HRS Co., Ltd.
www.hrssilicone.cn www.hrssilicone.com

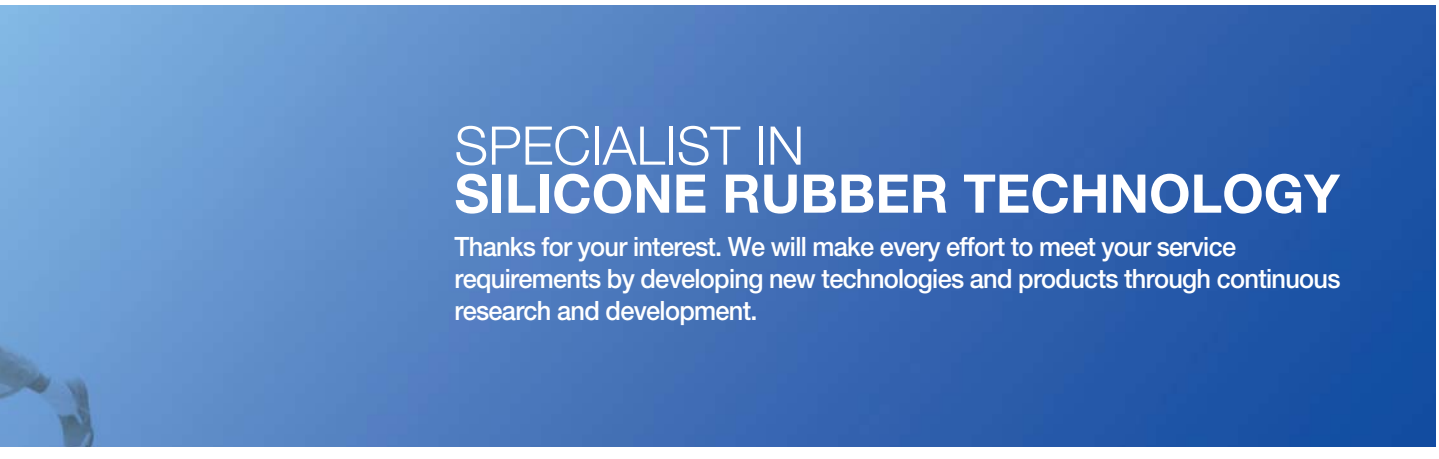
HCR

High Consistency Silicone Rubber

SPECIALIST IN
SILICONE RUBBER TECHNOLOGY

Silicone Technology
HRS

Contents



SPECIALIST IN
SILICONE RUBBER TECHNOLOGY

Thanks for your interest. We will make every effort to meet your service requirements by developing new technologies and products through continuous research and development.

EVERYTHING FOR YOUR LIFE - HRS

HRS Co., Ltd., was established in 1981 and developed silicone rubber compounds for the first time in South Korea. We now provide a variety of silicone rubber products such as Silicone Gum, Vinyl Polymer, HCR, LSR, RTV and silicone rubber molded and extruded articles, Dental Impression Materials.

We have focused on developing customized and environmental friendly silicone rubber products for industries such as electric and electronics, IT, automobile, machinery, medical tools and consumer goods and have customers in over 20 countries worldwide. HRS now offers more than 200 products and services under the company's HRS brand.

HRS Co., Ltd, now makes an effort to further expand the markets to come up to various customers' expectations for the qualified and specialized silicone rubber molded and extruded articles based on 32 years know-how about silicone rubber fabrication and basic technologies.

Our specialty is providing technical solutions to customers' needs not only for the raw materials but silicone rubber molded and extruded products.

SEOUL OFFICE

- **Main Businesses**
  - Trading Team
  - Finance Team
  - HR/IR Team
  - Strategy & Planning Team

PYONGTAEK PLANT

- **Main Businesses**
  - HCR Silicone Rubber
  - LSR Silicone Rubber
  - RTV(F/S) Silicone Rubber
  - Silicone Gum/Polymer
  - DM Dental Impression Materialsi

1978~1985

1978. 05 Established Hae Ryong Trading Company (Importing business of silicone rubber)
1981. 07 Incorporated as Hae Ryong (started developing the manufacturing technology of silicone rubber Compound)
1983. 10 Awarded for New Material development by the minister of the Ministry of commerce and industry
1985. 03 Changed the company name to Hae Ryong Silicone Co., Ltd. Moved to the new factory in Gimpo City
1985. 12 Acquired UL-94V0

1986~1990

1986. 08 Developed the technology for primary synthesis of silicone gum for the first time in the country through a collaborate research with korea Advanced institute of Science and technology (KAIST)
1987. 06 Developed the basic technology for silicone gum compounding
1990. 09 Made a contract with Bayer AG in Germany for technological affiliation and sales in Southeast Asia

1991 ~ 1995

1991. 07 Developed the technology to manufacture the silicone rubber for general purpose silicone rubber for general purpose molding. UL standard certification was acquired for that and the sales in domestic and foreign market of it was started. (for the first time in Korea).
1991. 10 Established sales agencies in Southeast Asia (8 Countries including Taiwan and Malaysia)
1993. 05 Supplied and installed Fire Stop Seal for the 3rd and 4th Yeonggwang nuclear power plant (the first localization in the country)
1993. 11 Developed the technology to manufacture the silicone RTV foam (the project to develop basic industrial technologies implemented in collaboration with National Industrial Technology Center)

ASAN PLANT

- **Main Businesses**
  Rubber Article
  Silicone Sheet (S/S)

CHINA PLANT

- **Main Businesses**
  Rubber Article
  Silicone Sheet (S/S)

1995 ~ 2000

1995. 11 Exported silicone rubber amounting more than U$5,000,000.00 for the first time in the country (received the tower of 5 million dollar export as the prize). Awarded the medal of commendation from the governor of Gyeonggi-do for the merits of export (no.2222)
*The tower of 5 million US dollar export
1995. 12 Acquired the certification for EM mark (silicone RTV foam) - National Industrial Technology Center no. 95-61
1996. 10 Acquired ISO 9001 certification.

2000 ~ 2005

2000. 05 Listed in KOSDAQ
2002. 11 The company acquired the patent for the addition- cure type low hardness silicone rubber with excellent magneto-adherence.
2004. 08 The construction of Pyeongtaek factory was completed (production facility for silicone polymer, HCR and LSR)
2005. 06 The patent for shielding silicone rubber of self-adhesive electromagnetic waves was registerd.

2006 ~

2006. 08 Change of representative directors (collaborative representative directors; Kang,Seong-ja, Ji, Won-Yeong)
2007. 03 Hae Ryong Silicone Company Limited → HRS Company Limited
2007. 07 Form strategic alliance with Dowcorning Corporation for HCR business
2007. 10 Acquisition of co-patent with Comtech Chemicals Ltd for "Manufacture process of low hardness and low viscosity silicone foam "
2007. 11 Acquired ISO-14001
2008. 10 The construction of Asan factory was begun.
2008. 11 Exported silicone rubber amounting more than U$10,000,000.00
* The tower of 10 million US dollar export
2010. 07 Supply Agreement between Hilti and HRS
2011. 05 SUZHOU HAERYONG SILICONE CO., LTD. was established in china
2012. 10 Acquired the patent for Silicon polymer composition for backlight unit buffer spacer material of LCD

SPECIALIST IN
SILICONE RUBBER TECHNOLOGY

Thanks for your interest. We will make every effort to meet your service requirements by developing new technologies and products through continuous research and development.

OVERVIEW OF THE SILICONE RUBBER

Silicone rubber's special features such as "Organosiloxanes Polymer" has been originated from its unique molecular structure that they carry both inorganic and organic properties unlike other organic rubbers. In other words, due to the Si-O bond of Silicone Rubber and its inorganic properties, Silicone Rubber is superior to ordinary organic rubbers in terms of heat resistance, chemical stability, electrical insulating, abrasion resistance, weatherability and ozone resistance etc...

With these unique characteristics, Silicone Rubber has been widely used to replace petrochemical products in various industries like aerospace, munitions industry, automobile, construction, electric and electronics, medical and food processing industry. Recently, these scopes of silicone application have been expanding at a great speed by the demand of industries that want more reliable elastomer.

Main Characteristics of Silicone Rubber:

- Excellent High and Low Temperature Resistance.
- Excellent Electrical Properties.
- Physiological Inertness.
- Excellent Weatherability.
- Oil Resistance.
- Flame Retardant.

GENERAL PROPERTIES

1. High bonding energy

Silicone rubber has siloxane bond (Si-O) of molecular structure as the main chains. While carbon bond, C-C, carries 84.9 Kcal/mol, siloxane bond carries 106.0 Kcal/mol It shows that siloxane bond has greater capacity and stability. As a result, silicone rubber has better heat resistance, electric conductivity and chemical stability than any other ordinary organic rubbers. Siloxane bond's energetic stability is secured due to sharp difference between Si and O in terms of electro-negativity making Si-O to be closest to ionic bond.

Classification	Bonding Energy Kcal/mol (KJ/mol)	
	C	SI
C	84.9 (349)	58-80 (240-340)
Si	58-80 (240-340)	45 (189)
H	98.8 (414)	72.6 (304)
O	83.2 (349)	106.0 (423)

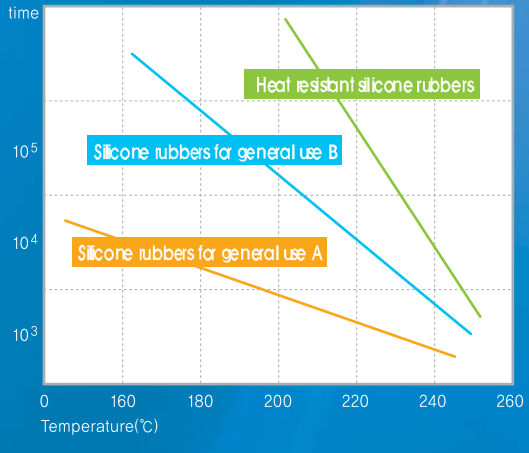
2. Low intermolecular force with spiral structure

With its coil shaped spiral structure and low intermolecular force, silicone (dimethylpolysiloxane) is highly elastic and compressible. Furthermore as methyl groups are located in the outside of coil structure, they are free to rotate on its own. As a result silicone rubber has outstanding water repellency and contact resistance.

Heat Resistance

Heat resistance of silicone rubber is the one of its most excellent properties and provides the basis for its creation. Silicone rubber is far better than organic rubbers in terms of heat resistance. At 150℃, almost no alterations of properties take place that it may be used semi permanently. Furthermore, silicone rubber withstands use for over 10,000 consecutive hours even at 200℃ and, if used for a shorter term, it may also be used at 300℃ as well. Boasting this excellent heat resistance, silicone rubbers are widely used to manufacture rubber components and parts used in high-temperature places.

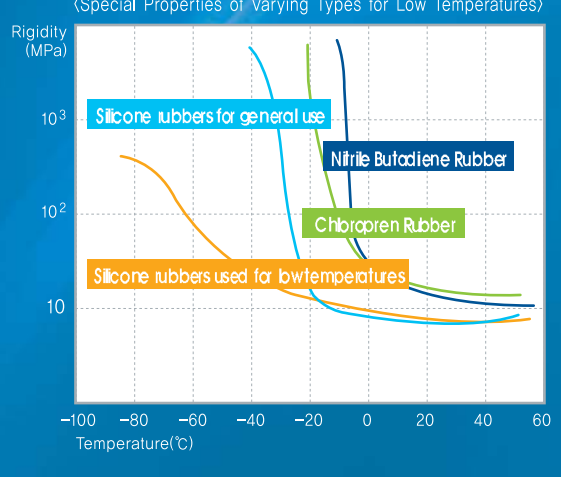
〈Heat Resistant of Silicone Rubbers〉



Cold Resistance

Cold resistance of silicone rubber is the finest among organic rubbers. It provides a critical reason behind the creation of silicone rubbers. Natural and ordinary rubbers demonstrate significant changes in formation depending on temperatures. They become soft at high temperatures and hard at low temperatures so that they may not be able to used any more. While other organic rubbers may only be used up to -20℃ or -30℃, silicone rubber maintains its elasticity between -55℃ and -70 ℃. Some of the products even withstand temperatures as extremely low as under -100℃.

〈Special Properties of Varying Types for Low Temperatures〉



Weatherability

Silicone rubber has superb ozone resistance. Due to corona-discharged ozone, other organic rubbers become soften at a higher speed, but silicone rubber is rarely affected. Furthermore, even long-term exposures to UV rays, winds, or rain silicone rubber's physical properties will not be changed substantially.

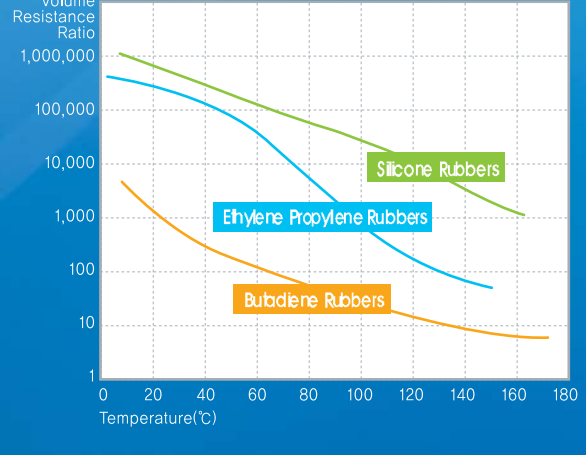
<Result of long-term outdoor expose testing of various rubbers>

Test Condition / Material	Time until surface cracks are first apparent (years)		Time of sunlight exposure until elongation is 1/2 that of the initial value (years)	
Location	Panama	Rock Island	Panama	Rock Island
Nitrile	0.5-1	-	7	10
Chloroprene	-	-	8.5	over 10 years
VMQ	over 10 years	over 10 years	over 10 years	over 10 years to decline to 75%

Electric Properties

Silicone rubber is being used for insulation materials at high temperature with its superior insulation properties. It is particularly known for wide range in temperature and volume resistance between $10^{14}\Omega \cdot cm$ and $10^{16}\Omega \cdot cm$. Silicone rubber experiences lowest change in performance in wet condition and is the best fit for being used as insulation materials. By adding special conductive fillers, conductive silicone may also be manufactured. In particular, silicone rubber is strongly resistant against corona discharge compares to others, while being widely used for insulation purposes in high voltage environments.

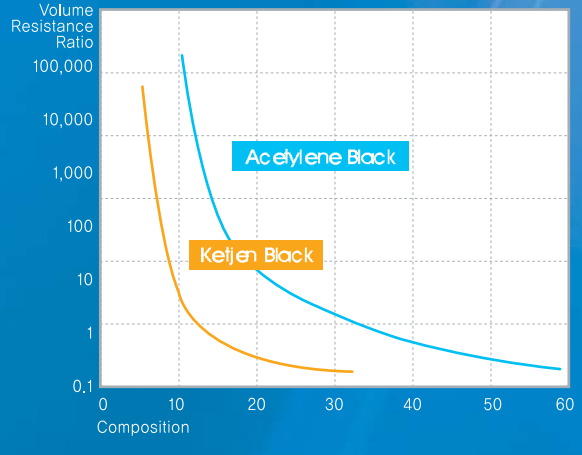
〈Changes in Volume Resistance Ratio Resulting from Variance in Temperature for Various Rubber Types〉



Electric Conductivity

Conductive silicone rubber is a compound comprising conductive materials such as carbon black, silver and copper. Depending on the type of silicone rubber, they range in resistance level from a few Ω · cm to 10^3 Ω · cm. One of the properties is that its electric properties are not much affected by variance in temperatures. No rubber materials are not found yet to match the electric properties of silicone rubber over 200℃. Conductive silicone rubber is also being used for keyboard interfaces, antistatic parts, and shield materials for high voltage cables.

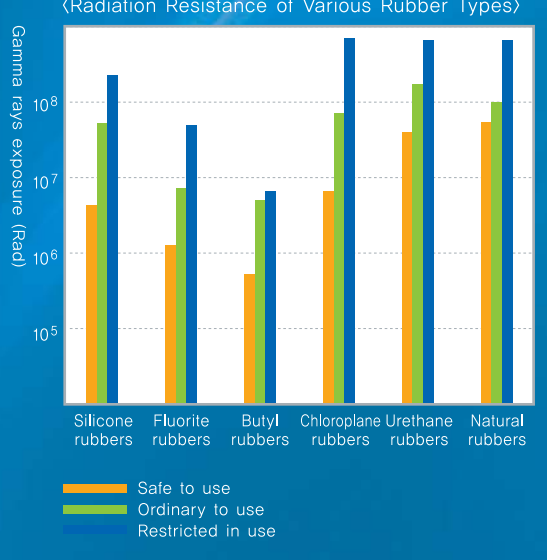
〈Carbon Black Composition and Volume Resistance Ratio〉



Radiation Resistance

Compares to other organic rubbers, ordinary (dimethyl) silicone rubber has no special performance in terms of anti radiation. However, methyl phenyl silicone rubber adopting phenyl group in polymer molecules does have radiation resistance to be used for cables at nuclear power plants and connectors.

〈Radiation Resistance of Various Rubber Types〉



Steam Resistance

Silicone rubber absorbs only 1% of moisture even after experiencing long exposure to water without being affected in mechanical strength or electric properties. Generally, silicone rubber does not deteriorate even after having contact with steam under atmospheric pressure. In high pressure steam over 150°…, siloxane polymer is cut off and rubber properties decline. Such a property may be improved by the composition of silicone rubber, selection of curing agent, and the post curing. Other modified products are also available with improved steam and boiling water resistance.

Flame Retardancy

Silicone rubber does not easily burn when in contact with a flame, but would burn out consistently once ignited. However, by adding a small amount of flame retardant, it may become flame retardant and self-extinguisher. Flame retardant silicone rubbers presently in use would scarcely produce toxic gas during combustion since they do not contain organic halogen compounds discovered in organic polymers.

<Standards on Classifying Combustibility of UL 94>

Classification	Standards
94V-0	Time to burn is less than 10 seconds at most
94V-1	Time to burn is less than 30 seconds at most
94 HB	Failed to burn the average 4 inches during a horizontal combustibility test

Oil Resistance

Silicone rubber is inferior to ordinary organic rubber in oil resistance at room temperature. However, for automobiles or aircrafts that require high temperature resistance, it demonstrates higher performance. Even when in contact with automobile oil, silicone rubber does not inflate significantly by reason of swelling. It swells in non polar organic compounds such as benzene, toluene, and gasoline. But its materials do not disintegrate or dissolve unlike ordinary organic rubbers. If solvent is removed, it would be restored to the original conditions.

<Oil Resistance of General Silicone Rubbers>

Oil Type	Optimized Condition ℃/ Time	Change in Properties			
		Hardness (%)	Tension (%)	Elongation (%)	Change in Volume (%)
ASTM NO. 1	150 / 168	-10	-10	-10	+10
ASTM NO. 2	150 / 168	-25	-20	-20	+40
Ford Brake Fluid	150 / 72	-20	-60	-40	+15
Diesel Fluid	50 / 168	-30	-	-	+105
Gasoline	23 / 168	-20	-	-	+165
Motor oil (SAS #30)	175 / 168	-8	-70	-65	-8

Non toxic

Silicone rubber is physiologically inert, and is thus used for baby nipple and stoppers in medical application. Silicone rubber is also very ideal elastomer for making swimming caps and goggles.

APPLICATIONS BY INDUSTRY

Industry Classifcation	Use	Customize
Office Equipments	Key Board Pad Key Board Electric Contact	Flexibility resistance, Electric Insulation
	Zebra Connector	Electric Conductivity
	Office Equipments and Industrial Use Rolls'	Heat Resistance, Low compression set
Home Appliance Industry	Anti Steam Packing for Pressure Cookers and Rice Cookers	Steam Resistance, Low compression set
	Microwaves' Door Packing	Extrudability, Heat Resistance, Low compression set
	Hair Dryer Brush Pad	Heat Resistance, Weatherability, Various Colors
	ANODE CAP	Anode Cap's Electric Insulation, Flame Retardancy, Heat Resistance
Automobiles	Spark Plug's Boots	Heat Resistance, Insulation, Oil Resistance
	Muffler Holder's	Heat Resistance, Low compression set
	Radiator Hose's	Heat Resistance, Cold Resistance, Anti-freezing, Low compression set, Hot water resistance
	Water Resistant Connector's	Heat Resistance, Oil Resistance, Oil Breed
	Oil Seal, Oil Ring's	Heat Resistance, Oil Resistance, Non-abrasive, Low compression set
Leisure Industry	Goggles, Snorkel, Swiming Cap, Goggle Band, Mouthpiece, Golf Club Grip	Transparency, High Strength, High tear strength, Non Toxicness, Sensitivity
Treatment/ Sanitation	Baby nipple, Baby teeth developer	Non Toxicness, High Transparency
	Drain Hose	Non Toxicness, High elongation
	Ringel Cap	Non Toxicness, High tear strength
	Automatic Vending Machine Hose	Transparency, Non Toxicness, Extrudability, Heat Resistance
	Carry to Go Packing	Non Toxicness, Low compression set
Electric Wire	Refrigerator Defroster Wire, Heat Wire, Neon Wire, Ignition Wire, Home Appliances' Lead Wire	Heat Resistance, Cold Resistance, Weatherability, Electric Insulation, Flame Retardancy, Heat Conductivity, Extrudability
IT	Lamp Holder, Thermal Sheet, Anode Cap	Heat Resistance, Flame Retardancy, Thermal Conductivity
Electrical Power	Suspension Insulator, Line Post Insulator, Surge Arrestor, Connector	Heat Resistance, Flame Retardancy, Electrical Insulation
Others	Mold Cast, Gas Mask	Heat Resistance, High Tear Strength, Physiological Inertness, High Tensile Strength

GENERAL PURPOSE FOR MOLDING SILICONE RUBBER

HR-1901U Series are up grade general-purpose silicone rubber which are used for wide range of applications. There mill workability, mold release ability. There are good mechanical properties

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Grade No. / Properties		Test Methods	HR-1931U(T)	HR-1941U(T)	HR-1951U(T)	HR-1961U(T)	HR-1971U(T)	HR-1975U(T)	HR-1981U(T)	HR-1961U(G)	HR-971U(G)	HR-1981U(G)
Colors		ASTM E 1767	Translucent							Natural gray		
William's plasticity		ADTM D 926	160	180	210	230	240	260	280	230	250	280
Specific gravity		ASTM D 792	1.09	1.13	1.15	1.16	1.20	1.20	1.21	1.24	1.35	1.42
Hardness		ASTM D2240	30	40	50	60	70	75	80	60	70	80
Tensile Strength(MPa)		ASTM D412	6.5	7.5	8.5	8	8	9.5	8.5	7.5	8	8
Elongation (%)		ASTM D412	500	400	300	230	200	210	160	210	150	120
Tear strength (kgf/cm)	"B"	ASTM D624 "B"	8	8	8.5	8.5	8.5	9	8	8	8	8
	"C"	ASTM D624 "C"	16	18	20	20	22	23	18	20	18	16
Rebound resilience (%)		ASTM D 1054	61	66	70	65	62	56	60	54	55	42
Compression set (%)		ASTM D395	16	14	13	15	15	12	14	19	21	26
Linear shrinkage (%)		JIS K 6249	4.2	4.1	3.9	3.8	3.6	3.5	3.7	3.6	3	3

(Compression Set : 177℃×22hrs)

• FEATURES

- Good physical properties.
- Excellent processability in press molding & injection and all other process.
- Price Advantage
- Qualified UL94HB.
- Comply with FDA Reg. 21 CFR, 177.2600
- Good Rebound resilience

• APPLICATIONS

- General Industrial Parts
- Electronic Parts, Keypad, O/A rolls
- Food contact parts, packing
- Automotive parts

GENERAL PURPOSE FOR EXTRUSION SILICONE RUBBER

General Extrusion Silicone Rubber are designed for use in multi purpose application with molding, injection, calendaring, and extrusion of profiles and wires. There are designed to extending fillers and additives. Also, carious hardness levels can be made by mixing each grade.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Grade No. / Properties	Test Methods	BASE-30	BASE-50	BASE-60	BASE-70	BASE-75
Colors	ASTM E 1767	Transparent				
William's plasticity	ADTM D 926	150	210	230	250	260
Specific gravity	ASTM D 792	1.08	1.14	1.16	1.18	1.19
Hardness	ASTM D2240	31	51	60	70	75
Tensile Strength(MPa)	ASTM D412	7.5	9	9.5	10	9
Elongation (%)	ASTM D412	600	350	330	290	240
Tear strength (kgf.cm)	ASTM D624 "B"	10	10	10	11	12.5
Linear shrinkage (%)	JIS K 6249	4.3	4.2	4.1	4.0	3.7
Volume resistivity (ohm.cm)	ASTM D 257	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}
Dielectric strength (kV/mm)	ASTM D 149	25	26	26	27	27

• FEATURES

- Excellent physical properties
- Excellent extrusion processability and good molding
- Easy to blending for intermediate hardness control
- Good heat resistant up to 250℃ ~ 280℃ with the heat additives HT-100 or HT-300

• APPLICATIONS

- All molded articles gaskets, packing, O-ring, profiles and general high temp wires
- Food contact packing
- Electrical article (Wire & cable)

LOW HARDNESS SILICONE RUBBER

There Grade have a low hardness. (Shore A 5 ~ 20)in the cure State. There can be used in Silicone rubber products such as sporting goods and medical articles that require a soft feel.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Methods	SW-5	SW-8	SW-20
Colors	ASTM E 1767	Translucent		
William's plasticity	ADTM D 926	90	90	120
Specific gravity	ASTM D 792	1.01	1.01	1.06
Hardness	ASTM D2240	8	10	20
Tensile Strength(MPa)	ASTM D412	2.5	4	5.5
Elongation (%)	ASTM D412	1100	1000	950
Tear strength(kgf/cm)	ASTM D624 "B"	4	4	12
	ASTM D624 "C"	7	10	25
Compression set (%)	ASTM D395	47	22	18
Linear shrinkage (%)	JIS K 6249	4.4	4.2	4.3

(Compression Set : 177℃×22hrs)

• FEATURES

- Low Hardness and high Elongation Property
- Excellent process ability in molding & Injection
- Complies with FDA and BfR recommendations for articles in contact with food

• APPLICATIONS

- Swimming Cap, Goggle bands
- Baby Care
- High elastic article (Strip, Tape)

SUPER HIGH HARDNESS SILICONE RUBBER

There are Special grade of silicone rubber that is specially designed as super shore A hardness 90 ±3 with transparent color.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Grade No. / Properties	Test Methods	HR-1991U(T)	HR-2290U (T)
Colors	ASTM E 1767	Translucent	
William's plasticity	ADTM D 926	300	450
Specific gravity	ASTM D 792	1.24	1.25
Hardness	ASTM D2240	90	9
Tensile Strength (MPa)	ASTM D412	8.5	9.5
Elongation (%)	ASTM D412	150	100
Tear strength (kgf/cm)	ASTM D624 "B"	12	13
	ASTM D624 "C"	30	35
Rebound resilience (%)	ASTM D 1054	50	50
Compression set (%)	ASTM D395	12	16
Linear shrinkage (%)	JIS K 6249	3.6	3.8

(Compression Set : 177℃×22hrs)

• FEATURES

- High Hardness 90 shore A
- Transparent
- High Williams plasticity and high green strength
- Good mechanical properties
- Comply with FDA Reg. 21 CFR 177. 2600. for food contact applications

• APPLICATIONS

- Keytop of keypad
- O-ring, Gasket, Seals
- Food Contact article (Kitchenware, bottles)

HIGH TEAR STRENGTH SILICONE RUBBER

There are grades specially designed for high tear strength property with various curing agents such as 2,4-DCLBP, 2,5-DHBP. There are used for applications such as parts with complicated shapes, large molded parts, etc.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Methods	HR-2500/40	HR-2500/50	HR-2500/60	HR-2500/70
Colors	ASTM E 1767	Transparent			
William's plasticity	ADTM D 926	180	200	240	270
Specific gravity	ASTM D 792	1.11	1.13	1.16	1.17
Hardness	ASTM D 2240	40	51	61	71
Tensile Strength (MPa)	ASTM D 412	9.0	10.0	11.0	10.0
Elongation (%)	ASTM D 412	700	550	520	450
Tear strength (kgf/cm)	ASTM D 624 "B"	32	33	39	35
	ASTM D 624 "C"	36	40	42	46
Rebound (%)	JIS K 6255	55	54	49	45
Volume Resistivity(Ω·cm)	ASTM D 257	10^{16}	10^{16}	10^{16}	10^{16}
Dielectric Strength (Kv/mm)	ASTM D 149	25	26	24	26
Food Contact **	FDA	Yes	Yes	Yes	Yes

• FEATURES

- High Tear Strength & High Tensile Strength
- Comply with Reg. 21 CFR 177.2600
- Excellent Extrusion Processability & Molding Processability
- Good Temperature Resistant (220℃)
- High Transparent

• APPLICATIONS

- High Property Articles
- Medical Rubber Articles (Tubing, Hose)
- Food Contacted Articles
- Sheet, Gasket
- Aircraft Articles
- Automotive article (Muffler hanger)

LOW COMPRESSION SET SILICONE RUBBER

This is specially designed for excellent compression Sets with post cure

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	LCS 40
Colors	ASTM E 1716	Transparent
William's plasticity	ASTM D 926	140
Specific gravity	ASTM D 792	1.10
Plasticity	ASTM D 926	140
Hardness	ASTM D 2240	40
Tensile Strength(MPa)	ASTM D 412	5
Elongation(%)	ASTM D 412	280
Tear Strength(kgf/cm)	ASTM D624 "B"	10.6
Rebound Resilience(%)	JiS K 6255	78
Compression Sett(%)*1	ASTM D 395	5
Linear Shrinkage(%)	JiS K 6249	4
Volume Resistivity(ohn.com)	ASTM D 257	10^{15}
Dielectric Strength(KV/mm)	ASTM D 149	26

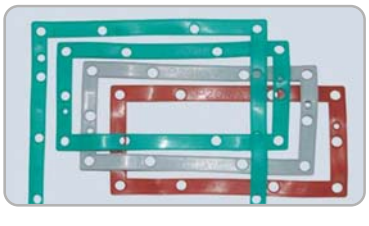
(Compression Set : 177℃ ×22hrs)

• FEATURES

- Low Compression Set
- Excellent Extrusion Processability & Molding Processability

• APPLICATIONS

- O/A Roll
- Packing
- Gasket
- Sheet
- O-Ring
- Seal



STEAM RESISTANCE SILICONE RUBBER

HR-3700 series are very special grade which are specially designed & modified for high steam resistant for use direct steam & boiling water contacted applications such as rice jar packing, electric pot packing etc.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-3700/50U	HR-3700/60U	HR-3700/70U
Colors	ASTM E 1716	Transparent		
William's plasticity	ASTM D 926	210	230	250
Specific gravity	ASTM D 792	1.13	1.15	1.18
Hardness	ASTM D 2240	50	60	70
Tensile Strength (MPa)	ASTM D 412	10.0	10.0	10.0
Elongation (%)	ASTM D 412	400	350	300
Tear Strength (kgf/cm)	ASTM D 624 "B"	15	14	15
	ASTM D 624 "C"	29	32	30
Rebound (%)	JIS K 6255	65	65	60
Compression Set (%)	ASTM D 395	12	10	10
Linear Shrinkgage (%)	JIS K 6249	4.0	4.0	3.9
PROPERTIES CHANGE AFTER STEAM AGING				
110℃Steam 30 Days	Hardness (Points)	-2	-2	-2
	Tensile Strength (%)	-11	-10	-8
	Elongation (%)	-15	-12	-10
150℃Steam 30 Days	Hardness (Points)	+1	+1	+1
	Tensile Strength (%)	-47	-46	-47
	Elongation (%)	-47	-47	-48
PROPERTIES CHANGE AFTER BOILING WATER AGING				
100 ±1 ℃Steam 96hrs.	Hardness (Points)	+1	+1	0
	Tensile Strength (%)	-2	-2	0
	Elongation (%)	-3	0	-2

(Compression Set : 177℃ ×22hrs)

• FEATURES

- Excellent Heat & steam resistant Properties
- Excellent rebound & compression set
- Excellent possibility

• APPLICATIONS

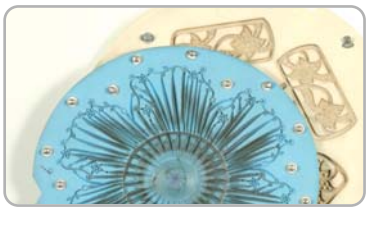
- Rice Steam Cooker Packing
- Electric pot, teapot, packing, valves, O-ring
- Steam Line Packing

METAL CASTING SILICONE RUBBER

There are specially designed silicone rubber for low temperature melting alloy metal casting and plastic polymer casting.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	MC-50	MC-60	MC-70
Colors	ASTM E 1716	Translucent		
Specific gravity	ASTM D 792	1.15	1.17	1.19
Hardness	ASTM D 2240	50	60	70
Tensile Strength (MPa)	ASTM D 412	100	100	90
Elongation (%)	ASTM D 412	550	400	250
Tear strength (kgf/cm)	ASTM D 624 "B"	38	38	40
	ASTM D 624 "C"	37	37	38



• FEATURES

- High Mechanical Property
- High Heat Resistant
- Low Shrinkage
- High Elongation
- Produced comply with FDA Reg. 21CFR, 177.2600

• APPLICATIONS

- Alloy Casting
- Art Accessory Casting
- Ring Casting
- Other Casting

ELECTRIC CONDUCTIVE SILICONE RUBBER

There are specially designed electro conductive silicone rubber for use in special applications as below.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-1526U	HR-1527U	HR-1528U
Colors	ASTM E 1767	BLACK		
William's plasticity	ADTM D 926	500	600	750
Specific gravity	ASTM D 792	1.16	1.2	1.21
Hardness	ASTM D2240	60	70	78
Tensile Strength (MPa)	ASTM D412	6	6.5	6.5
Elongation (%)	ASTM D412	250	200	150
Tear strength (kgf/cm)	ASTM D624 "B"	10	10	11
	ASTM D624 "C"	18	18	18
Linear shrinkage (%)	JIS K 6249	4.3	4.2	4
Volume resistance (ohm · cm)	ASTM D 257	10	5	4

• FEATURES

- Electro conductivity (3-10omh.cm Volume Resistance)
- Very good elasticity
- Good heat resistant
- Good physical properties

• APPLICATIONS

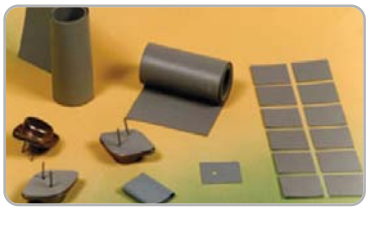
- Electro conductive parts
- Keypad contractors
- LCD Zebra
- EMI gasket
- Cable connectors
- Heaters

THERMAL CONDUCTIVE SILICONE RUBBER

There are designed for high thermal conductivity and high electrical insulation properties.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Grade No. / Properties	Test Method	HR-770/60	HR-770/70	HR-770/80
Colors	ASTM E 1767	Dark Gray		
William's plasticity	ADTM D 926	260	280	300
Specific gravity	ASTM D 792	2.00	2.05	2.10
Hardness	ASTM D 2240	60	70	80
Tensile Strength (MPa)	ASTM D 412	3	3.5	4
Elongation (%)	ASTM D 412	400	300	100
Tear strength (kgf/cm)	ASTM D 624 "B"	10	10	10
	ASTM D 624 "C"	10	10	10
Linear shrinkage (%)	JIS K 6249	3	2.7	2.6
Volume Resistance (ohm·cm)	ASTM D 257	10^{15}	10^{15}	10^{15}
Dielectric Strength (Kv/mm)	ASTM D 149	20	19	19
Thermal Conductivity (W/mk)	ASTM E 1530	0.7	0.8	0.9
Flame Retardancy	UL-94	V-1	V-0	V-0



• FEATURES

- High thermal conductivity
- High electrical insulation properties
- High heat resistant
- Low volatility content
- Flame retardant (UL94V-0, V-1 Level)

• APPLICATIONS

- Heat transfer pads, Sheets, Packings
- CPU, Transformer, Transistor pads for heat transfer
- All kind of heat transfer parts

FLAME RETARDANT SILICONE RUBBER

There are specially designed for excellent flame retardant property and heat stability to be complied UL94V-0 on thickness.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Methods	HR-5020U		HR-7020U	
		(W)	(B)	(W)	(B)
Colors	ASTM E 1767	White	Black	White	Black
William's plasticity	ASTM D 925	200	200	250	250
Specific gravity	ASTM D 792	1.43	1.43	1.47	1.47
Hardness	ASTM D 2240	55	55	70	70
Tensile Strength (MPa)	ASTM D 412	7.5	7.5	7.0	7.0
Elongation (%)	ASTM D 412	320	320	200	200
Tear strength (kgf/cm)	ASTM D 624 "B"	12	12	15	15
Linear shrinkage	JIS K 6249	3.2	3.2	2.5	2.5
Volume Resistivity(Ω.cm)	ASTM D 257	$2x10^{15}$	$2x10^{15}$	$2x10^{15}$	$2x10^{15}$
Dielectric Strength(KV/mm)	ASTM D 149	25	25	25	25
Flame Retardancy	UL-94	V-0	V-0	V-0	V-0

• FEATURES

- Flame Retardant UL94V-0, (UL E-98818)
- Halogen Free
- Good Heat Stability (-50℃ ~ +250℃)
- Good Electrical Property & Excellent process ability in molding & Extruding

• APPLICATIONS

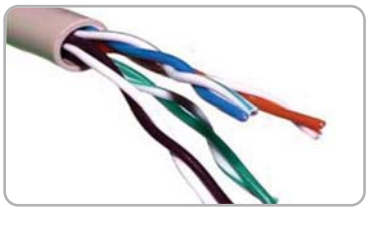
- Flame Retardant Rubber Parts
- Construction article (Fire- Proof gasket)
- PDP,TFT-LCD Lamp holder
- Special Wires

WIRE & CABLE SILICONE RUBBER

There are specially designed for wire & cable insulation to be complied UL AWG wires and various lead wires.

Catalyst: HC-2/1.5phr (116℃ ×10min)

Typical Properties	Test Method	HR-1660U	HR-1670U
Colors	ASTM E 1767	White	
William's plasticity	ADTM D 926	240	250
Specific gravity	ASTM D 926	1.4	1.45
Hardness	ASTM D 792	63	70
Tensile Strength (MPa)	ASTM D 2240	8	8
Elongation (%)	ASTM D 412	220	180
Tear strength (kgf/cm)	ASTM D 412	20	20
	ASTM D 624 "B"	23	23
Volume resistivity (ohm·cm)	ASTM D 624 "C"	1×10^{15}	1×10^{15}
Dielectric strength (kv/mm)	ASTM D 149	22	22
PROPERTIES CHANGE AFTER HEAT AGING TEST(ASTM D 573)			
250ºC × 72hrs	Hardness change	2	2
	Tensile Strength change (%)	-12	-13
	Elongation change (%)	-20	-20



• FEATURES

- Excellent temperature stability
- Excellent Process ability in extrusion
- Good Mechanical and electrical properties

• APPLICATIONS

- Appliance wire (Braided or Non-Braided)
- Fixture wire (Braided or Non-Braided)
- Motor lead wires (Braided or Non-Braided)
- Heater lead wires (Braided or Non-Braided)
- Power control and instrument cables
- Automotive wires (Braided)

HIGH VOLTAGE INSULATOR SILICONE RUBBER

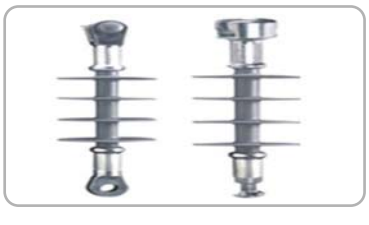
There are specially designed silicone rubber compounds for high voltage insulator application, which require excellent performance in contaminated environments.

Catalyst: HC-8/1.8phr (171℃ ×10min)

Grade No.		HVI-65	HVI-70
Application		Insulator Surge Arrestors	
Colors	ASTM E 1767	Gray	
Specific gravity	ASTM D 792	1.52	1.54
Hardness	ASTM D 2240	65	70
Tensile Strength (MPa)	ASTM D 412	50	50
Elongation (%)	ASTM D 412	250	230
Tear Strength (kgf/cm)	ASTM D 624 "B"	15	13
Rebound (%)	JIS K 6255	50	49
Compression Set (%)	ASTM D 395	24	24
Linear Shrinkage (%)	JIS K 6249	2.9	2.85
Flame Retardant	IEC 60695	V-0	V-0

(Compression Set : 177℃ ×22hrs)

Electrical Properties		HVI-65	HVI-70
Volume resistivity (ohm·cm)	ASTM 257	2.5×10^{15}	2.5×10^{15}
Dielectric strength (kv/mm)	ASTM 149	23	23
Dielectric Constant (1KHz)	ASTM 150	4.0	4.0
Dissipation Factor (1KHz)	ASTM 150	0.03	0.03
Tracking Resistant (KV)	IEC 60587	4.5	4.5
Arc Resistant (Second)	ASTM D 495	>200	>200



• FEATURES

- Excellent Tracking and Erosion Resistance
- Excellent Dielectric Strength
- Superior Water Repellency (Hydrophobicity)
- Excellent Weathering and Air Pollution
- Low Leakage Current
- Excellent Injection Molding Processibility

• APPLICATIONS

- Suspension Insulation
- Line Post Insulator
- Surge Arrestor
- Cable Terminator and Connectors

• INSTRUCTION OF USE

- This Production is supplied with catalyst (Ready to use) but without color. The suitable curing temperature is 160℃ ~ 180℃ compression molding and injection molding process.

• HANDING AND SAFETY

- See MSDS

• SPECIFICATION

- All our technical information data should not be used as a specification.

• STORAGE AND WARRANTY

- The warranty period is 6months from date of shipment.
- Must be stored cool/dark place

OIL BLEED SILICONE RUBBER

There are special silicone rubbers for self-sealing grommets and connectors of automobile industries.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Properties / Grade No.		Test Methods	SL-30U	SL-40U	SL-50U	SL-60U
Colors		ASTM E 1767	Natural White			
William's plasticity		ADTM D 926	150	165	200	210
Specific gravity		ASTM D 792	1.1	1.13	1.16	1.17
Hardness		ASTM D2240	30	40	50	60
Tensile Strength (MPa)		ASTM D412	7	7.5	8.5	8.5
Elongation (%)		ASTM D412	500	400	300	260
Tear strength (kgf/cm)		ASTM D624 "B"	10	10	10	11
		ASTM D624 "C"	18	21	27	25
Linear shrinkage (%)		JIS K 6249	4.3	3.9	3.5	3.3
Compression set (%)		ASTM D395	10	6	5	6
PROPERTIES CHANGE AFTER HEAT AGING TEST (ASTM D 573)						
225℃ x 96hrs	Hardness change		-11	-3	2	2
	Tensile Strength change (%)		-45	-22	-16	-15
	Elongation change (%)		-20	-26	-7	-10
PROPERTIES CHANGE AFTER HEAT AGING TEST (ASTM D 573) ASTM #1.OIL						
150℃ x 70hrs	Hardness change		-11	-11	-12	-12
	Tensile Strength change (%)		-38	-28	-20	-22
	Elongation change (%)		-11	-10	-14	-12
	Volume change (%)		29	25	21	20

• FEATURES

- Good Heat and oil Resistance properties
- Excellent process ability in injection & molding
- Good Mechanical properties

• APPLICATIONS

- Automotive article (Wire harness connectors, grommets, single wire gasket, flat gaskets)
- Industrial O-Ring, Oil Seal

HIGH TRANSPARENT SILICONE RUBBER

There are highly transparent and mechanically strong Silicone rubbers. There are various processing method (extruding, molding)

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Methods	HR-2130	HR-2140	HR-2150	HR-2160	HR-2170
Colors	ASTM E 1767	Transparent				
William's plasticity	ADTM D 926	170	190	210	220	240
Specific gravity	ASTM D 792	1.09	1.10	1.14	1.16	1.18
Hardness	ASTM D2240	30	40	50	60	70
Tensile Strength (MPa)	ASTM D412	8.5	10	11	11	11
Elongation (%)	ASTM D412	700	650	550	500	350
Tear strength(kgf/cm)	ASTM D624 "B"	20	25	25	20	15
	ASTM D624 "C"	34	37	40	42	40
Linear shrinkage (%)	JIS K 6249	4.3	4.2	4	4	3.8

• FEATURES

- High super transparency
- High tear strength
- Hardness from 30 ~ 70
- All ingredients selected comply with FDA Reg. 21 CFR, 177.2600

• APPLICATIONS

- Baby Nipples
- Medical tubing
- Food contact articles
- High tear strength articles

HIGH HEAT RESISTANCE SILICONE RUBBER

There are specially designed for use in high temperature application in range of 250℃~315℃ in limited period.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties		HR-520U	HR-620U	HR-720U	HR-820
Colors	ASTM E 1716	Natural			Beige
William's plasticity	ASTM D 926	220	230	290	300
Specific gravity	ASTM D 792	1.13	1.16	1.18	1.34
Hardness	ASTM D 2240	52	60	72	80
Tensile Strength (MPa)	ASTM D412	10.0	10.0	10.0	8.5
Elongation (%)	ASTM D 412	400	250	250	100
Tear strength (kgf/cm	ASTM D 624 "B"	15	13	10	10
	ASTM D 624 "C"	29	25	30	24
Rebound resilience	JIS K 6255	55	55	50	50
Compression set (%)	ASTM D 395	30	22	29	28
Linear shrinkage (%)	JIS K 6249	4.0	3.9	3.8	2.8
Volume resistively (ohm·cm)	ASTM D 257	10^{15}	10^{15}	10^{15}	10^{15}
Dielectric strength (Kv/mm)	ASTM D 149	22	22	22	22

PROPERTIES CHANGE AFTER HEAT AGING TEST (ASTM D 573)									
Color		Beige	Red	Beige	Red	Beige	Red	Beige	Red
250℃X72hrs	Hardness (Points)	-2	+4	-2	+2	-3	-3	-3	-3
	Tensile Strength (%)	-28	-26	-28	-26	-26	-26	-25	-25
	Elongation (%)	-30	-30	-30	-30	-28	-28	-26	-26
300℃X24hrs	Hardness (Points)	+3	+2	+3	+3	+4	+4	+4	+4
	Tensile Strength (%)	-35	-32	-35	-34	-34	-34	-33	-33
	Elongation (%)	-36	-34	-36	-34	-32	-32	-30	-30

• FEATURES

- Specially designed for high temperature resistant in range of 250℃~315℃
- Excellent all properties
- Excellent for compression molding and extrusion

• APPLICATIONS

- Electric Dry-oven Gaskets
- Electronic Micro-oven Gaskets
- Autoclave Packing
- Glass tube handling of Pads

ADDITION CURE SILICONE RUBBER

There are specially designed for Addition cure AD-1100 series complies with BfR & FDA Food contact article

Catalyst: HC-25A/1.0phr (140℃ ×10min/200℃ ×4hrs)

Grade	Test Method	AD-1150	AD-1160	AD-1170
Colors	ASTM E 1767	Transparent		
William's plasticity	ASTM D 926	200	220	250
Specific gravity	ASTM D 792	1.12	1.16	1.20
Hardness	ASTM D 2240	50	60	70
Tensile Strength (MPa)	ASTM D 412	11.5	10	10.5
Elongation (%)	ASTM D 412	670	550	420
Tear Strength (kgf/cm)	ASTM D 624 "B"	26	24	21
Rebound Resilience (%)	JIS K 6255	55	49	45
Compression Set (%)	ASTM D 395	26	24	22
Linear shrinkage (%)	JIS K 6249	2.8	2.7	2.4
Volume Resistively (ohm.cm)	ASTM D 257	1.5×10^{15}	2.1×10^{15}	1.6×10^{15}
Dielectric strength (KV/mm)	ASTM D 149	26	27	28

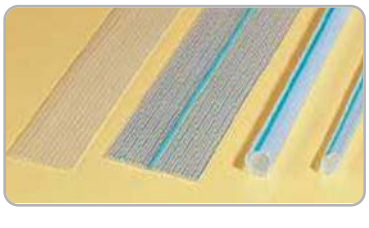
(Compression Set : 177℃ ×22hrs)

• FEATURES

- Excellent process ability in extrusion & mold
- Excellent Mechanical Properties & good Transparency
- Non Yellowshi
- Complies with FDA BfR recommendation for articles in contact with food

• APPLICATIONS

- Food Contact article (Hoses, Tubing, Packing)
- Healthcare, Medical Devices (Seal, Tubings)



ADDITION CURE SILICONE RUBBER (GRNERAL PURPOSE)

There are specially designed for Addition cure AD-3900 series complies with BfR & FDA Food contact article

Catalyst: HC-25A/1.0phr (140℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	AD-3950	AD-3960	AD-3970	AD-3980
Colors	ASTM E 1767	Translucent			
William's plasticity	ASTM 926	200	225	250	280
Specific gravity	ASTM D 792	1.15	1.16	1.18	1.23
Hardness	ASTM D2240	50	62	72	80
Tensile Strength(MPa)	ASTM D412	95	95	90	80
Elongation(%)	ASTM D412	470	420	280	250
Tear strength(kgf/cm)	ASTM D624 "B"	15	15	20	15
	ASTM D624 "C"	32.5	33	35	30
Rebound Resilience(%)	JIS K 6255	65	52	52	50
Compression Set(%)*1	ASTM D 395	24	26	25	30
Linear shrinkage(%)	JIS K 6249	2.9	2.7	2.6	2.4
Volume Resistively(ohn.com)	ASTM D 257	2.1×10^{14}	3.4×10^{14}	4.2×10^{14}	4.5×10^{14}
Dielectric strength(KV/mm)	ASTM D 149	26	25	24	25

(Compression Set : 177℃ ×22hrs)

• FEATURES

- Excellent process ability in mold
- Excellent Mechanical Properties & good Transparency
- Non Yellowshi
- Complies with FDA BfR recommendation for articles in contact with food

• APPLICATIONS

- Food Contact article (Hoses, Tubing, Packing)

CLOSED CELL SPONGE SILICONE RUBBER

There are specially designed compounds for making closed cell sponge articles.
The SPG compounds are very suitable for continue extruded profiles producing by hot air and hot liquid system.

Typical Properties	SPG-30	SPG-50	SPG-60	SPG-70
Blowing Ratio (%) approx.	200	200	200	200
Density	0.35	0.45	0.50	0.55

• FEATURES

- Excellent high & low temperature resistant (-50℃ ~ +230℃)
- Very low compression set at high & low temperature excellent weather resistant

• APPLICATIONS

- Dry oven gaskets, Seals
- Building glazing gasket, seals
- Building movement gap absorbing gasket
- Food container gasket, packing
- Hot liquid pipe line insulation
- O/A Rolls
- Many suitable application

• FABRICATION TECHNIQUE

- Soften & Catalyst Mixing
- SPG Compounds must be pre-softening in the 2-roll mill for 3-5 min. and add suitable catalyst HC-2, 1.5~2.5phr depend on density and curing condition.
- The catalyst must be well dispersed with SPG compounds. And pigment can be added in these stages together with HC-2.
- The mixing temperature must be keep within 50℃ in any cases.
- Extrusion, Foaming, Curing
- Cold extruder is required (less 50℃)
- HAV Tunnel : 1st zone : 150~180℃/ 2nd Zone : 180~200℃/ 3rd Zone : 200~250℃
- Post Cure : 180~200℃/4hrs

• DIFFICULTIES

- There are many difficult factors on the fabrication specially dimension control and profile shape, hardness control, density control. Etc...
- All the technical and right products can be made only by longer experience.

HIGH PERFORMANCE EXTRUSION MOLDING SILICONE RUBBER

There are specially designed as high performance base to be used for wide range of applications with Extrusion, Press molding, Injection molding.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	Base-300	Base-500	Base-700
Colors	ASTM E 1767	Transparent		
William's plasticiyt	ASTM D 926	160	200	250
Hardness	ASTM D 792	1.08	1.14	1.18
Hardness	ASTM D 2240	35	53	70
Tensile Strength (MPa)	ASTM D 412	9.0	11.0	11.0
Elongation (%)	ASTM D 412	600	550	400
Tear strength (kgf/cm)	ASTM D 624 "B"	16	22	24
Rebound (%)	JIS K 6255	65	50	50
Compression set	ASTM D 395	45	40	31
Volume Resistivity(ΩXcm)	ASTM D 257	2×10^{15}	4×10^{15}	4×10^{15}
Dielectric Strength(Kv/mm)	ASTM D 149	25	26	26
Food Contact **	FDA	Yes	Yes	Yes

• FEATURES

- Good Temperature resistant
- Medium-High Mechanical properties
- Excellent Extrusion Processability
- Good Molding Processability
- Good Electrical Properties
- Easy Blendable of each Hardness
- More Silica Extendable
- Comply with FDA Food Reg. 21CFR, 177.2600 21CFR 177.2600

• APPLICATIONS

- Automotive Parts
- Electrical Parts
- Food Contacted articles
- Tubings, Hoses
- Profiles Packings
- Sheets
- All Molded & Extruded Products

SPACER PANEL SILICONE RUBBER

This is specially designed Thin thickness Sheet and high elastic silicone rubber for specific applications.

Catalyst: HC-2/1.5phr (116℃ ×10min)

Typical Properties	Test Method	HR-SPR
Colors	ASTM E 1716	Translucent
William's plasticity	ADTM D 926	190
Specific gravity	ASTM D 792	1.13
Hardness	ASTM D 2240	42
Tensile Strength (MPa)	ASTM D 412	8
Elongation (%)	ASTM D 412	400
Tear strength (kgf/cm)	ASTM D624 "B"	8
	ASTM D624 "C"	10
Rebound Resilience (%)	ASTM D 395	60
Compression set (%)*1	JIS K 6255	25

(Compression Set : 177℃ ×22hrs)

• FEATURES

- Good physical property
- Excellent processability in press molding & injection and all other process
- Qualified UL94HB
- Comply with FDA Reg. 21 CFR, 177.2600

• APPLICATIONS

- General Industrial Parts
- Electronic Parts, Keypad, O/A rolls
- Food contact parts, packing
- Automotive parts

HIGH VOLTAGE CABLE SILICONE RUBBER

This is a specially designed silicone rubber for high dielectrics break down voltage and excellent other electrical properties, which are, required special silicone rubber cables.

Catalyst: HC-2/1.5phr (116℃ ×10min/200 ℃ ×4hrs)

Typical Properties	Text Method	HR-700UHV
Colors	ASTM E 1717	BEIGE WHITE
William's plasticity	ADTM D 926	250
Specific gravity	ASTM D 792	1.2
Hardness	ASTM D 2240	70
Tensile Strength (MPa)	ASTM D 412	11
Elongation (%)	ASTM D 412	300
Tear strength (kgf/cm)	ASTM D 624 "B"	14
	ASTM D 624 "C"	40
Volume resistivity (ohm·cm)	ASTM D 257	$1x10^{16}$
Dielectric strength (Kv/mm)	ASTM D 149	32
PROPERTIES CHANGE AFTER HEAT AGING TEST (ASTM D 573)		
220 ℃ × 96hrs	Hardness change	+2 ~ 3
	Tensile Strength change (%)	-3 ~10
	Elongation change (%)	-10 ~13
250 ℃ × 72hrs	Hardness change (Points)	+3 ~ 6
	Tensile Strength change (%)	-10 ~ 18
	Elongation change (%)	-15 ~ 22

• FEATURES

- Excellent heat aging properties
- Excellent dielectric strength
- Excellent mechanical properties
- Excellent extrusion workability

• APPLICATIONS

- High voltage FBT cable of electric microwave oven
- High voltage C/TV cable/wires
- High voltage aircraft cable
- High voltage ignition cable of automobile
- High voltage parts, bushing, insulation tubes

OIL RESISTANT SILICONE RUBBER

There are specially designed silicone rubber for the better oil resistance Specially to the ASTM #1 oil than other general silicone rubber grades.

Catalyst: HC-8/1.8phr (171℃ ×10min/200 ℃ ×4hrs)

Typical Properties	Test Method	HR-431	HR-531	HR-731
Colors	ASTM E 1767	Natural		
William's plasticity	ADTM D 926	250	270	300
Specific gravity	ASTM D 792	1.23	1.32	1.4
Hardness	ASTM D2240	60	71	81
Tensile Strength (MPa)	ASTM D412	6.5	7.5	7.0
Elongation (%)	ASTM D412	250	200	150
Tear strength (kgf/cm)	ASTM D624 "B"	15	15	15
	ASTM D624 "B"	28	24	23
Compression Set (%)	ASTM D395	28	30	33
PROPERTIES CHANGE AFTER OIL IMMERSION TEST (ASTM D 471) ASTM #1.OIL				
150 ℃ × 72hrs	Hardness Change (point)	-3	-2	-2
	Tensile Strength (%)	-10	-9	-10
	Elongation (%)	-12	-10	-10
	Volume (%)	10	8	9

(Compression Set : 177 ℃×22hrs)

• FEATURES

- Specially designed for Oil Resistance
- Excellent all properties
- Excellent for compression molding and extrusion

• APPLICATIONS

- O-Ring, Automotive Rubber Parts, Seals.

NO POST CURE SILICONE RUBBER

There are specially designed general-purpose silicone rubber, which reach optimum balance of properties without post cure.

Catalyst: HC-8/1.8phr (171℃ ×10min/No Post Cure)

Typical Properties	Test Method	HR-NPC-140	HR-NPC-180
Colors	ASTM E 1716	Transparent	Beige
William's plasticity	ADTM D 926	190	300
Specific gravity	ASTM D 792	1.11	1.43
Hardness	ASTM D 2240	42	80
Tensile Strength (MPa)	ASTM D 412	8.5	8.5
Elongation (%)	ASTM D 412	400	150
Tear strength (kgf/cm)	ASTM D 624 "B"	10	11
	ASTM D 624 "C"	25	22
Rebound resilience (%)	JIS K 6255	65	45
Compression set (%)*1	ASTM D 395	20	15
Linear shrinkage (%)	JIS K 6249	4	3.2

(Compression Set : 177℃ ×22hrs)

• FEATURES

- Excellent elastic properties.
- Post curing is not required in case of industrial use (cost saving / short lead time)
- Can be blended for intermediate hardness between 40 and 80 hardness.

• APPLICATIONS

- All industrial rubber articles (molded, extruded)
- Industrial rolls.
- Seal packing, Gaskets, Sheets.

HIGH TRANSPARENT, HIGH TEAR STRENGTH SILICONE RUBBER

There are specially designed for use in high transparent and high mechanical strength applications in food and medical industries.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Methods	HR-1130	HR-1140	HR-1150	HR-1160	HR-1170
Colors	ASTM E 1767	Transparent				
William's plasticity	ADTM D 926	160	195	210	230	260
Specific gravity	ASTM D 792	1.08	1.10	1.12	1.16	1.19
Hardness	ASTM D2240	30	41	52	60	70
Tensile Strength(MPa)	ASTM D412	9.0	9.0	9.5	10.0	10.0
Elongation (%)	ASTM D412	700	600	450	400	300
Tear strength(kgf/cm)	ASTM D624 "B"	10	20	12	14	14
	ASTM D624 "C"	25	36	38	38	37
Linear shrinkage (%)	JIS K 6249	4.3	4	3.9	3.6	4

• FEATURES

- High transparency.
- High tear, tensile strength
- Comply with FDA Reg. 21 CFR, 177.2600
- Excellent for extrusion, molding, injection.

• APPLICATIONS

- Baby Nipples (HR-1140)
- Goggles (HR-1150, 1160, 1170)
- Medical products
- Food contact products
- High mechanical products

LOW HARDNESS & HIGH ELASTIC SILICONE RUBBER

HR-1921U(T) is specially designed low hardness and high elastic silicone rubber for specific applications.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Methods	HR-1921U(T)
Colors	ASTM E 1767	Translucent
William's plasticity	ADTM D 926	135
Specific gravity	ASTM D 792	1.04
Hardness	ASTM D 2240	20
Tensile Strength (MPa)	ASTM D 412	5.5
Elongation (%)	ASTM D 412	600
Tear strength (kgf/cm)	ASTM D 624 "B"	8
	ASTM D 624 "C"	10
Rebound resilience (%)	ASTM D 1054	60
Compression set (%)	ASTM D 395	< 25
Linear shrinkage (%)	JIS K 6249	4.3

• FEATURES

- Low shore A hardness and excellent elastic properties
- Excellent molding & injection processability.
- Good heat stability.
- Produced comply with FDA Reg. 21CFR, 177.2600

• APPLICATIONS

- O/A Rolls (Low hardness) replace RTV.
- Automotive connector sealing parts (protect humidity, water, dust...)
- Zebra connectors
- Soft packings & caps

HIGH STRENGTH SILICONE RUBBER

HR-431,531 and 731 are specially designed for high strength applications.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-431	HR-531	HR-731
Color	ASTM E 1716	Transparent		
Specific Gravity	ASTM D 792	1.11	1.15	1.21
Hardness	ASTM D 2240	40	50	70
Tensile Strength (MPa)	ASTM D 412	9.5	11	10
Elongation (%)	ASTM D 412	700	650	450
Tear Strength (kgf/cm)	ASTM D 624 "B"	38	39	40
Rebound resilience (%)	JIS K 6255	50	50	45
Compression set (%)	ASTM D 395	45	45	50
Volume Resistivity (ohm.cm)	ASTM D 257	1016	1016	1016
Dielectric Strength (KV/mm)	ASTM D 149	20	20	20
Dielectric constant (1KHz)	ASTM 150	2.9	2.9	2.9
Food Contact	FDA	YES	YES	YES

(Compression Set : 177℃×22hrs)

• FEATURES

- High Tear Strength
- High Tensile Strength
- High Elongation
- Excellent Extrusion Processing
- Good Molding Processing
- Comply with FDA Reg. 21 CFR 177.2600

• APPLICATIONS

- High Mechanical Articles
- Food Contact Articles.
- Medical Articles (For External use only)
- Air Craft Parts

HIGH TEMPERATURE UL WIRE

High Temperature UL Wire series are very specially designed and modified for high temperature resistant wire & cable insulation to meet to UL 150℃ and 200℃ wires.

Catalyst: HC-2/1.5phr (116℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-60HT	HR-65HT	HR-70HT
Colors	ASTM E 1767	Beige		
William's plasticity	ADTM D 926	240	250	260
Specific gravity	ADTM D 926	1.22	1.25	1.3
Hardness	ASTM D 792	60	65	70
Tensile strength (MPa)	ASTM D 2240	9	90	90
Elongation (%)	ASTM D 412	330	250	220
Tear strength (kgf/cm)	ASTM D 412	16	16	16
	ASTM D 624 "B"	20	20	20
PROPERTIES CHANGE AFTER HEAT AGING TEST (ASTM D 573)				
225℃ × 72hrs	Hardness change	+2	+2	+2
	Tensile Strength change (%)	-14	-12	-13
	Elongation change (%)	-20	-19	-18
225℃ × 72hrs	Hardness change	+4	+4	+4
	Tensile Strength change (%)	-28	-27	-27
	Elongation change (%)	-26	-27	-26

• FEATURES

- Excellent heat aging stability for UL wires
- Excellent electrical properties
- Excellent processability of wire cable.

• APPLICATIONS

- Wire and cables
- Tubing, Profiles
- Gaskets, Packing

HIGH VOLTAGE RESISTANT SILICONE RUBBER

HRV-3 Series are specially designed for high voltage resistant applications of high voltage cable connectors, silicone insulators, insulation tubes and sleeves, high voltage cables.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HRV-3/40	HRV-3/50	HRV-3/60	HRV-3/70
Color	ASTM E 1716	Transparent			
William's plasticity	ASTM D 926°°	1.11	1.14	1.15	1.18
Specific Gravity	ASTM D 792	170	200	230	270
Hardness	ASTM D 2240	40	50	60	70
Tensile Strength (MPa)	ASTM D 412	100	95	95	95
Elongation (%)	ASTM D 412	650	450	350	200
Tear Strength (kgf/cm)	ASTM D 624 "B"	30	16	17	18
	ASTM D 624 "C"	35	40	41	42
Rebound resilience (%)	JIS K 6255	58	58	57	55
Linear shrinkage (%)	JIS K 6249	4.2	4	3.9	3.8
Volume Resistivity (ohm.cm)	ASTM D 257	2×10^{16}	2×10^{16}	2×10^{16}	2×10^{16}
Dielectric Strength (KV/mm)	ASTM D 149	27	30	30	30

• FEATURES

- Very high dielectric resistant
- Excellent all others electrical properties
- Very high mechanical properties
- Excellent hydrophobic, water repellent
- Excellent resistant to UV, Ozone and ground environments

• APPLICATIONS

- Cable connectors
- Silicone rubber insulators
- Electrical insulation tubes, sleeves
- High voltage cable insulation

CERAMIFIABLE HCR SILICONE FOR SAFETY CABLES

HR-6023U(W) & HR-7023U(W) is specially designed a peroxide crosslinking silicone rubber for the manufacture of silicone insulated safety cables that maintain circuit integrity in case of fire.

Catalyst: HC-2 1.5phr/DCP 1.0phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-6023U(W)		HR-7023U(W)	
Color	ASTM E 1716	White			
Catalyst		HC-2	DCP	HC-2	DCP
Specific Gravity	ASTM D 792	1.32	1.32	1.32	1.32
Hardness	ASTM D 2240	60	64	72	77
Tensile Strength (MPa)	ASTM D 412	8.5	9	8	8.5
Elongation (%)	ASTM D 412	280	320	250	300
Tear Strength (kgf/cm)	ASTM D 624 "B"	18	20	18	20
Volume Resistivity (ohm.cm)	ASTM D 257	6.4×10^{15}	4.1×10^{15}	6.4×10^{15}	4.1×10^{15}
Dielectric Strength (KV/mm)	ASTM D 149	24	25	23	25
Dielectric constant(50Hz)(ε)	DIN VDE 0303	3.05	3.15	3.1	3.2
Dissipation factor(50Hz)(tan δ)	DIN VDE 0303	20×10^{-3}	24×10^{-3}	10×10^{-3}	14×10^{-3}

• FEATURES

- Good mechanical and electrical properties
- Good rheological Properties
- Good heat stability
- In case of fire formation of a ceramic-like layer with high insulation resistance and good mechanical stability without formation of corrosive or toxic gases.
- In case of fire low smoke density

• APPLICATIONS

- For flame resistant cable

AUTOMOTIVE MUFFLER HANGER GRADE HR-9300MH

HRS silicone rubber HR-9300MH is specially designed for Automotive muffler hanger purpose.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Methods	HR-9300MH
Colors	ASTM E 171	Transparent
Specific Gravity	ASTM D 792	1.15
Hardness	ASTM D 2240	50
Tensile Strength (MPa)	ASTM D 412	10
Elongation (%)	ASTM D 412	800
Tear Strength (kgf/cm)	ASTM D 624 "B"	40
	ASTM D 624 "C"	45
Rebound resilience (%)	JIS K 6255	54
Compression set (%)	ASTM D 395	35

• FEATURES

- High Tear Strength
- High Elongation Value
- High Tensile Strength
- Good Molding Processability
- High Transparent

• APPLICATIONS

- High Property Articles
- Medical Rubber Articles
- Food Contacted Articles
- Sheet, Gasket
- Aircraft Articles
- Muffler Hanger

SILICONE RUBBER FOR KEYPAD APPLICATION

HR-29X0U are high durometer translucent peroxide cured silicone rubber compounds for molding.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-2960U(T)	HR-2970U(T)
Colors	ASTM E 1716	Translucent	
William's plasticity	ASTM D 926°°	220	250
Specific Gravity	ASTM D 792	1.17	1.2
Hardness	ASTM D 2240	60	70
Tensile Strength (MPa)	ASTM D 412	9	9
Elongation (%)	ASTM D 412	400	350
Tear Strength (kgf/cm)	ASTM D 624 "B"	13	13
	ASTM D 624 "C"	25	30
Rebound resilience (%)	JIS K 6255	67	55
Compression set (%)	ASTM D 395	19	16
Linear shrinkage (%)	JIS K 6249	3.5	3.5

• FEATURES
- Translucent appearance
- High durometer grade available

• APPLICATIONS
- Keyboard for musical instruments
- Transilluminate type key unit for cellular phones
- O-rings, gaskets, diaphragms, boots, sheets

SELF- ADHESIVE GRADE SAT-600U

SAT-600U is a special grade of silicone rubber that is specially designed as Self adhesive Grade.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	SAT-600
Color	ASTM E 1716	Transparent
William's plasticity	ASTM D 926	250 ~ 350
Specific Gravity	ASTM D 792	1.13 °æ 0.05
Hardness	ASTM D 2240	50 ±5
Tensile Strength (MPa)	ASTM D 412	8
Elongation (%)	ASTM D 412	600
Tear Strength (kgf/cm)	ASTM D 624 "B"	13
	ASTM D 624 "C"	35
Rebound resilience (%)	JIS K 6255	50

• FEATURES
- Good mechanical properties.
- Good Adhesive Property
- Comply with FDA Reg. 21 CFR 177. 2600. for food contact applications

• APPLICATIONS
- Electronic Insulation Tape

ROLL COVERING SILICONE RUBBER

HR-785/60, 70 and 80 are specially designed for roll covering purpose.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-785/60	HR-785/70	HR-785/80
Colors	ASTM E 1716	Beige		
William's plasticity	ASTM D 926	200 ~ 250	250 ~ 300	260 ~ 320
Specific Gravity	ASTM D 792	1.21	1.26	1.34
Hardness	ASTM D 2240	60	70	80
Tensile Strength (MPa)	ASTM D 412	8.5	9	8.5
Elongation (%)	ASTM D 412	300	200	150
Tear Strength (kgf/cm)	ASTM D 624 "B"	11	13	11
	ASTM D 624 "C"	20	25	20
Compression set (%)	ASTM D 395	20	16	15
Linear shrinkage (%)	JIS K 6249	3.4	3.5	2.8

(Compression Set : 177℃×22hrs)

• FEATURES
- High temperature resistance
- Low compression set
- High releasing properties
- Less electro static properties

• APPLICATIONS
- Industrial roll covering
- Industrial packing, gasket, bushings
- O-ring. Seals

ROLL COVERING SILICONE RUBBER (STEAM CURING METHOD)

HR-7470 and HR-7480 silicone rubber are specially designed for roll covering application with steam curing method. It also good for press molding with peroxide curing.

Catalyst: HC-8/1.8phr (171℃ ×10min/200℃ ×4hrs)

Typical Properties	Test Method	HR-7470	HR-7480	HR-7490
Colors	ASTM E 1716		Beige	
William's plasticity	ASTM D 926	230	290	280
Specific Gravity	ASTM D 792	1.25	1.35	1.45
Hardness	ASTM D 2240	70	82	90
Tensile Strength (MPa)	ASTM D 412	8.5	9	8
Elongation (%)	ASTM D 412	200	120	70
Tear Strength (kgf/cm)	ASTM D 624 "B"	11	12	8
	ASTM D 624 "C"	22	18	15
Compression set (%)	ASTM D 395	10	10	10

(Compression Set : 177℃×22hrs)

• FEATURES

- Excellent hardness stability
- Excellent releasing property
- Excellent heat stability
- Excellent chemical resistant

• APPLICATIONS

- Industrial rolls
- Laminating rolls
- Stamping rolls
- Industrial rubber articles

ADDITIVES FOR SILICONE RUBBER

There are can be variously selected for the customer's purpose.
There should be added on two-roll mill before cure.

CURING AGENTS

Name	Chemical Composition	Addition(phr)	Usage
HC-2	2,4 Dichlorobenzoylperoxide 50%	1.2~1.8	HAV, Coating Thick Section Molding
HC-3	Dicumyl Peroxide	1.0 ~ 2.0	General Molding, Steam Cure
HC-4	2,5 Dimethyl, 2,5(t-butylperoxy) hexane 50%	0.8 ~ 1.2	All Compression Molding Conductive Rubber
HC-8	2,5 Dimethyl, 2,5(t-butylperoxy) hexane 25%	1.6 ~ 2.4	Food Contact
HC-15AY	Special Pure Peroxide (25%)	1.8 ~ 2.0	Anti Yellowing Food contact
HC-25_A	Platinum Catalyst		HAV, Molding
HC-25_B	Inhibitor + Cross linker		HAV, Molding

HC-15AY curing agent is very effective for Less Odor, No or Less Yellowing, More Transparent purpose curing, but it may be little worse about mold releasing, if the mold is not chrome plate.

ADDITIVES

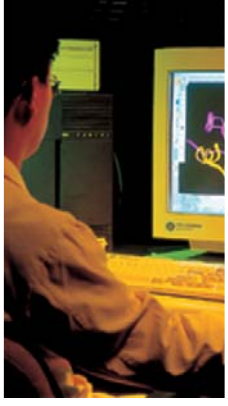
Additives	Color & Form	Functions	Addition Amount(phr)
ZA-1	White Paste	Improve Roll Mixing / Releasing	0.1 ~ 0.5
CA-1	"	Improve Mould Releasing	0.1 ~ 0.5
AS-1	"	"	0.1 ~ 0.5
HT-100	Light Yellow Paste	Improve Heat Resistant (280℃)	0.5 ~ 1.0
HT-P	Clear Paste	" (250℃)	0.2 ~ 0.5
HT-Red	Red Paste	" (300℃)	2.0 ~ 3.0
FS-1	White Paste	Flame Retardant (94V-1)	3.0 ~ 5.0
FS-3	Black Paste	Flame Retardant (94V-0)	3.0 ~ 5.0
Softener	Clear Paste	Improve Softness/Mold Flow	1.0 ~ 5.0
CS-1	White Beige Paste	Reduce Compression Set	1.0 ~ 3.0

SELECTION GUIDE

HCR / HIGH CONSISTENCY SILICONE RUBBER

Type of Silicone Rubber	Application	Grade No.	Color (※1)	Standard Curing			Specific Gravity	Plasticity (Wiliams)	Hardness (Shore A)
				Catalyst /Amount (Phr) ※3	Press Cure Condition (℃/hrs)	Post Cure Condition (℃/hrs)			
GENERAL PURPOSE FOR MOLDING GRADE	Molding	HR-1931U(T)	TL	HC-8/1.8	171/10	200/4	1.09	160	30
		HR-1941U(T)	TL	HC-8/1.8	171/10	200/4	1.13	180	40
		HR-1951U(T)	TL	HC-8/1.8	171/10	200/4	1.15	210	50
		HR-1961U(T)	TL	HC-8/1.8	171/10	200/4	1.16	230	60
		HR-1971U(T)	TL	HC-8/1.8	171/10	200/4	1.20	240	70
		HR-1975U(T)	TL	HC-8/1.8	171/10	200/4	1.20	260	75
		HR-1981U(T)	TL	HC-8/1.8	171/10	200/4	1.21	280	80
		HR-1961U(G)	NG	HC-8/1.8	171/10	200/4	1.24	230	60
		HR-1971U(G)	NG	HC-8/1.8	171/10	200/4	1.35	250	70
		HR-1981U(G)	NG	HC-8/1.8	171/10	200/4	1.42	280	80
GENERAL PURPOSE FOR EXTRUSION GRADE	Extrusion	BASE-30	TP	HC-8/1.8	171/10	200/4	1.08	150	31
		BASE-50	TP	HC-8/1.8	171/10	200/4	1.14	210	51
		BASE-60	TP	HC-8/1.8	171/10	200/4	1.16	230	60
		BASE-70	TP	HC-8/1.8	171/10	200/4	1.18	250	70
		BASE-75	TP	HC-8/1.8	171/10	200/4	1.19	260	75
LOW HARDNESS GRADE	Molding	SW-5	TL	HC-8/1.8	171/10	200/4	1.01	90	8
		SW-8	TL	HC-8/1.8	171/10	200/4	1.01	90	10
		SW-15	TL	HC-8/1.8	171/10	200/4	1.02	120	15
		SW-20	TL	HC-8/1.8	171/10	200/4	1.06	120	20
SUPER HIGH HARDNESS GRADE	Extrusion/Molding	HR-1991U(T)	TL	HC-8/1.8	171/10	200/4	1.24	300	90
		HR-2290U(T)	TP	HC-8/1.8	171/10	200/4	1.25	450	90
HIGH TEAR STRENGTH GRADE	Extrusion/Molding	HR-2500/40	TP	HC-8/1.8	171/10	200/4	1.11	180	40
		HR-2500/50	TP	HC-8/1.8	171/10	200/4	1.13	-	51
		HR-2500/60	TP	HC-8/1.8	171/10	200/4	1.16	240	61
		HR-2500/70	TP	HC-8/1.8	171/10	200/4	1.17	270	71
LOW COMPRESSION SET GRADE	Molding	LCS40	TP	HC-8/1.8	171/10	200/4	1.10	140	40
STEAM RESISTANCE GRADE	Extrusion/Molding	HR-3700/50U	TP	HC-8/1.8	171/10	200/4	1.13	210	50
		HR-3700/60U	TP	HC-8/1.8	171/10	200/4	1.15	230	60
		HR-3700/70U	TP	HC-8/1.8	171/10	200/4	1.18	250	70
METAL CASTING GRADE	Molding	MC-50	TL	HC-8/1.8	171/10	200/4	1.15	-	50
		MC-60	TL	HC-8/1.8	171/10	200/4	1.17	-	60
		MC-70	TL	HC-8/1.8	171/10	200/4	1.19	-	70
ELETRIC CONDUCTIVE GRADE	Molding	HR-1526U	BK	HC-8/1.8	171/10	200/4	1.16	500	60
		HR-1527U	BK	HC-8/1.8	171/10	200/4	1.20	600	70
		HR-1538U	BK	HC-8/1.8	171/10	200/4	1.21	750	78
THERMAL CONDUCTIVE GRADE	Extrusion/Molding	HR-770/60	DG	HC-8/1.8	171/10	200/4	2.00	260	60
		HR-770/70	DG	HC-8/1.8	171/10	200/4	2.05	280	70
		HR-770-80	DG	HC-8/1.8	171/10	200/4	2.10	300	80
FLAME RETARDANT GRADE	Extrusion/Molding UL-94V_0	HR-5020U	W/BK	HC-8/1.8	171/10	200/4	1.43	200	55
		HR-7020U	W/BK	HC-8/1.8	171/10	200/4	1.47	250	70
WIRE & CABLE GRADE	Extrusion	HR-1660U	W	HC-2/1.6	116/10	-	1.40	240	63
		HR-1670U	W	HC-2/1.6	116/10	-	1.45	250	70
HIGH VOLTAGE INSULATOR GRADE	Molding, Surge Arrestors Suspension, Insulators	HVI-65	G	HC-8/1.8	171/10	-	1.52	240	65
		HVI-70	G	HC-8/1.8	171/10	-	1.54	240	70
OIL BREED GRADE	O-Ring, Oil seal Gasket, Wire	SL-30U	NW	HC-8/1.8	171/10	-	1.10	150	30
		SL-40U	NW	HC-8/1.8	171/10	-	1.13	165	40
		SL-50U	NW	HC-8/1.8	171/10	-	1.16	200	50
		SL-60U	NW	HC-8/1.8	171/10	-	1.17	210	60
HIGH TRANSPARENT GRADE	Extrusion/Molding	HR-2130	TP	HC-8/1.8	171/10	200/4	1.09	170	30
		HR-2140	TP	HC-8/1.8	171/10	200/4	1.10	190	40
		HR-2150	TP	HC-8/1.8	171/10	200/4	1.14	210	50
		HR-2160	TP	HC-8/1.8	171/10	200/4	1.16	220	60
		HR-2170	TP	HC-8/1.8	171/10	200/4	1.18	240	70
HIGH HEAT RESISTANCE GRADE	Extrusion/Molding	HR-520U	LY	HC-8/1.8	171/10	200/4	1.13	220	52
		HR-620U	LY	HC-8/1.8	171/10	200/4	1.16	230	60
		HR-720U	LY	HC-8/1.8	171/10	200/4	1.18	290	72
		HR-820U	BW	HC-8/1.8	171/10	200/4	1.34	300	80
ADDITION CURE GRADE	Extrusion/Molding	AD-1150	TP	HC-25A/1.0	140/10	200/4	1.12	200	50
		AD-1160	TP	HC-25A/1.0	140/10	200/4	1.16	220	60
		AD-1170	TP	HC-25A/1.0	140/10	200/4	1.20	250	70
		AD-3950	TL	HC-25A/1.0	140/10	200/4	1.15	200	50
		AD-3960	TL	HC-25A/1.0	140/10	200/4	1.16	225	62
		AD-3970	TL	HC-25A/1.0	140/10	200/4	1.18	250	72
		AD-3980	TL	HC-25A/1.0	140/10	200/4	1.23	280	80
CLOSED CELL SPONGE GRADE	Extrusion/Foaming Blowing ratio(200) Density(0.35~0.55%	SPG-30	-	HC-8/1.8	171/10	-	-	-	-
		SPG-50	-	HC-8/1.8	171/10	-	-	-	-
		SPG-60	-	HC-8/1.8	171/10	-	-	-	-
		SPG-70	-	HC-8/1.8	171/10	-	-	-	-
HIGH PROPERTY EXTRUSION MOLDING GRADE	Extrusion/Molding	BASE-300	TP	HC-8/1.8	171/10	200/4	1.08	160	35
		BASE-500	TP	HC-8/1.8	171/10	200/4	1.14	200	53
		BASE-700	TP	HC-8/1.8	171/10	200/4	1.18	250	70
SPACER PANEL GRADE	Molding	HR-SPR	TL	HC-2/1.5	116/10	-	1.13	190	42
HIGH VOLTAGE CABLE GRADE	Extrusion	HR-700UHV	BW	HC-2/1.5	116/10	200/4	1.20	250	70
OIL RESISTANT GRADE	Molding	HR-707/60U	GW	HC-8/1.8	171/10	200/4	1.23	250	60
		HR-707/70U	GW	HC-8/1.8	171/10	200/4	1.32	270	71
		HR-707/80U	GW	HC-8/1.8	171/10	200/4	1.40	300	81
NO POST CURE GRADE	Extrusion/Molding	HR-NPC-140	TP	HC-8/1.8	171/10	200/4	1.11	190	42
		HR-NPC-180	BW	HC-8/1.8	171/10	200/4	1.43	300	80
HIGH TRANSPARENT HIGH TEAR STRENTH GRADE	Extrusion/Molding	HR-1130	TP	HC-8/1.8	171/10	200/4	1.08	160	30
		HR-1140	TP	HC-8/1.8	171/10	200/4	1.10	195	41
		HR-1150	TP	HC-8/1.8	171/10	200/4	1.12	210	52
		HR-1160	TP	HC-8/1.8	171/10	200/4	1.16	230	60
		HR-1170	TP	HC-8/1.8	171/10	200/4	1.19	260	70

※1 TL(Translucent), NG(Natural Gray), TP(Transparent), BW(Beige White), BK(Black), DG(Dark Gray), W(White), G(Gray), NW(Natural White), LY(Light Yelow)

Properties(※2)				Permanent Compression Set, % 177 ℃(350 ℉)/ 22Hours	Rebound (%)	Heat Resistance, Changes After 96 Hours At 220℃(428 ℉) %			Oil Resistance, Changes After 72 Hours At 150 ℃(302 ℉)in ASTM No.3 oil, %				Breakdown Voltage, kV/mm		Volume Resistivity, Ω-㎝	
Tensile Strength (kgf/㎠)	Elogation (%)	Tear Strength (KN/m) B Type	Tear Strength (KN/m) C Type			Hardness	Tensile Strength	Elongation	Hardness	Tensile Strength	Elongation	Weight	As Cured	After Dipping in Water	As Cured	After Dipping in Water
65	500	8	16	16	61	+1	-10	-20	-12	-35	-30	+40	22	21	10^{15}	10^{15}
75	400	8	18	14	66	+1	-10	-15	-12	-36	-20	+34	23	22	10^{15}	10^{15}
85	300	8.5	20	13	70	+2	-12	-15	-16	-35	-30	+38	23	22	10^{15}	10^{15}
80	230	8.5	20	15	65	+2	-12	-10	-13	-35	-30	+34	23	22	10^{15}	10^{15}
80	200	8.5	22	15	62	+1	-10	-10	-15	-36	-20	+30	23	22	10^{15}	10^{15}
95	210	9	23	12	56	+1	-10	-10	-15	-36	-20	+30	23	22	10^{15}	10^{15}
85	160	8	189	14	60	+1	-10	-10	-15	-36	-15	+30	23	22	10^{15}	10^{15}
75	210	8	20	19	54	+1	-9	-15	-16	-35	-20	+30	22	22	10^{14}	10^{14}
80	150	8	18	21	55	+1	-9	-10	-15	-35	-15	+26	22	22	10^{14}	10^{14}
80	120	8	16	26	42	+1	-8	-10	-15	-35	-15	+20	21	21	10^{14}	10^{14}
75	600	10	25	-	-	+2	-13	-20	-28	-50	-20	+50	25	24	10^{15}	10^{15}
90	350	10	30	-	-	+2	-15	-20	-27	-49	-21	+55	26	26	10^{15}	10^{15}
95	330	10	30	-	-	+1	-15	-20	-27	-49	-21	+55	26	26	10^{15}	10^{15}
100	290	11	35	-	-	+1	-14	-15	-26	-48	-18	+45	27	26	10^{15}	10^{15}
90	240	12.5	35	-	-	+1	-14	-15	-26	-48	-18	+45	27	26	10^{15}	10^{15}
25	1100	4	7	47	-	-	-	-	-	-	-	-	-	-	10^{15}	10^{15}
40	1000	4	10	22	-	-	-	-	-	-	-	-	-	-	10^{15}	10^{15}
50	1000	4	10	25	-	-	-	-	-	-	-	-	-	-	10^{15}	10^{15}
55	950	12	25	18	-	-	-	-	-	-	-	-	-	-	10^{15}	10^{15}
85	150	12	30	12	50	-	-	-	-	-	-	-	-	-	10^{15}	10^{15}
95	100	13	35	16	50	-	-	-	-	-	-	-	-	-	10^{15}	10^{15}
90	700	32	36	30	-	-	-	-	-	-	-	-	25	25	10^{15}	10^{15}
100	550	33	40	37	-	-	-	-	-	-	-	-	26	26	10^{15}	10^{15}
110	520	39	42	-	-	-	-	-	-	-	-	-	26	26	10^{15}	10^{15}
100	450	35	46	40	-	-	-	-	-	-	-	-	26	26	10^{15}	10^{15}
50	280	10	15	5	78	-	-	-	-	-	-	-	-	26	10^{15}	10^{15}
100	400	15	29	12	65	+1	-15	-20	-27	-50	-20	+45	25	24	10^{15}	10^{15}
100	350	14	32	10	65	+1	-15	-20	-26	-49	-21	+48	26	26	10^{15}	10^{15}
100	300	15	30	10	60	+2	-15	-15	-26	-49	-18	+42	27	26	10^{15}	10^{15}
100	550	38	37	-	-	-	-	-	-	-	-	-	-	-	-	-
100	400	38	37	-	-	-	-	-	-	-	-	-	-	-	-	-
90	250	40	38	-	-	-	-	-	-	-	-	-	-	-	-	-
60	250	10	18	-	-	-	-	-	-	-	-	-	-	-	10	10
65	200	10	18	-	-	-	-	-	-	-	-	-	-	-	5	5
65	150	11	18	-	-	-	-	-	-	-	-	-	-	-	4	4
30	400	10	10	-	-	-	-	-	-15	-20	-30	+20	20	19	10^{15}	10^{15}
35	300	10	10	-	-	-	-	-	-15	-15	-30	+20	19	19	10^{15}	10^{15}
40	100	10	10	-	-	-	-	-	-10	-15	-20	+10	19	19	10^{15}	10^{15}
75	320	12	23	23	30	-1	-25	-30	-14	-45	-29	+35	25	25	10^{15}	10^{15}
70	200	15	23	24	30	+1	-23	-25	-11	-48	-30	+34	25	25	10^{15}	10^{15}
80	220	20	23	-	-	+2	-12	-20	-	-	-	-	-	-	10^{15}	10^{15}
80	180	20	23	-	-	+2	-13	-20	-	-	-	-	-	-	10^{15}	10^{15}
50	250	15	-	24	50	-	-	-	-	-	-	-	23	22	10^{15}	10^{15}
50	230	13	-	24	49	-	-	-	-	-	-	-	23	23	10^{15}	10^{15}
70	500	10	18	10	-	-11	-45	-20	-11	-38	-11	+29	-	-	10^{15}	-
75	400	10	21	6	-	-3	-22	-26	-11	-28	-10	+25	-	-	10^{15}	-
85	300	10	27	5	-	+2	-16	-20	-12	-20	-14	+21	-	-	10^{15}	-
85	260	11	25	6	-	+2	-15	-10	-12	-22	-12	+20	-	-	10^{15}	-
85	700	20	34	-	-	-	-	-	-	-	-	-	-	-	-	-
100	650	25	37	-	-	-	-	-	-	-	-	-	-	-	-	-
110	550	25	40	-	-	-	-	-	-	-	-	-	-	-	-	-
110	500	20	42	-	-	-	-	-	-	-	-	-	-	-	-	-
110	350	15	40	-	-	-	-	-	-	-	-	-	-	-	-	-
100	400	15	29	30	55	+1	-22	-30	-29	-48	40	+45	23	22	10^{15}	10^{15}
100	250	13	25	22	55	+1	-22	-30	-29	-48	40	+45	23	23	10^{15}	10^{15}
100	250	10	30	29	50	+2	-20	-30	-30	-50	-30	+44	22	22	10^{15}	10^{15}
85	100	10	24	28	50	-1	-21	-28	-29	-49	-29	+40	22	22	10^{15}	10^{15}
115	670	26	-	26	55	-	-	-	-	-	-	-	26	-	10^{15}	10^{15}
100	550	24	-	24	49	-	-	-	-	-	-	-	27	-	10^{15}	10^{15}
105	420	21	-	22	45	-	-	-	-	-	-	-	28	-	10^{15}	10^{15}
95	470	15	-	24	65	-	-	-	-	-	-	-	26	-	10^{14}	10^{14}
95	420	15	-	26	52	-	-	-	-	-	-	-	25	-	10^{14}	10^{14}
90	280	20	-	25	52	-	-	-	-	-	-	-	24	-	10^{14}	10^{14}
80	250	15	-	30	50	-	-	-	-	-	-	-	25	-	10^{14}	10^{14}
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	600	16	17	45	65	+2	-15	-25	-27	-48	-20	+50	25	24	10^{15}	10^{15}
110	550	22	31	40	50	+2	-18	-23	-28	-45	-20	+52	26	26	10^{15}	10^{15}
110	400	24	37	31	50	+1	-20	-20	-26	-46	-18	+45	26	26	10^{15}	10^{15}
80	400	8	10	25	60	-	-	-	-	-	-	-	-	-	-	-
110	300	14	40	-	-	2	-3	-10	-	-	-	-	32	32	10^{16}	10^{16}
65	250	15	28	28	60	-	-	-	-3	-10	-12	+10	25	24	10^{14}	10^{14}
75	200	15	24	30	60	-	-	-	-2	-9	-10	+8	26	26	10^{14}	10^{14}
70	150	15	23	33	58	-	-	-	-2	-10	-10	+9	26	25	10^{14}	10^{14}
85	400	10	25	20	65	+2	-15	-20	-20	-48	-20	+40	27	27	10^{15}	10^{15}
85	150	11	22	15	45	+1	-14	-30	-15	-46	-18	+22	27	27	10^{15}	10^{15}
90	700	10	25	28	55	+2	-13	-20	-28	-50	-20	+50	25	24	10^{15}	10^{15}
90	600	20	36	30	60	+2	-20	-25	-27	-45	-35	+45	27	26	10^{16}	10^{16}
95	450	12	38	31	60	+1	-20	-20	-26	-46	-40	+42	27	26	10^{16}	10^{16}
100	400	14	38	29	60	+2	-18	-22	-28	-50	-30	+40	26	25	10^{16}	10^{16}
100	300	14	37	25	60	+2	-20	-20	-29	-49	-25	+40	27	26	10^{16}	10^{16}

※2 The propertes are to be taken as typical. Please note these properties are not a specification. The properties are normal average value with the standard curing method. If use different catalyst and different curing conditon, the value will be different.

※3 HC-2(2,4-dchlorobenzoyperoxide 50% on silcone)/ HC-8(2,5-Dimethy 2, 5-t-butyperoxy)hexane 25% in silcone.

RELATED PRODUCTS

<Curing Agents>

HRS Products	Chemical Composition		Addition Amount (phr)	Curing Temp. (℃)	Uses
HC-1	Benzoyl Peroxide	50%	1.5~2.0	120~180	Dispersion Coating
HC-2	2, 4 Dichlorobenzoyl Peroxide	50%	1.2~1.8	120~400	H.A.V. Extrusion/ Sponge
HC-3	Dicumyl Peroxide	20%	0.5~0.8	150~180	All Molding Steam Cure
HC-3M	Special Peroxide	25%	1.5~2.0	150~170	Baby Nipple
HC-4	2,5 DMBPH	50%	0.8~1.2	170~200	All Molding Steam Cure
HC-8	2,5 DMBPH	25%	1.8~2.0	"	"
HC-15AY	Special Catalyst	25%	1.8~2.0	"	High Transparent
PT-A	Platinum Complex		Control	120~250	Medical Tubing
CL-A	Cross-Linker		"	"	"

<Additives>

Additives	Color & Form	Functions		AdditionAmount (phr)
ZA-1	White Paste	Improve Roll Mixing, Mold Release		0.3~1.0
CA-1	"	"		0.3~1.0
HT-100	Light Yellow Paste	Improve Heat Stability	250℃	0.5~1.0
HT-200	"	"	250℃	0.5~2.0
HT-300	"	"	250℃	0.5~2.0
HT-P	Clear Paste	"	250℃	0.2~1.0
HT-Red	Red Paste	"	300℃	2.0~5.0
FS-1	White Paste	Improve Flame Retardant		3.0~5.0
FS-3	Black Paste	"		3.0~5.0

<Pigments>

HRS Products	Color & Form	Composition
HTV Color White	White Paste	50%
HTV Color Black	Black Paste	"
HTV Color UL-Blue	Ultra-Blue Paste	"
HTV Color Yellow	Yellow Paste	"
HTV Color Green	Green Paste	"
HTV Color Red	Red Paste	"
HTV Color RBN	Red Brown Paste	"

※ RoHs free grade

<Others>

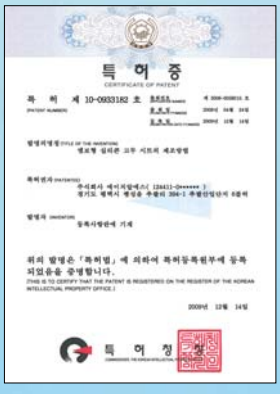
Products	Color & Form	Functions	Addition (phr)
HR-304T	Brown Liquid	Metal Bonding Primer	
BL-5	White Putty	Blowing Agent	4 ~ 8

CERTIFICATES

Lampshade with light diffusion silicone Layer

Silicone Lampshade

Silicone Embo Type Sheet



Self-stickiness Thermal Sink-pad

Self-stickiness EMI

Low Specific Gravity Silicone

Low Hardness and Low Specific Gravity Silicone Foam

Buffer sheet for the compression of an ACF

Silicon polymer composition for backlight unit buffer spacer material of LCD

FILK

ISO 9001(DM)

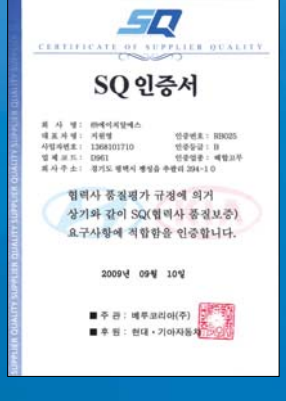
ISO 9001

ISO 14001

ISO 13485

KGMP

SQ



Exports U.S. $10 millions

Inno-Biz

KOTRA GLOBAL BRAND

SAMSUNG/Eco-Partner

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Users are solely responsible for making preliminary tests to determine the suitability of products for their intended use. Statements concerning possible or suggested uses made herein may not be relied upon, or be construed, as a guaranty of no patent infringement.

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