatility than C-4.
*3 Not available in U.S..

5. Standard conditions for compression molding

Grade	Press conditions		Thickness of molded item (mm) Less than 1	1 - 5	5 - 10	10 - 25	25 - 50
C-1A*1 **C-23N**	Temperature	°C	120 - 125				
	Time	min	10	10 - 15	15 - 30	30 - 60	60 - 120
	Pressure	MPa	2.9 - 4.9				
C-3	Temperature	°C	155 - 160				
	Time	min	10	10 - 15	15 - 30	30 - 60	60 - 120
	Pressure	MPa	2.9 - 4.9				
C-4 C-15 C-8 C-8A C-8B	Temperature	°C	165 - 170				
	Time	min	10	10 - 15	15 - 30	30 - 60	60 - 120
	Pressure	MPa	2.9 - 5.9				
C-25A/B*2	Temperature	°C	150 - 170				
	Time	min	10 - 20			20 - 60	60 - 120
	Pressure	MPa	2.9 - 5.9				

✻1 Curing may be uneven in molded items thicker than 5 mm. Shin-Etsu recommends C-3, C-8, or C-8A for molding items over 5 mm thick.
✻2 Molding possible at temperatures as low as 120°C-150°C.

6. Primers

By applying the primer in advance, better adhesion will be obtained.

Grade	Appearance	Ingredient (%)	Solvent	Drying conditions	Adherend
PRIMER-NO.4	Colorless, transparent	20	n-Heptane	23°C / 15 - 20 min	Metal, Plastic
PRIMER-NO.33	Reddish brown	20	Toluene/IPA	23°C x 30 min → 150°C x 15 min	Metal
PRIMER-NO.34T	Colorless, transparent	20	Toluene/IPA	23°C x 30 min → 150°C x 15 min	Metal

● We offer other primers in addition to those listed above. Contact our Sales Department for details.

7. Coloring agents

Grade	Color	Coloring ingredient (%) (ingredient name)
KE-Color BR	Reddish brown	50 (iron oxide)
KE-Color W	White	50 (titanium oxide)
KE-Color MB	Blue	50 (lapis)
KE-Color BL	Black	50 (iron oxide, carbon)
KE-Color SB	Sky blue	50 (cobalt blue)
X-93-941	Yellow	50 (titanium oxide, organic pigment)
X-93-942	Red	50 (organic pigment)

8. Application examples by industry

Industry	Application examples	Desired properties	Typical grade
Home appliances	LED lamp holder	electrical insulation, heat resistance, flame retardance	**KE-5620W-U**
	defrosters	heat resistance, cold resistance, electrical insulation	**KE-552B-U/KE-136Y-U/KE-582-U**
	gaskets for refrigerators	cold resistance	**KE-186-U**
	hot airbrushes	heat resistance, weather resistance, color tone	**KE-941-U/KE-951-U**
	microwave oven window gaskets microwave oven turnbelts	heat resistance, low compression set	**KE-552-U/KE-582-U**
Electric power	lead wires of motors and electric appliances heater wires of rice cookers defroster wires of refrigerators ignition wires	electrical insulation, heat resistance, cold resistance, thermal conductivity, extrusion workability, flame retardance, high pressure-resistance	**KE-552B-U***2
	connectors	dielectric strength	**KE-7211-U/X-30-3893-U**
Office equipment	keypads of mobile communications devices, etc.	electrical conductivity (some)*1, electrical insulation, flex fatigue resistance, low temperature-dependence	**KE-951-U/KE-3711-U**
	EMI gaskets	electrical conductivity, flame retardance, thermal conductivity	**KE-3801M-U/KE-3711-U**
Machinery	solar hoses	chlorine water resistance, weather resistance	**KE-7511-U/KE-7611-U**
	hot stamp rollers	heat resistance, low compression set	**KE-765-U/KE-785-U**
	vibration-damping rubbers	low rebound resilience	**KE-5550-U***2**/KE-501EM-U**
Automotive	keypad	click property, fatigue durability	**KE-9511-U/KE-5151-U**
	diaphragms, o-rings	oil resistance, heat resistance, cold resistance, flex fatigue resistance	**FE-251-U/FE-271-U**
		oil resistance, heat resistance, JIS B2401 4-C for clack valves	**KE-871C-U**
	plug boots	oil resistance, heat resistance	**KE-655-U**
	waterproof connectors	heat resistance, oil bleed, oil resistance	**KE-503-U/KE-505-U**
	radiator hoses	heat resistance, cold resistance, low compression set, hot water resistance	**SEP-1731-U**
	turbocharger hoses intercooler hoses	heat resistance, oil resistance, flex fatigue resistance	**KE-552B-U/KE-655-U**
Construction	fire resistant gaskets	flame retardance, sinterability	**KE-1734-U**
Food	pressure cooker gaskets rice cooker and electric kettle gaskets electronic rice cooker gaskets	steam resistance, safety, chlorine water resistance low compression set	**KE-971-U/KE-7611-U** **KE-7511-U/KE-961-U**
	milkers	transparency, tear strength, safety, high strength	**KE-153-U***2
	baby nipples	transparency, safety	**KE-520-U**
	lunch box gaskets	safety, low compression set	**KE-951-U/KE-971-U**
	cake mold, kitchenware	safety, coloring	*2
Leisure	swimming goggles, snorkel mouthpieces, goggle bands	transparency, high strength, high-class, safety, pleasant texture against the skin	**KE-153-U**

*1 Electrically conductive products such as KE-3711-U

*2 For information about these products, please contact one of the Sales Departments listed on the back cover.

Shin-Etsu

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The Development and Manufacture of Shin-Etsu Silicones are based on the following registered international quality and environmental management standards.

Gunma Complex	ISO 9001 (JCQA-0004)	ISO 14001 (JCQA-E-0002)
Naoetsu Plant	ISO 9001 (JCQA-0018)	ISO 14001 (JCQA-E-0064)
Takefu Plant	ISO 9001 (JQA-0479)	ISO 14001 (JQA-EM0298)

https://www.shinetsusilicone-global.com/

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