


Changing the Picture of Electronics Worldwide



Silicones are pioneering more ways to advance our lifestyle in the electronics age. Cell phones, the Internet, wireless computers and smart cards are all manufactured with silicones.

Silicone-based technology enables high-performance material for today's increasingly diverse and demanding electronics and electrical applications. Silicones seal and protect highly sensitive circuits, semiconductors and devices from heat, contamination and accidental damage and help ensure continuity of electrical supply.

Protect

Silicones produce airtight seals that protect the most sensitive electronic assemblies and components from outside contamination or movement. This is critical to ensure long-term stability and performance in many electrical products. In addition, silicone materials are non-corrosive, non-pyrophoric and meet the stringent safety and purity requirements of electronics production and manufacture.

Silicones' insulating properties help protect electrical circuitry in televisions, computers and aircraft video displays from heat, dirt and dust. They are also ideal for high-voltage applications and insulate above ground and under ground cable and power lines.

Enable

As devices become thinner, smaller and faster, new applications take advantage of silicones' remarkable physical properties: high- and low-temperature stability, excellent electrical insulation, strength, flexibility and pliability, moisture resistance, chemical stability, ultraviolet resistance and other environmental protection, and adhesion to and protection for a broad range of materials.

Typical Applications

Silicone sealants, adhesives and coatings are used for circuits, connectors, capacitors, coils, transistors and tubes in electronic devices for most consumer and business applications, including those listed below.

Automotive ●●●

Silicones insulate highly sensitive automotive electronics. They help electrical components perform in extreme temperatures and remain protected from moisture, salt and other corrosive surroundings. They help ensure electronics reliably perform critical functions in airbags, automotive body components, brake systems, ignition, fuel and air systems and transmissions.

Aviation and Aerospace ●●●

Silicones withstand tremendous stress and temperature extremes, which is essential in aviation and aerospace. Silicone adhesives, sealants and encapsulants help ensure the operational integrity of electrical components and systems. For example, they protect electronic printed circuit boards from moisture and contaminants.

Communications ●●●

Silicones seal, bond and encapsulate mechanical and electrical parts in home and office equipment including power transistors, rectifiers and thermal switches. Keypads, keyboards and copier rollers are made with silicones – as are hardcoating housings for computers, facsimile machines, telephones and home entertainment equipment.



Cleaning and Removal Fluids ●●●

Silicone fluids are good cleaning agents. They rinse off residues from cleaning materials used on components of aerospace guidance systems and electronics, as well as medical devices.

Home Appliances ●●●

Automatic coffee makers, digital answering machines, microwave ovens, steam irons, stereo systems, televisions, washing machines, vacuum cleaners – virtually every home appliance maintains an extended operational lifecycle because its electronic components are protected by silicones. With silicones, home appliances are safer, more dependable and require less maintenance. Silicones also contribute to newer generations of “thinking appliances” – compact electronics systems that deliver increasingly sophisticated performance.

Microelectronics and Microprocessors ●●●

Hyper-pure silicon (made with silicones) is critical for sensitive electronic circuits. As technological advancements increase processing power and miniaturization capabilities, increasingly compact electronic modules require significant thermal stability and moisture resistance. Silicones meet the ever-changing demands of the integrated circuit packaging industry's microelectronic devices, components, assemblies and systems.

Macroelectronics ●●●

Silicone is critical for assembling and protecting finished circuit boards or electronic modules. A variety of silicone-based materials, conformal coatings, encapsulants and gels enhance insulation and chemical resistance and provide consistent protection against moisture, humidity, vibration, over-heating, corrosion and radiation. Sealants, adhesives and primers can be easily manufactured with a variety of common materials including ceramics, reactive metals and filled plastics. This makes for sterile and rapid mass production of electronics systems.

Semiconductors ●●●

Silicones encapsulate and protect semiconductors – the necessary components in virtually all electronic devices. Semiconductors are needed for the function of high voltage/power applications such as industrial motors, locomotives and power supplies requiring high voltage switches; high frequency communications such as cell phone base stations, satellites and radar; and high temperature applications for aircraft engines, oil drilling and automotive electronics, including sensors to control fuel efficiency and emissions.

Power and Utilities ●●●

Electrical power distribution is dependent on contamination-free insulators that protect the power supply from costly and dangerous interruptions that could result from exposure to water, salt, sand or industrial pollutants. Silicones provide high voltage insulator coatings to protect wire, power and communications cables. Silicone insulators ensure underground and above ground cables transmit significant amounts of energy safely and without disruption. Silicones' inherent durability also prolongs the life of the material, reducing maintenance and replacement costs.



Consumers benefit daily from expanding applications of silicones in electronics and related industries. The silicone industry continues to improve current applications and technologies so they are more versatile, easier to use and more cost-effective.

Consumer Benefits

- Virtually any electronic device operating on batteries, by electric socket, industrial power supply or satellite relies on silicones.
- Silicones have played an integral role in advancements in computer technology, telecommunications and all other related fields that rely on the microchip. Without silicone to protect products from extreme temperatures and contamination, many technological and electronic innovations taken for granted today would not exist or function as effectively.
- Silicones have cost-savings benefits. Their strength and flexibility contribute to fast, sterile and efficient manufacturing and installation. Silicones' durability reduces cleaning, maintenance, and operational and replacement costs for new and older electronics products.
- Silicones extend the service life of electronics products. Even under extreme conditions, silicones retain their resistance to heavy wear and tear. This makes them an optimal ingredient in hardworking products such as computers, cars, jets and home appliances.
- Silicone sealants and adhesives provide the durability and service life that consumers require.