



Silicone Business

INTRODUCTION HRS co.,ltd.

Specialist in Silicone Rubber Technology





Established in 1981

Executive Leadership :

- CEO : Mr. Jin Sung, Kim

Main Business

- HCR [High Consistency Silicone Rubber]
- LSR [Liquid Silicone Rubber]
- RTV [Room Temperature Vulcanization]
- Cosmetics [Personal Care Materials]
- SS [Silicone Sheet]
- Rubber Articles
- PSA [Pressure Sensitive Adhesive]
- New Business

Total Employees : 145

Business Locations

- Seoul Office (Management & Trade)
- Pyeongtaek Factory (Materials)
- Asan Factory (Articles/PSA)
- Suzhou Factory (Articles/PSA)

[PYEONGTAEK, KOREA]



[ASAN, KOREA]



[SUZHOU, CHINA]





Domestic Silicone Rubber
Market Share No.1



40 years of silicone rubber technology and experience

Established in 1981,
Excellent financial stability



Silicone **Professional R&D** center



Prompt **technical support, customized product supply**

Technology and service company, small quantity batch production



Global Sales Networks

More than 15 countries worldwide

Specialized chemical material company focusing on creating high value added through technology development

1978: Established Hae Ryong Trading Company (importing business of silicone rubber)

1981: Incorporated as Hae Ryong (Started developing the manufacturing technology of Silicone Rubber Compound)

1983: Awarded for New Material development by the minister of the Ministry of commerce and industry

1985: Acquired U.L Standard(UL 94 V-0, Flammability Standard)

1986: Developed the technology for primary synthesis of silicone gum(collaborate with KAIST for the first time in the country)

1987: Developed the basic technology for silicone gum compounding

1990: Contract with Bayer AG in Germany for technological affiliation and sales in Southeast Asia(Presently Momentive)

1991: Established sales agencies in Southeast Asia(8 Countries including Taiwan and Malaysia)

1993: Supplied Fire Stop Seal for Nuclear Power Plant-Localized for the first time in Korea (certified KEPCO supply)

1995: Exported silicone rubber amounting more than \$5,000,000.00 for the first time in the country
(Awarded "the tower of 5 million dollar export" as the prize)

1996: Acquired ISO 9001 Certification

2000: Registered for KOSDAQ

2000: Acquired Hyundai Motor SQ Certification

2000 ~ 2003: Development of Technology such as Polymer, LSR

2004: Construction completed for Pyeong-teak Plant

2006: Appointed new CEO(co CEO: Ms. Sung Ja, Kang & Mr. Won Yeong, Ji)

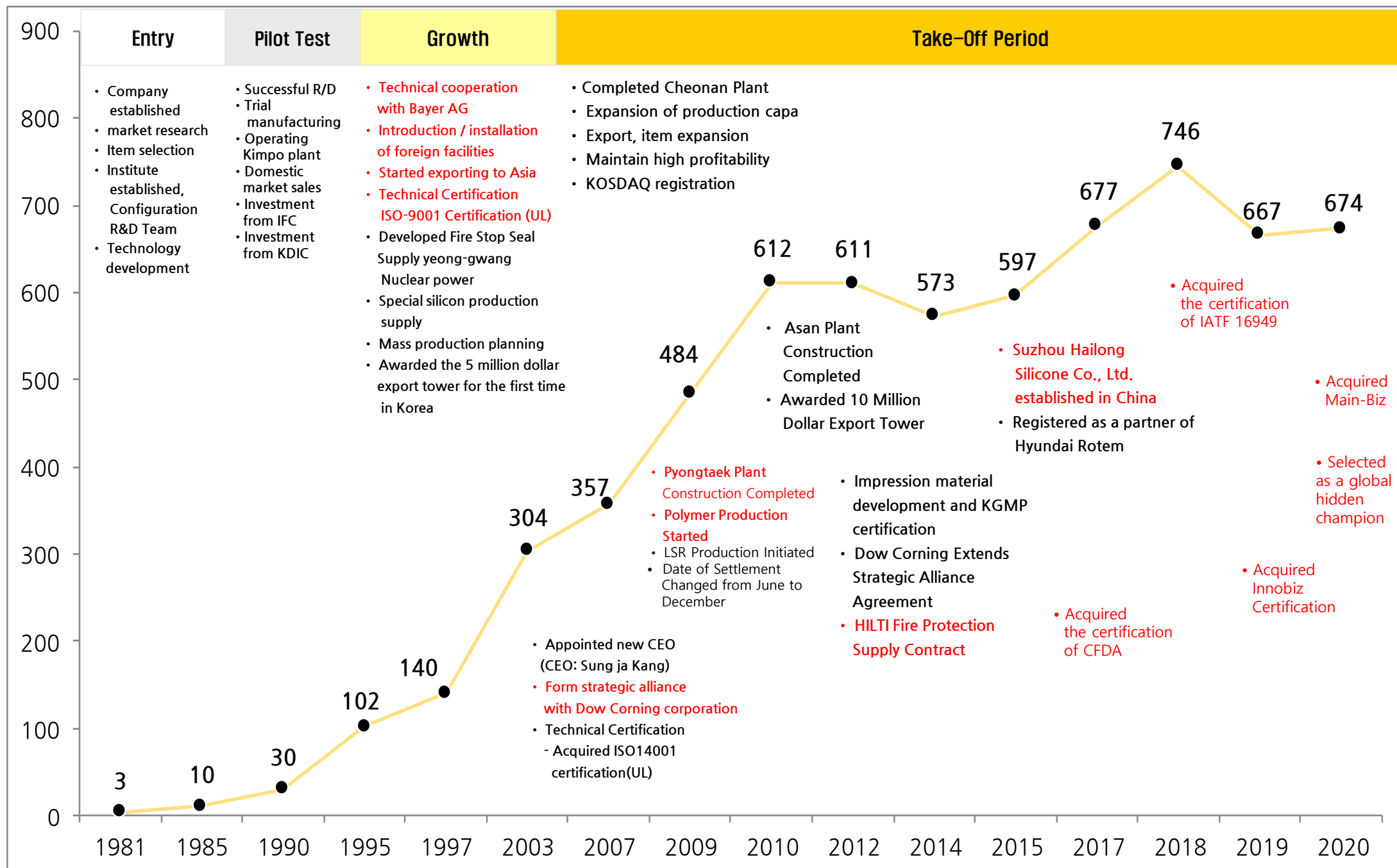


- 2007: Changed the company name from Haeryong Silicone Co., Ltd. to HRS Co., Ltd
- 2007: Form strategic alliance with Dow Corporation for Silicone rubber
: Long-term supply of raw materials and joint product development
- 2007: Acquired ISO14001 certification, SAMSUNG ELECTRONICS ECO-PARTNER
- 2008: Construction completed for Asan Plant
- 2009: Development of dental impression material (RTV 2K)
- 2010: Supply agreement between 'H' Corporation and HRS
Acquired ISO 13485, KGMP, CE Certification (Dental Impression Material RTV 2K)
- 2011: Suzhou haeryong silicone co.,Ltd. Was established in CHINA
- 2012: Selected as "global hidden champion" (the Small and Medium Business Administration)
Selected as "KOTRA GLOBAL BRAND(BLUE)"
- 2013: Acquired the certification of Hyundai Rotem Supplier Quality(RSQ)
- 2014: FDA approval for dental silicone impression materials
- 2016: CFDA approval for dental silicone impression materials
- 2017: Appointed new CEO (CEO:Jin Sung Kim)
- 2018: Acquired IATF 16949_2016
- 2019: Developed silicone for cosmetics (Silicone for Personal Care)
- 2020: Acquired Main-Biz
Selected as a global hidden champion (Ministry of SMEs and Startups)



(Consolidation revenue)

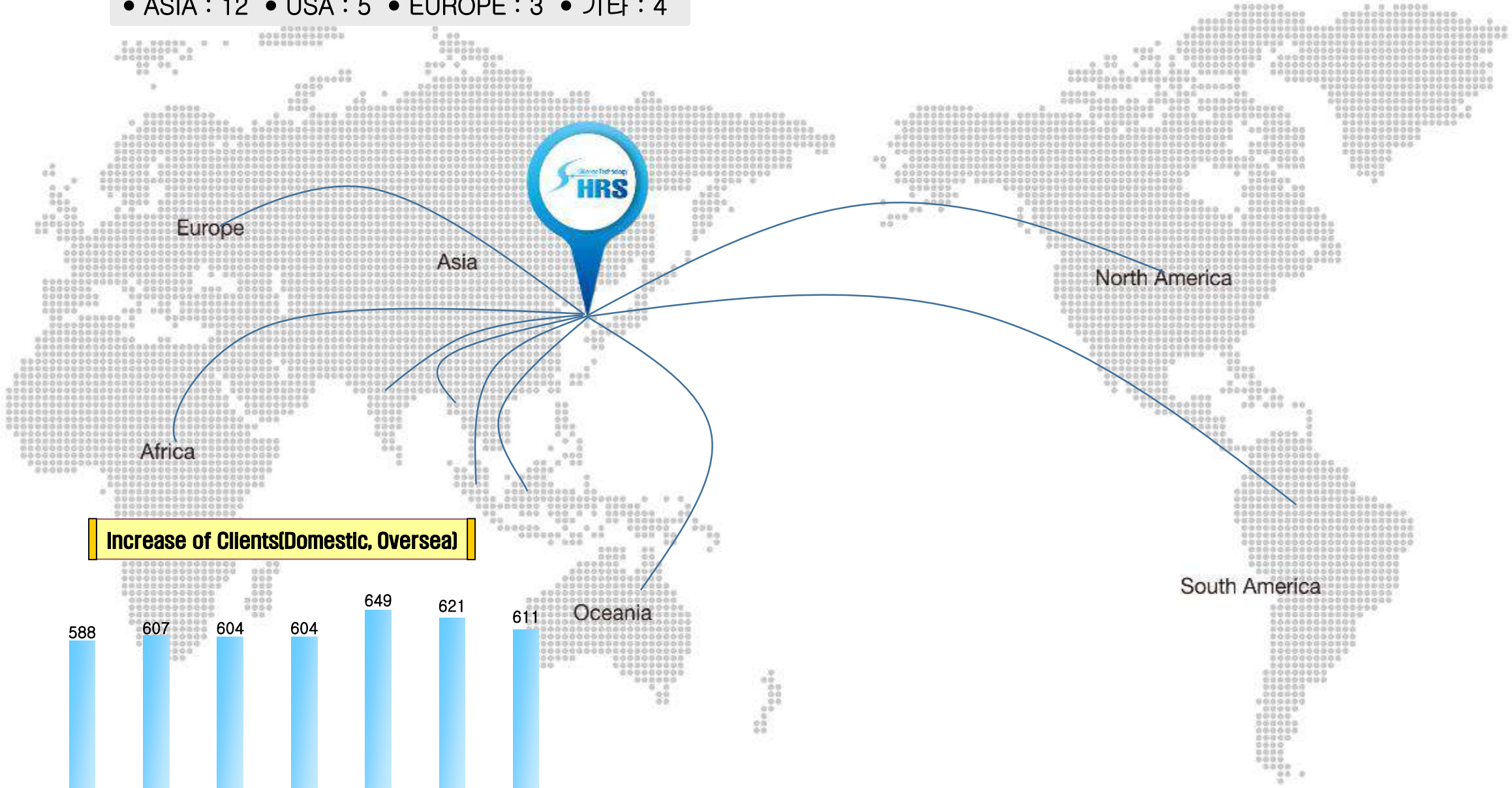
[Unit : billion]



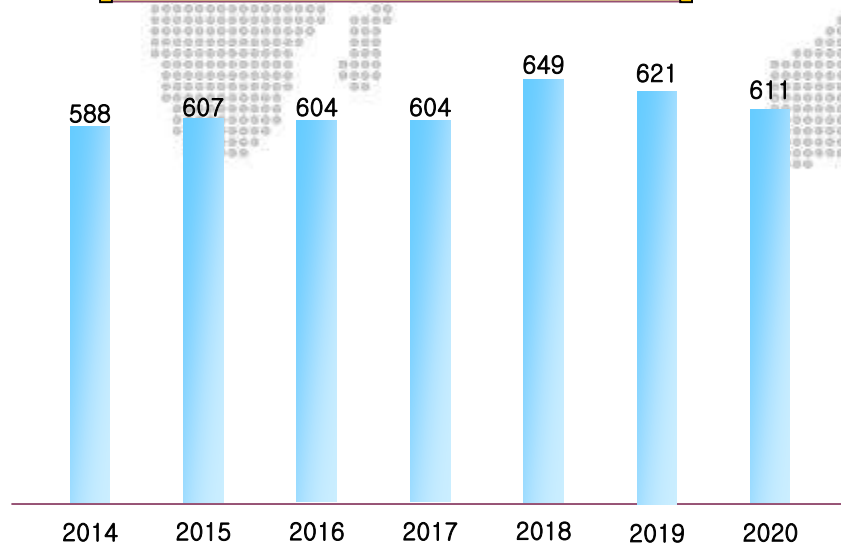


SALES NETWORK

- ASIA : 12
- USA : 5
- EUROPE : 3
- 기타 : 4



Increase of Clients(Domestic, Oversea)



◆ MAIN CUSTOMERS



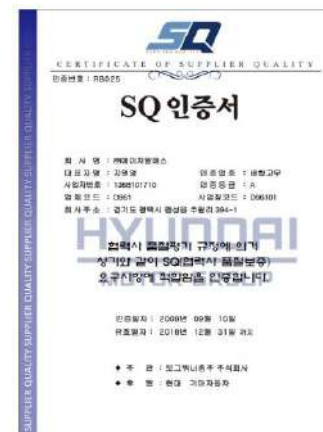


CERTIFICATION



- Quality certification : ISO9001, 14001_2015, 13485, SQ, RSQ, FILK, CE, FDA, CFDA, BS476, KGMP, LFGB, IATF 16949_2016, Etc

- ETC : KOSDAQ, INNOBIZ, MAINBIZ, Selected as 'Global Small Hidden Champion', 'Youth-friendly small enterprise'

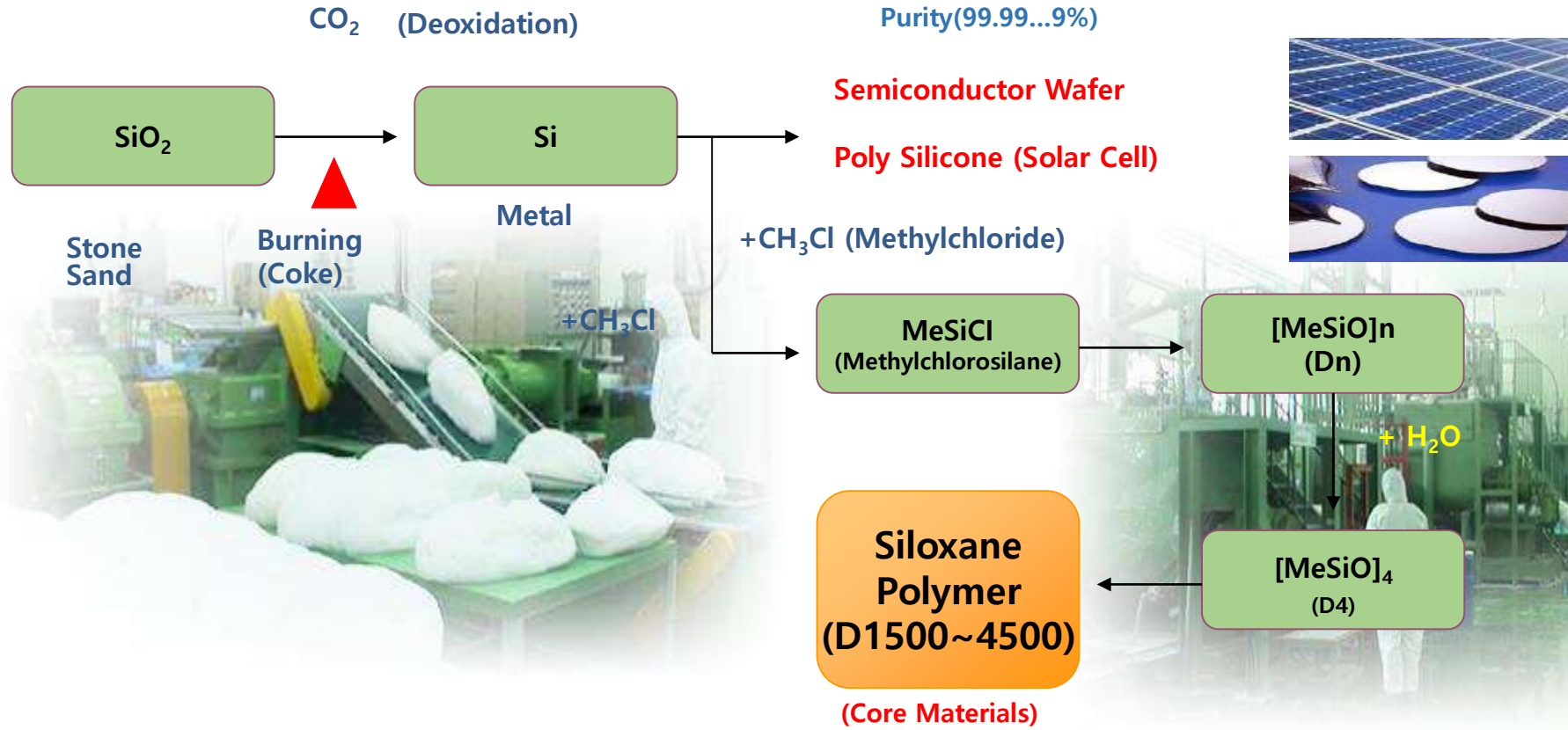




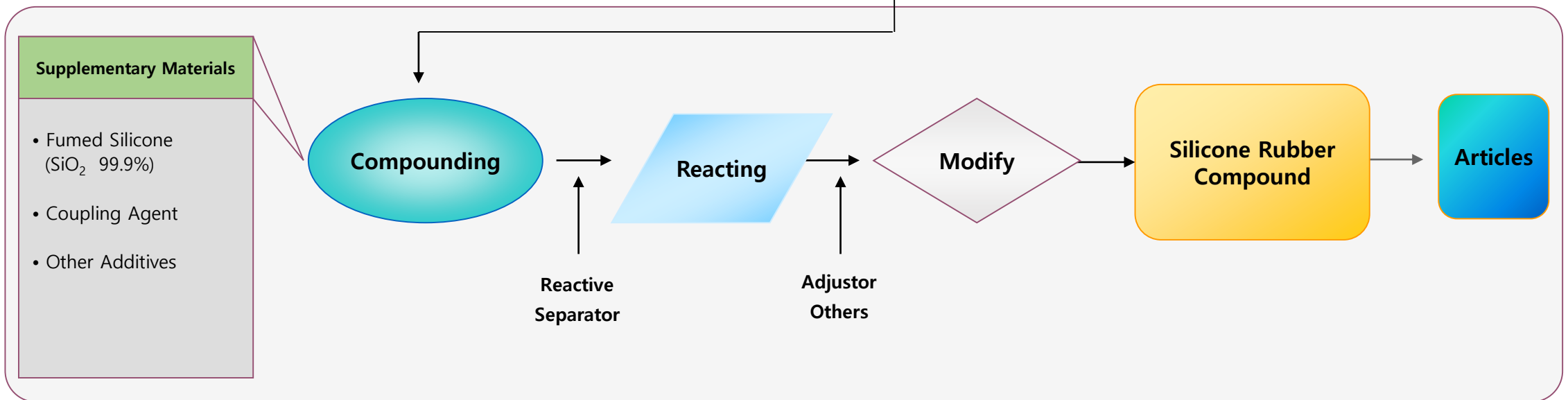
- Patent : 17 cases (4 processing)

The image displays 17 patent certificates from the Korean Intellectual Property Office (KIPO). Each certificate includes the patent number, title in Korean, inventor name, and registration date. The certificates are arranged in three rows: the first row has 6 certificates, the second row has 6, and the third row has 5. Some certificates in the third row feature a gold seal and a blue ribbon, indicating special recognition. The bottom row shows the official stamps and signatures of the Korean Intellectual Property Office, with names like 'Hui Dong-kyu' and 'Seung Eun-bro' visible.

◆ Silicone Rubber Manufacturing Process



>> Silicone Rubber : Main Process





Silicone Rubber Manufacturing Process



Remove O2 from rock, sand and cokes by burning(DEOXIDATION)



Removed O2 from SiO2 to form Si(Metal Silicone)



Create Chlorosilane by chemical reactions



(polymerization)



FLUIDS



SILANES



ELASTOMERS



RESINS

(manufacturing)



HCR (High Consistency Silicone Rubber)



LSR(Liquid Silicone Rubber)



Silicone Oil



Cosmetic Emulsion



RTV FS/DM



Car Industry



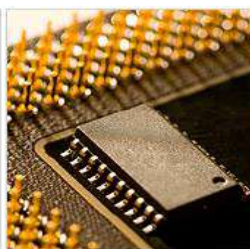
Medical Industry



Daily supply Industry



Cosmetic Industry



Electric Industry

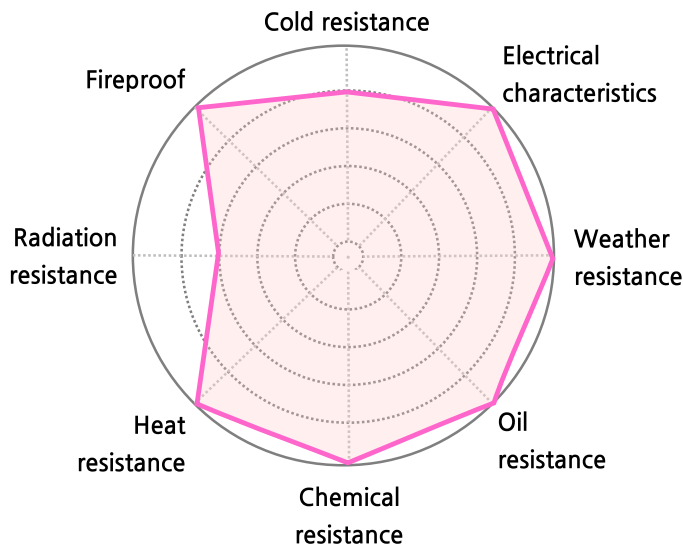


Baby product Industry



Air Industry

Silicone Rubber



Heat resistance

- the most excellent property of silicone rubber and one of the reasons for its creation
- Silicone rubber has much higher heat resistance than organic rubber
- Almost no change in properties at 150 °C, semi-permanent use
- It can be used more than 10,000 hours continuously at 200 °C. Also, it can be used at 300 °C for short time
- Widely used as rubber parts material used in high temperature places with excellent heat resistance

Cold resistance

- The cold resistance of silicone rubber is the best among all kinds of organic rubbers.
- Practical reasons for development
- Natural rubber and general rubber change shape with temperature and soften at high temperature and harden at low temperature.
- The low temperature limit of use of general organic rubber is -20 °C to -30 °C, whereas silicone rubber maintains its elasticity even at -55 °C to -70 °C.
- Some products can withstand cryogenic temperatures below -100 °C.

Weather resistance

- Silicone rubber has excellent ozone resistance
- Ozone is generated by corona discharge and general organic rubber softens rapidly. However, silicone rubber is hardly affected
- Physical properties hardly change even when exposed to ultraviolet or rain

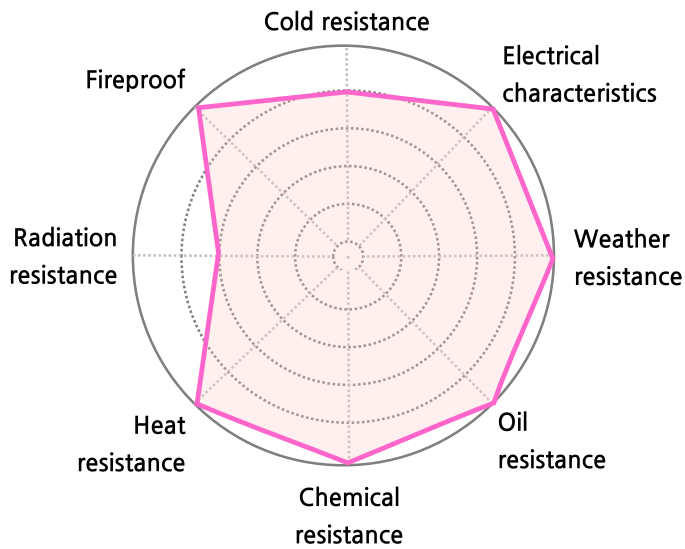
Electrical characteristics

- Silicone rubber has excellent insulation properties and is used as an electrical insulation material at high temperatures
- Especially, it is known to have wide temperature range and resistance value ($10^{14}\Omega\text{cm} \sim 10^{16}\Omega\text{cm}$)
- Lowest change in water, most suitable as insulation material

Electro magnetic wave absorption

- Due to the recent integration and miniaturization of electronic devices, EMC is emerging as a major issue in various electromagnetic environments
- Electromagnetic wave coupler is made by filling high performance metal powder with silicone rubber. It absorbs incident electromagnetic noise, converts it into heat and extinguishes it.

Silicone Rubber



Conductivity

- Conductive silicone rubber is a compound containing conductive materials equivalent to carbon black and silver, and various products having resistance values from several $\Omega \cdot \text{cm}$ to $10^3 \Omega \cdot \text{cm}$ have been developed.
- The characteristic of silicone rubber is that its electrical characteristics do not depend much on the temperature change. There is no rubber material with electrical characteristics comparable to silicone rubber at temperatures above 200°C .
- Widely used for keyboard contacts, antistatic parts and shield materials for high voltage cables

Radiation resistance

- General silicone rubber (dimethyl silicone rubber) is not particularly excellent in radiation resistance than other organic rubbers, but phenyl group is introduced into the polymer molecule.
- Methyl Phenyl Silicone Rubber has radiation resistance and is used for cables, connectors, etc. of nuclear power plants

Steam resistance

- Silicone rubber absorbs about 1% even in water for a long time and hardly affects mechanical strength or electrical properties.
- Generally, silicone rubber hardly deteriorates when it comes into contact with steam at normal pressure (atmospheric pressure).

Flame retardant

- Silicone rubber does not burn easily even when the flame is close, but it burns continuously after ignition. However, adding a little flame retardant to silicone rubber gives flame retardancy and self-extinguishing

Oil resistance

- Silicone rubber is less oil resistant than normal organic rubber at room temperature. However, it is superior to organic rubber in places where high temperatures such as automobiles and airplanes are needed.

Chemical resistance

- Silicone rubber may be invaded by strong acid or strong alkali, but has good resistance to polar organic compounds such as inorganic alcohols such as acids, bases and salts and animal and vegetable oils. In addition, it swells in nonpolar solvents such as gasoline, toluene, and carbon tetrachloride, but returns to the initial state when the solvent evaporates.

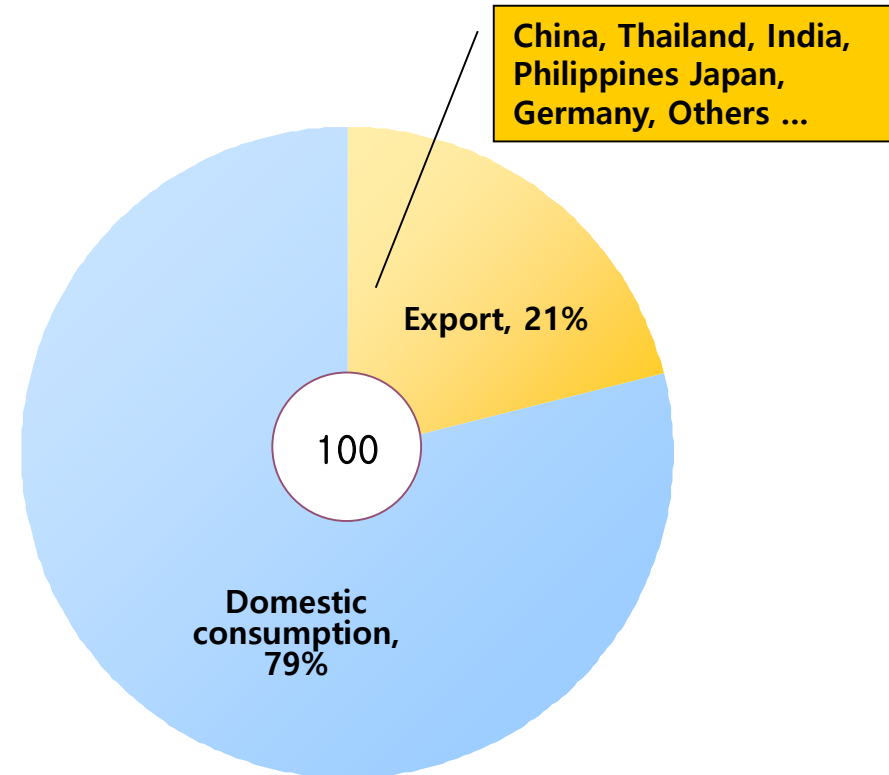
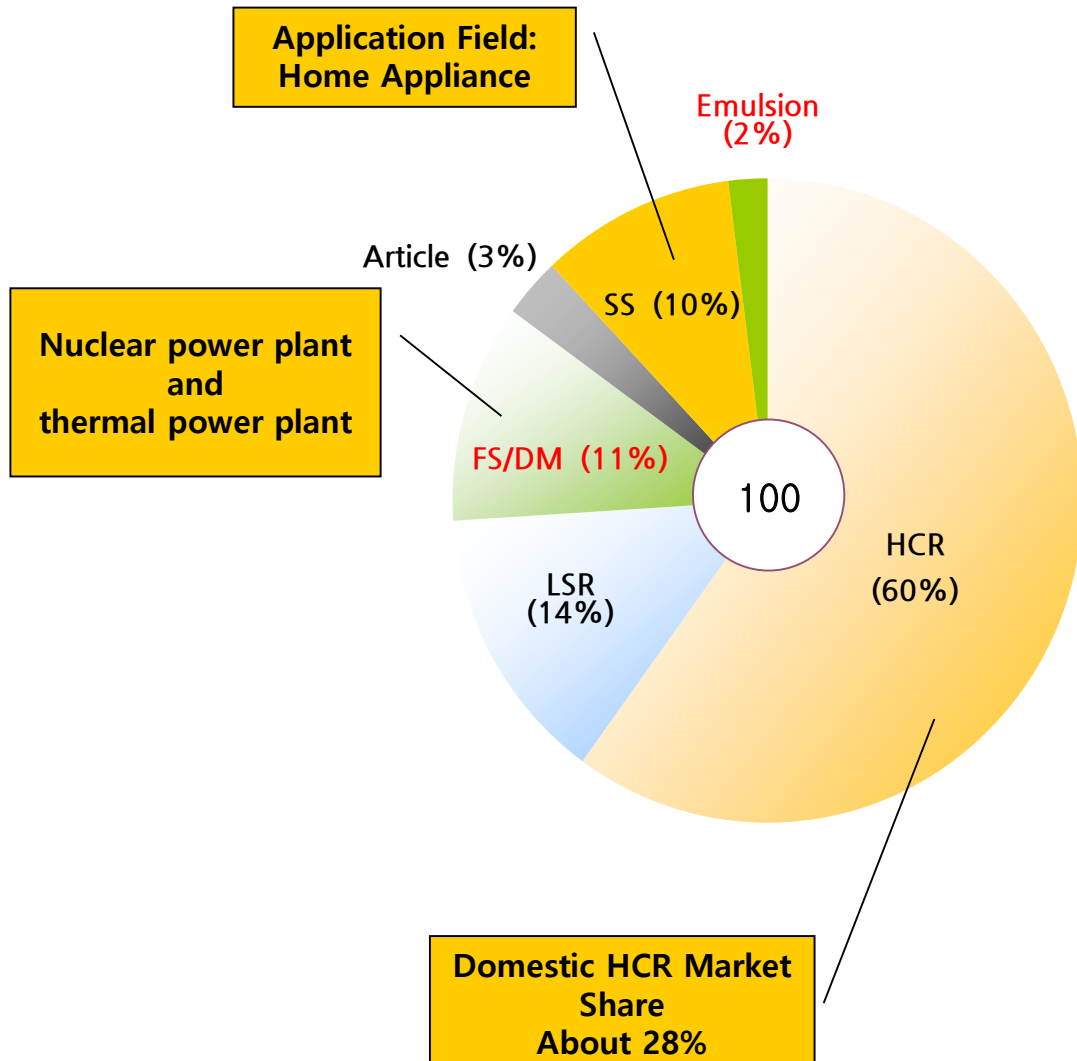
Hot water resistance

- Silicone rubber hardly changes its physical properties even after settling in water for a long time or in contact with steam. However, if the pressure of steam is $2 \text{kgf} / \text{cm}^2$, some decomposition may occur at the contact surface.

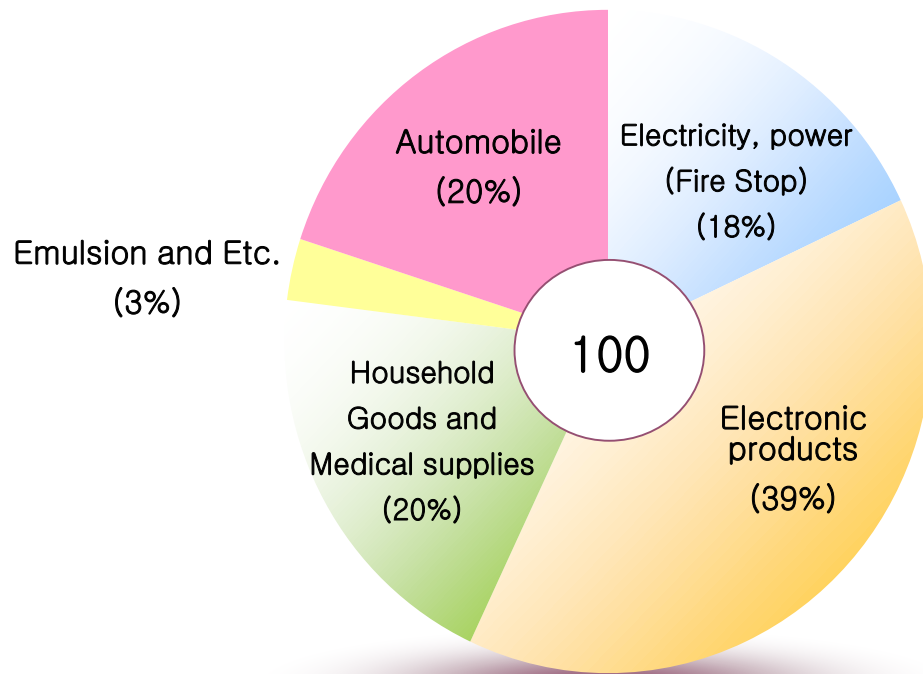
Compression set

- Compressive permanent shrinkage of general rubber increases remarkably with temperature change, while silicone rubber maintains elasticity and resilience over a wide temperature range from -100°C to 250°C .

◆ Share of sales by product



◆ Share of sales by industry



Main Customers

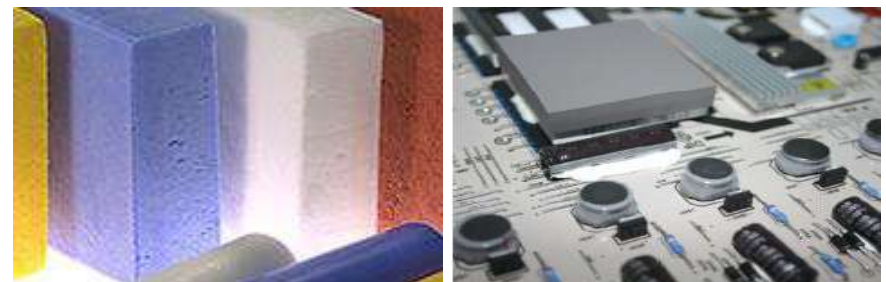


KIA MOTORS





- **HCR (High consistency silicone rubber)**
 - BASE COMPOUND
 - ROLL Mixing
 - Annual Production Capacity : 15,000Ton
- **LSR (Liquid silicone rubber)**
 - Annual Production Capacity : 4,000Ton
- **RTV (Room Temperature Vulcanization)**
 - Fireproof material
 - Dental material
 - CRTV(MMR)
 - Annual Production Capacity : 1,500Ton
- **Articles**
 - SS [Thermal Pad]
 - Special articles [Holder type]
 - Annual Production Capacity : 5,000Ton
- **Silicone for Personal Care**
 - U-Polymer / Gum
 - Annual Production Capacity : 1,000Ton



◆ HCR(High Consistency Silicone Rubber)

- Annual Production Capacity : **15,000 MT.**
- Production facilities : Kneaders, Twin Rollers, Strainers...
- We have **34 standard silicone rubber bases** and **over 300 customized full compounds.**
- Major applications:
 - Electronics: LED TV, Remote Controller, Rollers...
 - Automotive: Boots, Cables, Oil Seal, Muffler Hangers...
 - Electric Power: High voltage insulators, wire and cables...
 - Household: Packing for rice cooker, food containers...
 - Others: Medical, Leisure, fabric coating, insulations...



Automobile Industry



Rail road Industry



Medical Industry



Mobile Industry



Electric Industry



Living Goods Industry



ETC



Infant Industry

◆ HCR(High Consistency Silicone Rubber)

Car Industry

-As its Heat-resisting, **Oil-resisting, Electric-resisting, High tear availability**, Self Lubrication, it can be used for Adhesive, General O-Ring, Gasket

-Applied: HIGH TEAR STRENGTH GRADE, HIGH HEAT RESISTANCE GRADE, OIL RESISTANT GRADE
OIL BLEED GRADE, HIGH VOLTAGE CABLE GRADE, HIGH PERFORMANCE EXTRUSION MOLDING GRADE
SPACER PANEL GRADE, GENERAL PURPOSE FOR MOLDING GRADE, AUTOMOTIVE MUFFLER HANGER GRADE

Railroad Industry

-As its high-tension, **high-tear ability, prevention of flame propagation characteristics**, it can be used for variety cases.

-Applied: GENERAL PURPOSE FOR EXTRUSION GRADE, OIL RESISTANT GRADE, GENERAL PURPOSE FOR MOLDING GRADE
CLOSED CELL SPONGE GRADE, GRADE FOR KEYPAD APPLICATION, FLAME RETARDANT GRADE

Medical/Infant Industry

-Physiologically non-toxic, high-transparent, high-tear ability, it can be used for variety of medial/infant industry.

-Applied: HIGH PERFORMANCE EXTRUSION MOLDING GRADE, HIGH TEAR STRENGTH GRADE
HIGH TRANSPARENT GRADE, ADDITION CURE GRADE, HIGH TRANSPARENT, HIGH TEAR STRENGTH GRADE

Electric Industry

-As its ozon-proof ability, weatherproof ability, non-toxic, electric insulation characteristics it can be used for wire, heat radiation solution parts.

-Applied: HIGH VOLTAGE RESISTANT GRADE, FLAME RETARDANT GRADE, HIGH TEMPERATURE UL WIRE GRADE
CERAMIFIABLE HCR SILICONE FOR SAFETY CABLES, HIGH VOLTAGE CABLE GRADE, ELECTRIC CONDUCTIVE GRADE
THERMAL CONDUCTIVE GRADE, WIRE & CABLE GRADE, HIGH PERFORMANCE EXTRUSION MOLDING GRADE

Daily supplies Industry

-Its eco-friendly, non-toxic, heat-resisting, steam resisting characteristics.

-Applied: STEAM RESISTANCE GRADE, GENERAL PURPOSE FOR EXTRUSION GRADE, HIGH TRANSPARENT GRADE
HIGH TRANSPARENT, HIGH TEAR STRENGTH GRADE, GENERAL PURPOSE FOR MOLDING GRADE
LOW HARDNESS GRADE, ADDITION CURE GRADE, HIGH PERFORMANCE EXTRUSION MOLDING GRADE

◆ LSR(Liquid Silicone Rubber)

- Annual Production Capacity: **4,000 MT.**
- Production facilities: Kneaders and dosing unit.
- We have **7 standard grades** and **over 10 customized grades.**
- Major applications:

Electronics: Water & Dust resistant sealing, LCD/LED Holder,
Key Pads, Insulation Potting, Copying machine roller ...
Automotive: Boots, Oil Seal, Air bag...
Electric Power: High voltage insulators and Cable accessories...
Others: Medical, Leisure, Household, Fabric Coating...



Car Industry



Electric/Mobile Industry



Medical Industry



Daily supply Industry



ETC

◆ LSR(Liquid Silicone Rubber)

Car Industry

- For its fast curing, high-tear ability, high-mechanical strength, high-magnetic lubrication, it can be used for air-coating, engine room, and cables.
- Applied: RAL PURPOSE, HIGH TRANSPARENT, HIGH STRENGTH GRADE, LOW VISCOSITY FABRIC COATING GRADE
SELF-LUBRICATING GRADE, OIL BLEED GRADE

Daily supply Industry

- Eco friendly, non by-product.
- Applied: GENERAL PURPOSE, HIGH TRANSPARENT, HIGH STRENGTH GRADE
LOW VISCOSITY FABRIC COATING GRADE

Medical/Infant Industry

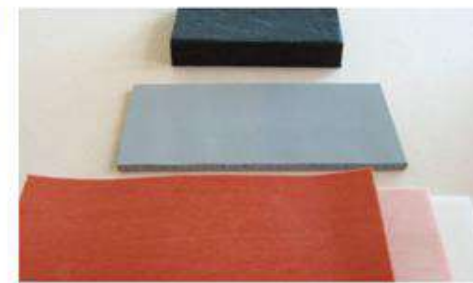
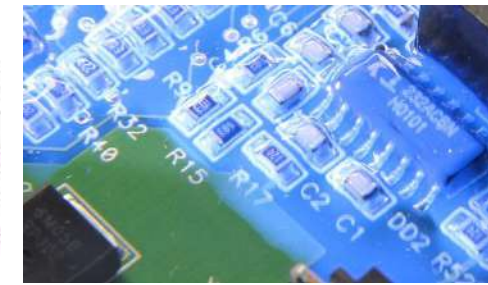
- More transparent than HCR, and with high tear ability it can be used for baby nipple and medical tubes.
- Applied: GENERAL PURPOSE, HIGH TRANSPARENT, HIGH STRENGTH GRADE

Electric Industry

- For its fast curing time, low permanent compression characteristic, it can be used for electric parts and various seals.
- Applied: GENERAL PURPOSE, HIGH TRANSPARENT, HIGH STRENGTH GRADE, SELF-LUBRICATING GRADE OIL BLEED
LOW COMPRESSION SET, HIGH REBOUND GRADE, FLAME RETARDANT GRADE, TRACKING RESISTANT GRADE

◆ RTV 2K(Room Temperature Silicone Rubber)

- Annual Production Capacity : **1,500 MT.**
- Production facilities : Kneaders and dosing unit.
- Major application :
 - FS - Fire Stop(Nuclear and thermal power plants - Korea Rep, China & Russia)
 - MMR(CRTV) – Industrial roll, special RTV
 - RTV for electric and electronics - conformal coating, heat resistant adhesive, sealing agent
 - Impression material - dental impression material, occlusal material
 - Mold – Mock-up, Shock Absorbing Gel etc



◆ RTV 2K(Room Temperature Silicone Rubber)

FS(Fire-Stop system)

- Silicone foam that cures on room temperature, it is used for fire-stop system with heat-resist, flame-resist, noise-resist and enclosure characteristics.
- Place applied: nuclear power plant, thermal power plant, department store and high buildings.
- Production applied: HR-PS-80, HR-PS-120, HR-PS-140, HR-BS-924

DM(Dental Impression Materials)

- Non-toxic for body** that can make frame out of mouth.
- Place applied: Dental, Medical center
- Applied: SILDENT LIGHT, SILDENT REGULAR, SILDENT HEAVY, SIDENT PUTTY, SILDENT TUBE, SILDENT BITE

MMR(Mold Making Rubber)

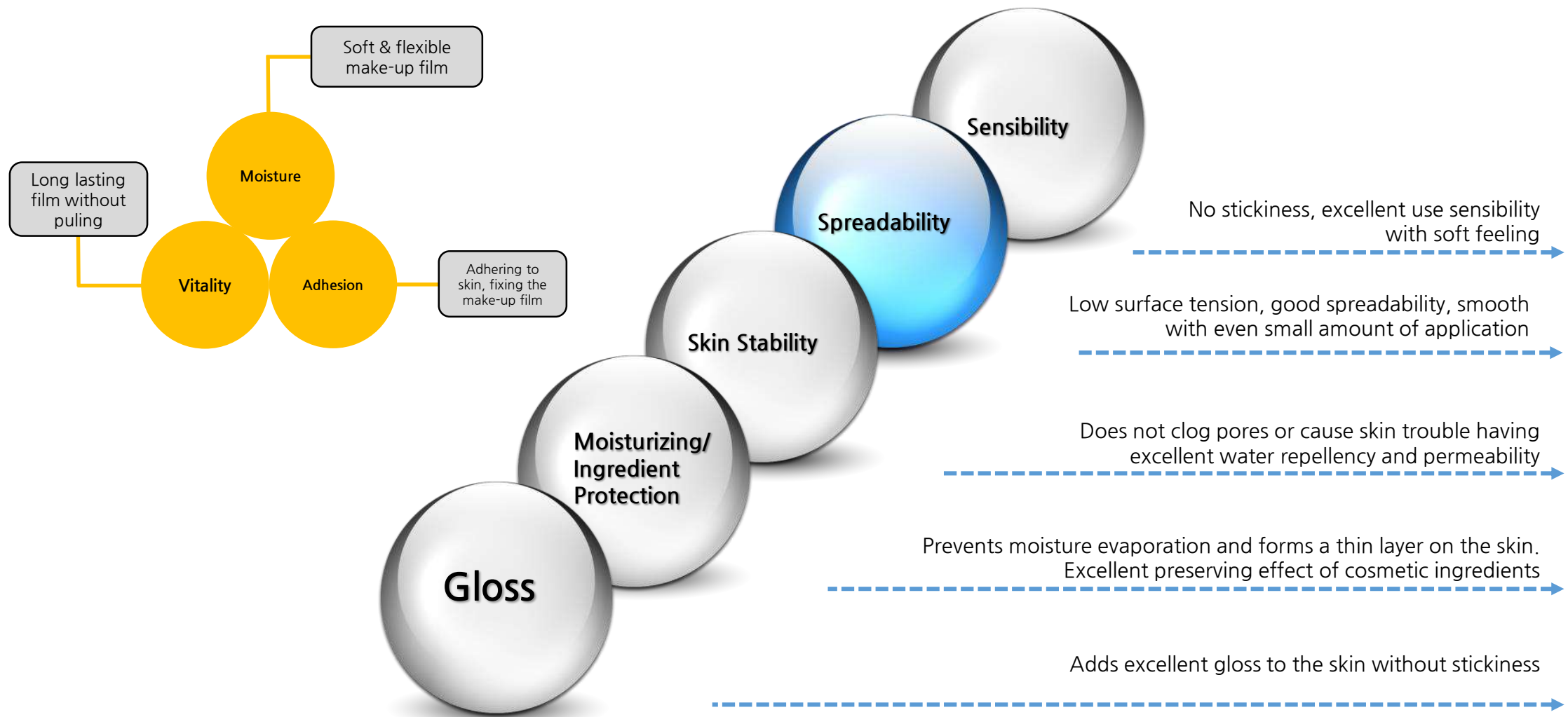
- Tri-liquid condensation type RTV using base, curing agent and catalyst.
It is mainly used for industrial rolls and can effectively remove fine dust, dust and foreign substances from the surface of the product.
- It can reliably remove dust and dirt even after long time use.
In addition, the silicone rubber's unique heat resistance and low temperature retention allow it to be used in a wide range of temperatures.

◆ Silicones for Personal Care

- Annual Production Capacity : **1,000 MT.**
- Production facilities : Kneaders and dosing unit...
- Major applications : Skin care, Body Care, Sun Care, Shampoo, Hair Care, Color-Cosmetics, etc.
- Major application :
 - * Silicone Oil
 - * Special Silicone Oil
 - * Vinyl Dimethicone Fluids
 - * Dimethicone Copolyols
 - * Silicone Elastomers
 - * Polymer-Fluid Blends (Gum Blends)
 - * Silicone Emulsions
 - * Unique Silicone Polymers



◆ Silicones for Personal Care



The soft feel when applying the cosmetic is mostly from silicone ingredients and fine silicone particles make the human skin surface homogeneous.

Silicone ingredients for cosmetics are used in basic cosmetics such as skin, lotion, essence and cream. **The scope of application** is very wide to color cosmetics such as lipstick and lip gloss, and hair care products such as shampoo and hair conditioner.

◆ Silicone Articles

- Production facilities: Comma Coater, Compression Mold, Extruders...
- Major applications:

Articles/SS APPLICATIONS: Thermal pad, Thermal sheet, ACF sheet,
Flame retardant sheet, spacer panel, AMOLED pad...
Custom Designed APPLICATIONS: Food contact packing, LCD/LED HOLDER,
Holder wire, Holder corner.



Holder



Holder Series



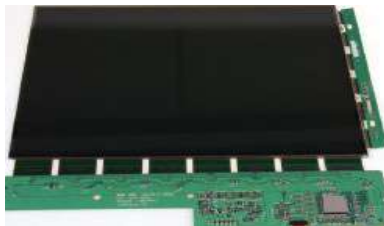
Thermal Pad



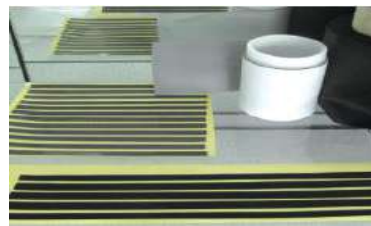
Thermal Pad



PSA



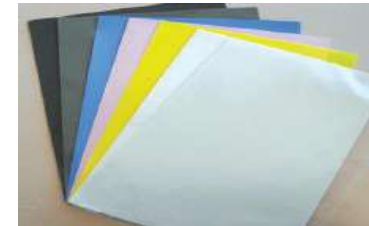
Thermal Pad



Space Panel



Silicone Sheet



PSA

◆ Silicone Articles

SS(Silicone Sheet)

- It is used as a part of IT products, as it is getting slimmer, smaller, and to radiant heat.
- Applied: TSP SERIES, TSP-FI SERIES, TC SERIES, ACF SERIES, SPACER PANEL, LSR-SH SERIES, PET RUBBER, HOLDER LGP, HOLDER WIRE



PSA(Pressure Sensitive Adhesive)

- It is used in a process of electric products or used as a LCD/LED protection film.
- Applied: General Purpose(HR-SP-9902,6802)
Surface & Leveling(HR-SP-4028,6227)
Low Temperature Cure(HR-SP-7001LT, 7061LT, 6803LT)



Silicone processed good

- Silicone Compression Molding: It can be made as a variety form from molds, And it needs heat and pressure. Compressible is normally used in industrial Sites, and it can construct auto or manual production system.



- Silicone Extrusion: It is used on mass production, such as silicone hoses. It can be made variety of size, color, and shape.



- Silicone Sponge Extrusion: If you add a blowing agent and heat into silicone Rubber, it forms silicone sponge. It requires high-techniques , facilities and Production know-how.



TSP – Series Application: LCD, LED, IC circuit

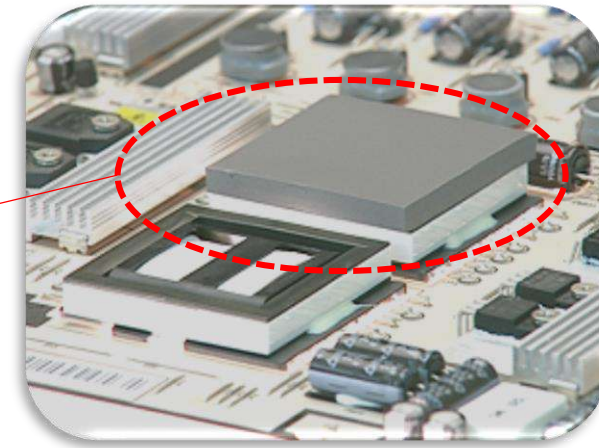
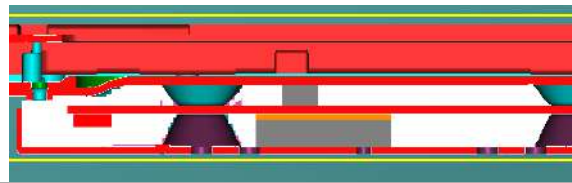
TSP Series is an advanced silicone rubber with High Thermal Conductivity, Superior Flame-retardant, Heat-resistance and Electrical Insulation.

<Attachment Location>

- Between C-PBA & Press Mold

<Function>

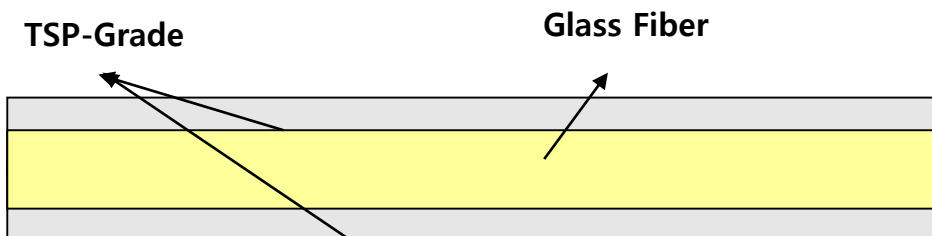
- Decrease Heat in IC Chip by transferring heat to external Metal Plate.
- Transfer heat fast by contacting with Metal Plate.



TSP-FI-Series

TSP-FI-Series are products coated with heat transfer material that has great heat transference. It is supplemented of low physical characteristics of silicone.

(suitable with products that are less than 0.5mm thick)



TC Series

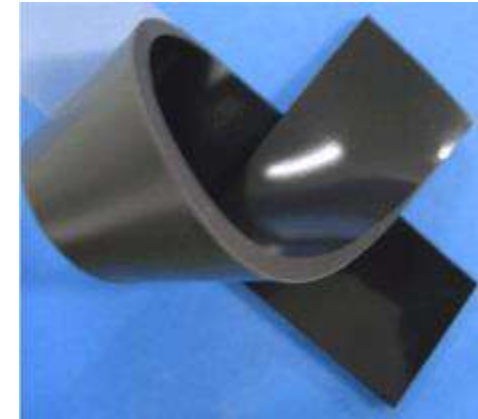
TC series are high thermally conductivity rubber sheets. They provide excellent heat conductivity and cushioning effect

<Attachment location>

- Between power sources and heat sink

<Feature>

- Excellent thermal conductivity
- Excellent flame retardant
- Various thickness are available
- Excellent electrical insulation
- Retain good physical property in a wide range of temperature



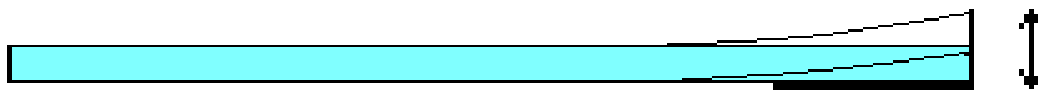
SPACER PANEL

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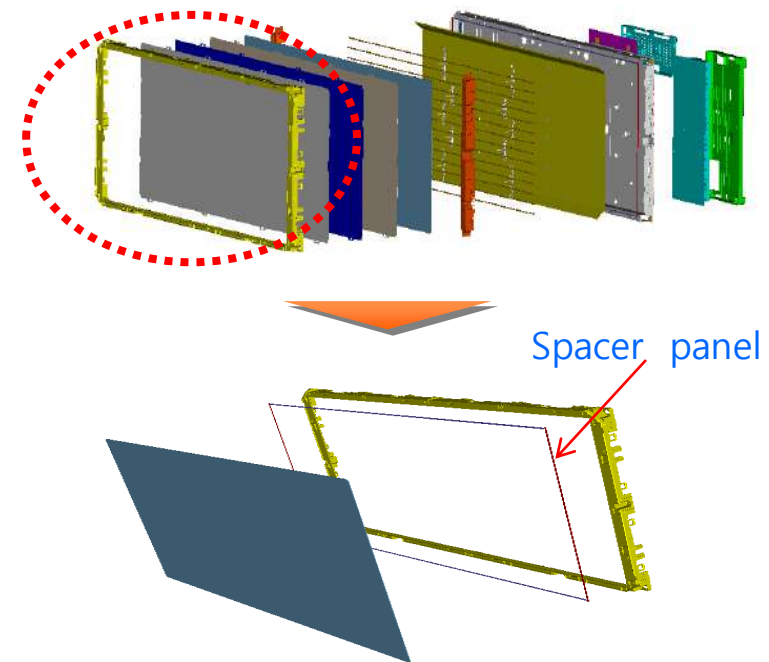
- Inside of Panel Surface
- Between Panel and Middle mold

<Function>

- Protect Panel from external shock
- Protect deformation of panel by internal heat



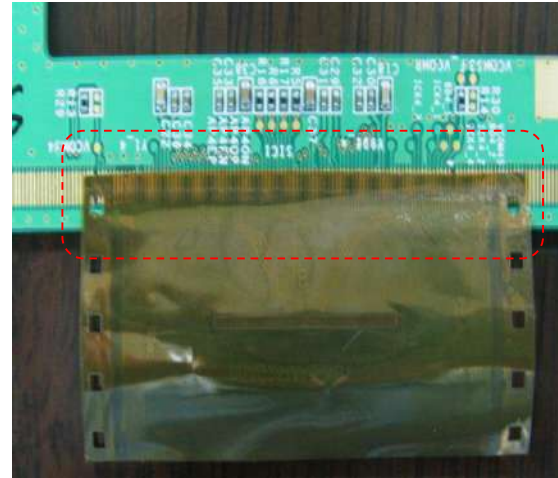
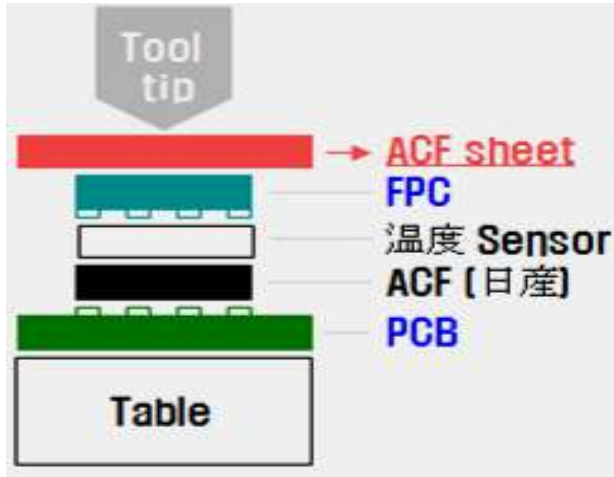
- ▶ Panel deformation (Up&down) will occur due to internal heat. Spacer Panel provide cushion when panel deformed.





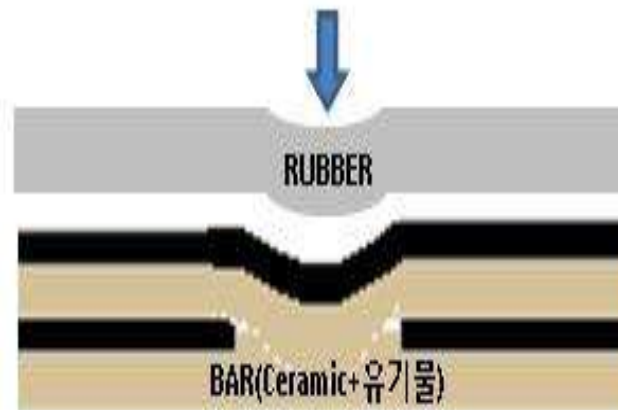
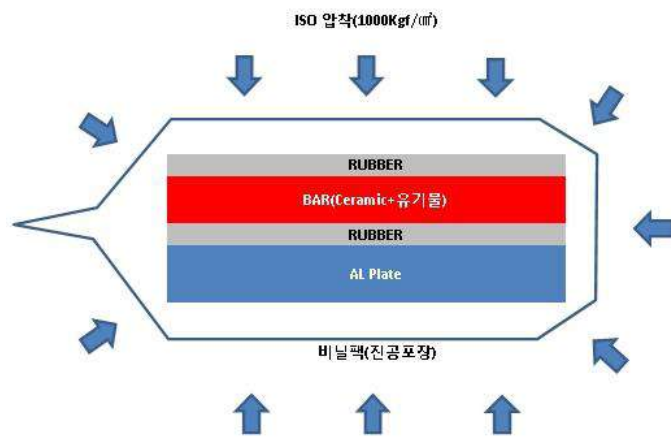
ACF SHEET

ACF sheet has superior thermal conductivity, electric conductivity.
It is optimized product for adhesive ACF Process of LCD, PDP, LED panel production.



PET RUBBER

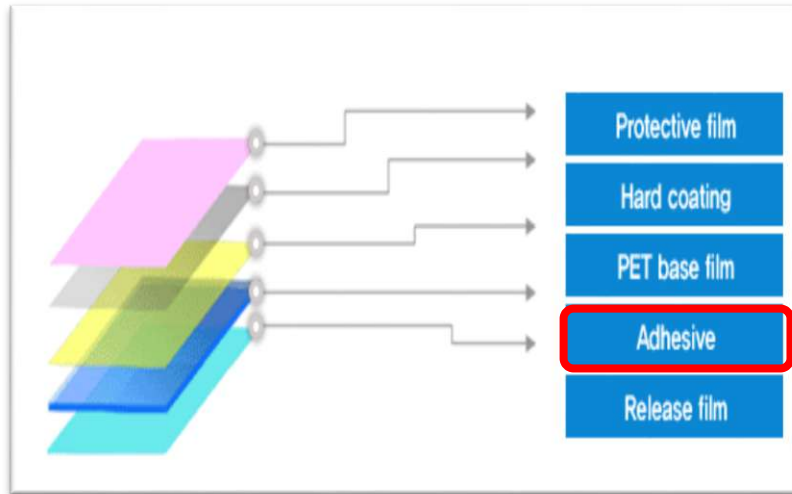
Used for shock absorption sheet when making MLCC (Multi Layer Ceramic Capacitor)





PSA-LCD protection films

HRS PSA give low adhesion performance for silicone pressure sensitive coating. It shows excellent wet-out performance to various target material such as glass, metal panel, display screen and adhere well with great wet-out performance itself though it has very lower adhesive force.

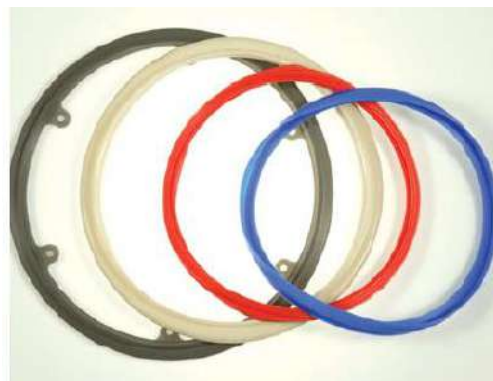


[Application]

- Protective tape / film requiring low adhesion and good wet-out performance
- Graphic Films and labels
- LCD protection films
- Electrical process films
- Coating films and masking tape

Silicone Compression Molding

Heat and pressure are need in compression molding. Compression molding is most commonly used as the working operation can be set up either in manual system or automation system.



Silicone Extrusion

According to the molding method and mixing ratio, silicone hose products, which require a mass production, are convenient to add special filler (heat resistance, flame retardant, weatherability, oil resistance, non-toxic etc). Also exact size, color and shape of products can be produced depending on the customers needs.



Silicone Sponge Extrusion

When a pyrolyzed-blowing agent and heat are added at the same time in the process of mixing silicone, a silicone sponge form can be produced. To produce this silicone sponge form, high advanced skills, techniques, equipments and processing know-how are needed.



ETC

	CONTENTS	IMAGE
FVMQ Fluorine silicone	This product combines the outstanding characteristics of silicone rubber with the oil and solvent resistance of fluorine rubber. Particularly optimized for molded parts in contact with heat, oil, solvents, etc. Also, because of its excellent workability, it can be used in a wide range of fields.	
OCA Optical Clear Adhesive	Inorganic type optical adhesive. Used for bonding optical film, acrylic, PC, glass, etc. High transmittance can be maintained even when combined with the counterpart, so it is not only applied to the touch panel of mobile devices but also used for bonding tempered glass and scattering prevention film of home appliances.	
PRC Paper Release Coating	Products coated with silicone on one or both sides of paper or film. Used to protect adhesives such as adhesive labels, sheets, and backing of adhesive tapes. It is also widely applied as a base material throughout the industry as a process paper.	
Hard Coating	Hard coating is to protect the surface of the substrate to apply a material to strengthen the mechanical properties, it is applied to a variety of industries, such as display, semiconductor, energy, food by giving various functions during hard coating	
Thermal Mold/Tape	Heat dissipation molding agent has excellent electrical properties and excellent thermal stability. For cell phone keypads and nozzle pads. Thermal tapes also conduct and radiate heat from electronics and displays. As well as preventing malfunctions and maintaining performance.	
Graphite	It is easy to machine, has high thermal conductivity, good friction and lubricity. Also, depending on the application, SiC coating, PG coating, VCI coating and impregnation are possible.	
Curing Agents Additives Pigments	<p>[Curing Agents] Material for increasing physical properties through crosslinking by adding to initial raw materials with short or linear structure between molecules</p> <p>[Additives] Regarding the IT industry, additives that improve heat resistance and flame retardancy are mainly used, and various kinds of additives such as productivity, flowability, release property, wear resistance, elongation, oxidation prevention, rust prevention, extreme pressure, and adhesive improvement are used.</p> <p>[Pigments] Powder type raw material used to produce various colors. The color of small particles in an insoluble state. It is divided into natural pigment and synthetic pigment, and pigment used in silicone industry is used for organic pigment.</p>	

Main Application Introduction

- * Automotive Industry

- * Electronics/Mobile Phone Industry

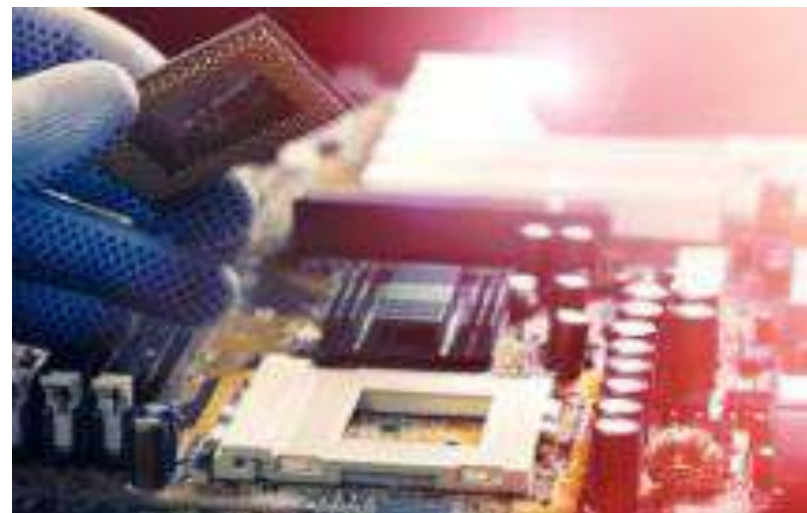
- * Display Industry

- * Wire Industry

- * Railway Industry

- * Medical Industry

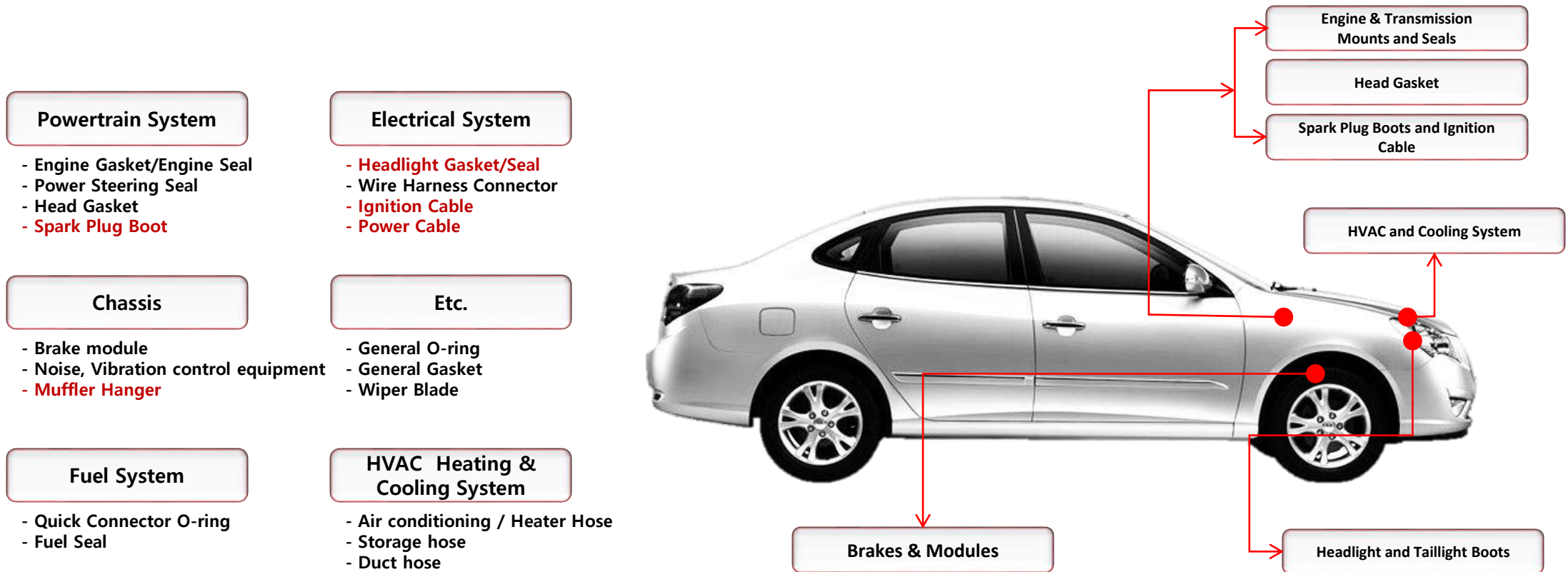
- * Kitchen Life Industry



Automotive vehicle parts

Silicone Rubber

- The quantity of silicone rubber usage in Automotive parts : 1.0~1.5Kg/Car
- Heat-resistance, Oil-resistance, high voltage resistance, High tear strength and Self Lubricate products Special Grade
- Adhesive Products, General O-ring and Gasket,.



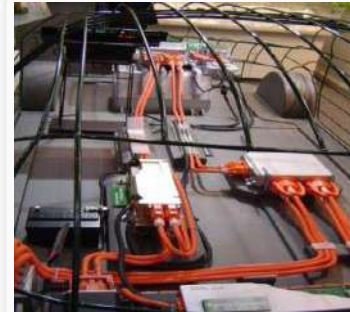
◆ Automotive vehicle parts



Muffler Hanger

- Muffler Hager is installed with the muffler in rear of the vehicle
- Exhaust Pipe Hager consists of synthetic rubber, silicone rubber and steel

Required properties: Heat-resistance, Cold-resistance, Dynamic characteristics



Power Cable

- Power cable consist of conductor & sheath
- Used a general building and a variety of electric appliances

Required properties : Dielectric Strength, Heat-resistance, Cold-resistance



Spark Plug Boot

- Spark Plug Boot has high voltage resistance as a insulator.

Required properties : Dielectric Strength, Heat-resistance



Headlight gasket

- Head light gasket needs low property changes in high temperature by light as well as at cold temperature in atmosphere

Required properties : Heat-resistance, Cold-resistance, Excellent sealing ability, Oil-resistance



Ignition cable

- Ignition cable transfer high voltage from power distribution board to cylinder or sparkplug.

Required properties : Dielectric Strength, Heat-resistance



Constant Velocity Joint boot

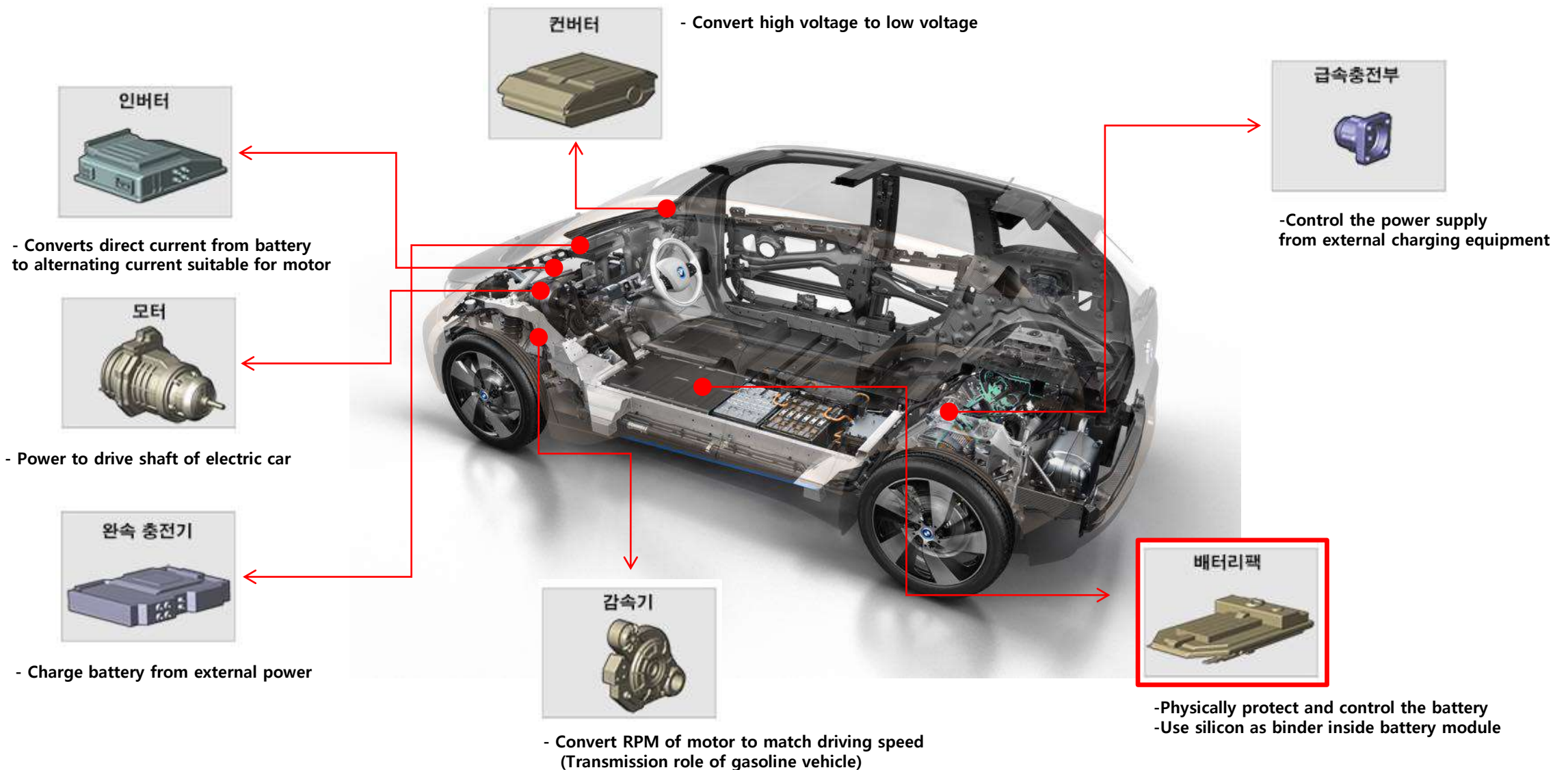
- CVJ transfers the power to axle at various angle without large increasing friction.
- This is mainly used at front wheel to prevent dust and foreign material from outside .

Required properties: High tear strength, Low weight

Electric vehicle parts

Silicone Rubber

- Silicon has insulation as well as heat dissipation. Used to cover wires in electric vehicles
- Prospects for use in everything from chargers to powered parts, to motors and wires
- Silicon material to be used for battery anode materials (3 ~ 5% currently in use)



◆ Electric vehicle parts

Developed and supplied battery cables for the next-generation of eco-friendly hybrids/ electric/ hydrogen vehicles, silicone rubber for high voltage, etc.

Applied in global eco-friendly vehicles locally and abroad, such as Hyundai/Kia Motors, Geely in China, Volkswagen in Europe, Audi, etc.



Battery Lead Wire

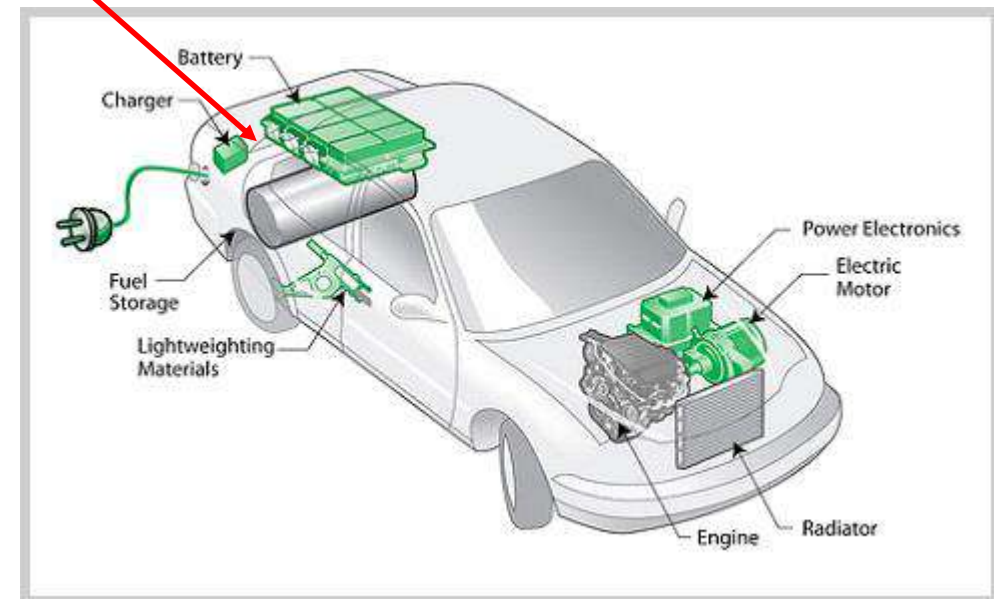
- Connects the battery and the battery charger in the electric vehicle
- Used in high voltage areas for smooth charging - prevents heat generation during the electric vehicle charging

Required characteristics: electrical properties, heat resistance, flame retardancy, etc.

CUSTOMER



HYUNDAI·KIA MOTORS



◆ Silicone rubber for electric/electronic/smartphone products



Wireless Earphone Eartips

- Gently adheres to the inside of the ear and blocks external sounds
- Characteristics: excellent resilience, adhesion, wearing comfort and is non-toxic



Smartphone IC Thermal Management Products

- Thermal management of performance-critical components such as IC, RAM, and image processors
- Excellent thermal conductivity, physical stability in vibration & temperature cycles, and stress relief function



Smartphone Waterproof Products

- International standard IP Rating (waterproof and dustproof)
- Applied in various forms such as seal
- Protects devices from moisture and prolonged immersion



O/A Device Roll Product

- Applied to rolls of office equipment such as printers and multifunctional devices
- Excellent conductivity, thermal conductivity, heat resistance, cold resistance, and weather resistance



Silicone Potting Products

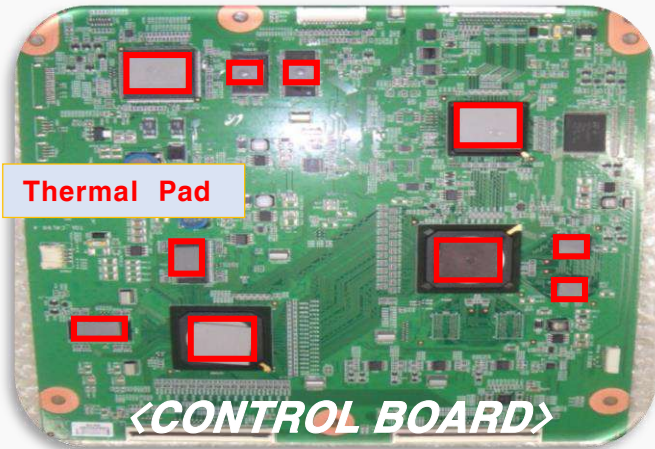
- Protects electronic components from moisture and dust
- Applied to electronic devices such as power supply devices, sensors, switches, and control modules



Silicone for other Electronic Products

- For securing parts: molding electronic products and fixing emblems
- For attaching silicone materials: connection of silicone sheets, etc.
- For microwave doors: Prevention of internal heat emission and electromagnetic wave blocking

◆ Silicone rubber for display



TSP - Series

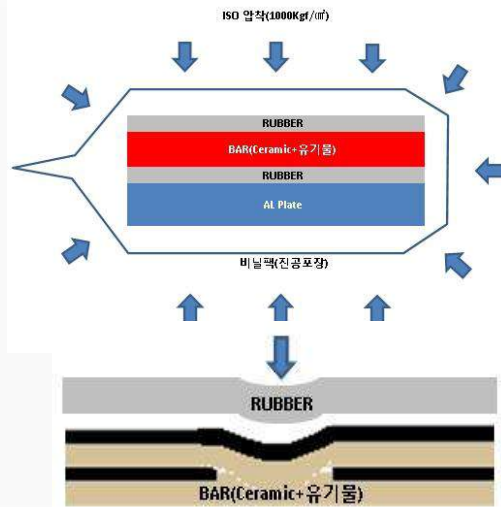
- TSP Series is an advanced silicone rubber with High Thermal Conductivity, Superior Flame-retardant, Heat-resistance and Electrical Insulation.

<Attachment Location>

- Between C-PBA & Press Mold

<Function>

- Decrease Heat in IC Chip by Transferring heat to external Metal Plate.
- Transfer heat fast by contacting with Metal Plate



PET RUBBER

- Used for shock absorption sheet when making MLCC (Multi Layer Ceramic Capacitor)

Electric wire



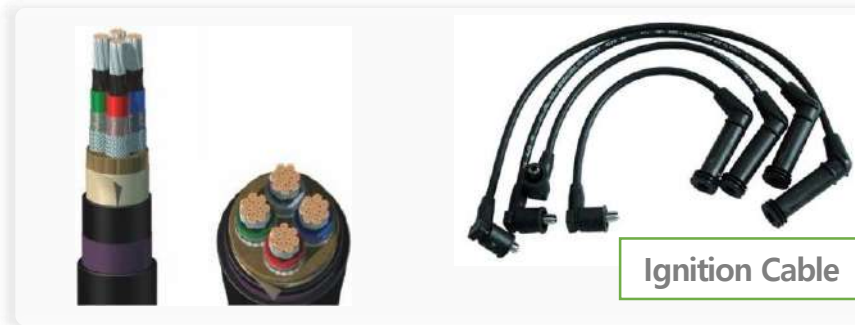
Flame Retardant Cable

- Increased flame retardancy by adding fillers and additives
- Applied to extrusion rubber parts that require a general level of flame retardancy
- Used as internal insulation of general flame-retardant cables



Fire Resistant Cable

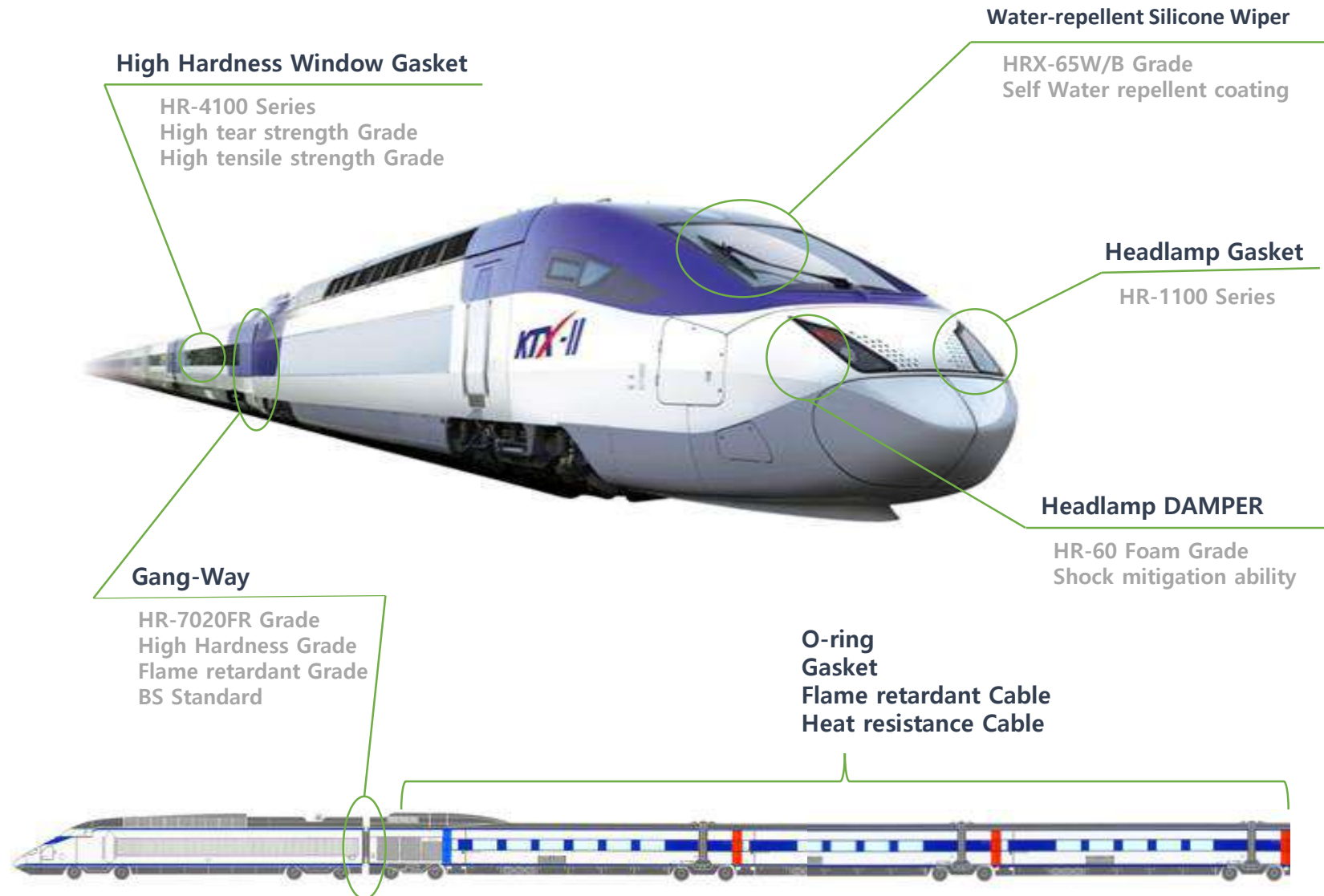
- Silicone coating becomes ceramic-like due to carbonization, and the conductor inside the coating is directly affected by fire to prevent leakage (electricity) from occurring
- Used for building control cables, warships and various ship control cables, etc.
- ※ Fire Resistance TEST (IEC 60331) Acquired
Test for electric cable under fire conditions - whether current flows by burning at a temperature of about 800°C for 2 hours



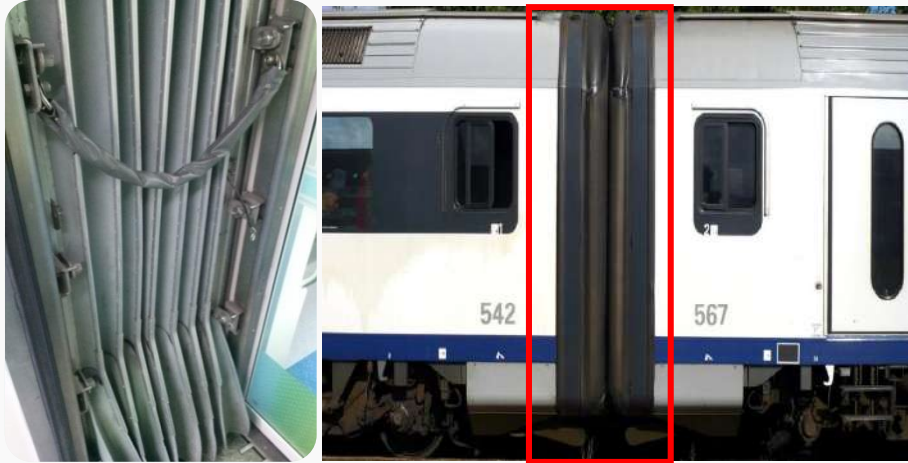
High Voltage Cable

- Silicone rubber has a significant difference in electronegativity due to the bonding of SI-O and has a bonding energy close to that of an ionic bond
- Strong electrical insulation properties as it is very stable in terms of energy
- Applied to high voltage parts/cables of automobile ignition, home appliances and industrial products

◆ Railroad Industry



◆ Silicone rubber for railroad Industry



Gangway Protection Cover

- High Hardness and prevention of Flame spread
- In accordance with BS Flame resistant standard
- Excellent Process ability
- Non toxic



Keypad, Key-top

- High resilience, compression set and rebound Grade
- Silicone Rubber Keypad is applied to almost all operation button types
- Applicable to remote controls, keyboards, operation buttons of general vehicles and railway vehicles, etc.

◆ High voltage insulator

Long Rod Insulator and Surge Arrestors

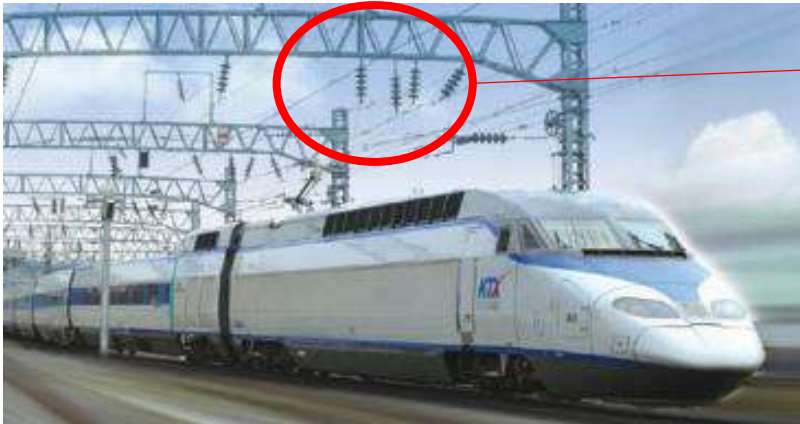


- Low degradation, saving the cost, efficient maintenance and inspection.
- It is one of the measure for salt and dust due to easy to clean by raining and excellent electrical loss
- Protecting machine and power line from overvoltage and induced lighting.



Bushing

- In electric power, a bushing is an insulated device that allows an electrical conductor to pass safely through a earthed conducting barrier such as the wall of a transformer or circuit breaker.
- There are Solid Type busing, Condenser Type bushing and Oil Field Bushing



High Voltage Insulator

HVI-65, 70, 72 Series
IEC 60587 Tracking Resistance
IEC 60695 Flame Retardant



◆ Silicone rubber for medical care

In the medical and healthcare industries, silicone can be used in medical components such as catheters, connectors, dental impression materials, and menstrual cups.

Silicone is a biocompatible material that is safe and reliable enough to be used as a skin adhesive for dressing wounds.



Dental Impression Material

- An important material used during the dental prosthetic treatment process
- This dental impression material is popular as it can replicate the state of the oral cavity
- High precision when taking impressions/ little change in size after hardening/ short working & hardening time/ excellent elastic recovery



Silicone Catheter and Medical Tube Products

- Catheter: silicone material is inserted into the bladder through the urethra and is applied to patients who cannot move or have difficulty urinating
- Non-toxic properties, excellent resilience and sealing properties



Menstrual Cups and Silicone Dressing Products

- Menstrual cup: 100% non-toxic silicone material / safe and semi-permanent as there are no harmful substances and bacteria does not propagate
- Dressing: soft silicone adhesive layer that is flexible and absorbent (used for patients who move a lot)

◆ Home products

Rice Steam Cooker Packing



Features

- Excellent Heat & Steam resistant Properties
- Rice Steam Cooker Packing, Electric pot, Packing
- Steam Line O-Ring, Gasket

Baby Nipples



Features

- High tear strength
- High transparency
- Non toxic

Food Contact Packing



Features

- Excellent extrusion process ability and good molding
- Excellent releasability that does not adhere to the container
- All molded articles packing

Home Products



Features

- Good molding process ability
- Non toxic
- Good temperature resistant

Kitchen Heat Resistant



Features

- Excellent Process ability in press molding & injection and all other process
- Excellent Heat resistant Properties
- Food contacted packing

Swimming Cap



Features

- Low Hardness and High Elongation Property
- Excellent comfortable
- Excellent Process ability
- Swimming cap