Imagine: Sealing, bonding and insulation for home appliances

Appliance solutions brochure
Silicones: At work for you

A home is more than four walls and a roof. Appliances – for the kitchen, laundry, climate control and security – are what define a home’s comfort, convenience and security. Without safety, value and ease of use, appliances won’t appeal to consumers who demand performance, reliability and energy efficiency.

That’s why an appliance needs to be more than a stylish shell with an electrical cord attached. It is the materials inside that underlie its design and assembly and define an appliance’s consumer appeal, reliability, ease of use, safety and efficiency. Materials like Dow’s unmatched selection of silicone adhesives, sealants, encapsulants and coatings are all formulated to help appliance manufacturers optimize the performance, value and manufacturability of their latest and future appliance designs.

Silicones from Dow: Reliable, resistant, responsible

Benefits

• Wide temperature range: The chemistry of silicones makes them more thermally stable than organic solutions, allowing them to perform reliably at temperatures from -65°C to 250°C, including some materials capable of intermittent use up to 350°C.
• Strong bonds: Whether the application calls for an adhesive or a seal, silicones remain flexible, stable and resilient over a wide temperature range – even when bonding materials with different coefficients of thermal expansion.
• Extremely weather-resistant: Silicones are virtually unaffected by weather, including rain, sleet, snow, ozone and thermal cycling.
• Good dielectric properties: Reliable electrical insulation is important in every appliance design, and silicones offer solid dielectric performance over a wide temperature range.
• Low flammability: Dow’s silicone adhesives and sealants are reluctant to burn, and select grades are exceptionally flame-retardant.
• Good chemical stability: Resistant to common household cleaners and chemicals, silicones are inert to aqueous solutions, dilute acids and bases, and solvents.
• Environment: Silicone, by nature, exhibits a very low order of toxicity during manufacturing operations and in finished products. Dow is committed to Responsible Care®, a voluntary pollution prevention initiative, and applies its guiding principles to how we do business globally.
• Gas and water-vapor permeability: Unlike other elastomers, silicones allow the passage of air, gases and steam.
• Excellent radiation resistance: Silicone adhesives and sealants from Dow exhibit exceptional resistance to ultraviolet radiation and can withstand exposure to sunlight.
• Optical properties: Dow’s advanced silicones offer excellent optical clarity without sacrificing other useful material properties.

Products

• Adhesives: Encompassing simple room-temperature and heat-accelerated cure options, Dow’s broad selection of silicone adhesives lets you form strong, flexible bonds between a wide range of surfaces.
• Sealants and foams: From hot-melt adhesives to foamed-in-place gaskets, Dow’s silicone sealant portfolio supports design versatility, automated manufacturing and higher productivity before your product even leaves the factory. Once applied, our sealants and foams form resilient seals that protect against air, moisture, dust and other contaminants.
• Conformal coatings: Silicone coatings from Dow are synonymous with more reliable electronics that can withstand moisture, contaminants, solvents and abrasion. Our silicone coatings further offer good dielectric and stress-relieving properties to help ensure your assembly delivers long-lasting performance.
• Thermal management solutions: Encompassing thermally conductive adhesives, gap fillers and silicone greases, Dow’s thermal management portfolio offers innovative design solutions for appliance applications demanding higher power densities, compact form factors and more reliable performance.
Safe & convenient

**Key trends:** Consumers expect safe, convenient performance – but adding electronics increases the heat. Silicones from Dow balance consumer preferences with engineering requirements.
- Thermal stability and heat resistance
- Environmental seals, coatings and encapsulants
- Dielectric strength for electrical insulation
- Reliable protection against heat and electricity

Efficient & responsible

**Key trends:** Efficient appliances need less energy and use less water. They cost less to operate and combine environmental sustainability with a sleek appearance and superior performance.
- Clean lines and compact designs
- Energy-efficient
- Environmentally sustainable
- Performance-driven

Easier processing for increased productivity

**Key trends:** Appliance manufacturers want better materials that are faster and easier to process. Silicones from Dow resist harsh environments and support more efficient manufacturing for greater productivity.
- Temperature cycling and extremes
- Room temperature cures
- Heat-accelerated cures and hot-melts
- Reasonable open time and dispensing
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We bring more than just an industry-leading portfolio of advanced silicone-based materials. As your dedicated innovation leader, we bring proven process and application expertise, a network of technical experts, a reliable global supply base, and world-class customer service.

To find out how we can support your applications, visit consumer.dow.com/pcb.