

SILICONES AND SEMICONDUCTORS

KEY PLAYERS IN EUROPE'S DIGITAL AUTONOMY

Semiconductors are powering our increasingly connected world. Also known as microchips, they are essentially the 'brain' of every electronic device, used in smartphones, cars or medical equipment. In 2021, around 1.15 trillion semiconductor units were sold globally. This means that there were around 148 semiconductors per every person living on earth.

This number is forecasted to increase with the shift towards green mobility. For example, a compact car typically uses 300 chips, while an electric vehicle needs around 3000 semiconductors. This is one of the reasons why chips are key for Europe to achieve both the digital and green transition.

Against this backdrop, the European Commission has put forward the Chips Act aiming to confront semiconductor shortages and strengthen Europe's technological leadership. The act aims at doubling the semiconductor production in Europe, meaning that by 2030, 20% of the world's microchip manufacturing will take place in the EU. Domestically produced semiconductors will help Europe move closer to the strategic autonomy, and silicones play an essential role in this process.

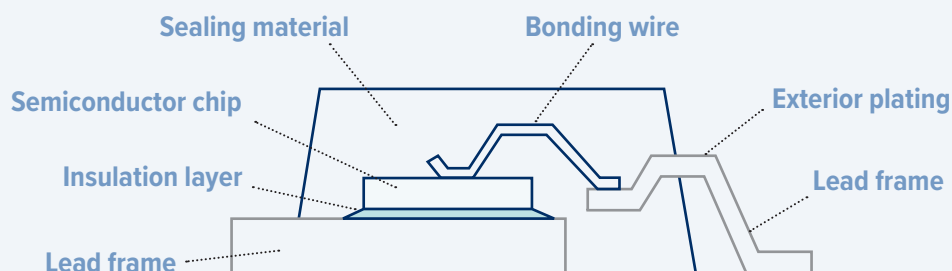
WHERE ARE SEMICONDUCTORS USED?

A more connected world means a need for more semiconductors to connect us!



WHERE ARE SILICONES USED IN SEMICONDUCTORS?

Silicones are used in the manufacturing process of semiconductors, primarily as an insulator. The main substance used is D4 (Octamethylcyclotetrasiloxane), which is transformed into very thin layers that are used to coat and protect the integrity of the microchips. The manufacturing processes of semiconductors are normally run in closed conditions to avoid any kind of emissions and contamination during production.



HOW DOES IT WORK?

While used in rather small quantities, the properties of D4 ensure high performance and reliability that allow advanced technology semiconductors to function effectively.



THERMAL STABILITY
prevents overheating



DURABILITY
prevents deterioration



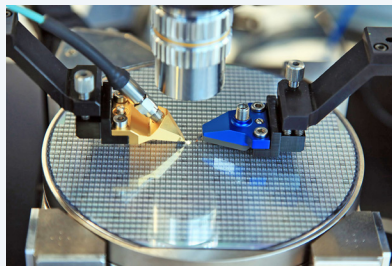
RESISTANCE
prevents damage

WHY IS IT IMPORTANT?

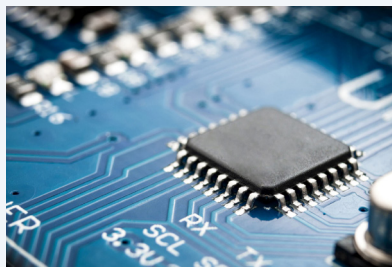
Preventing overheating, wear and damage is essential in ensuring the performance and durability of semiconductors. There are currently no viable alternatives available to D4 that provide the same protective and performance properties.

Silicones & assembly of semiconductors

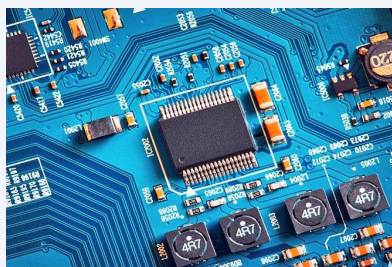
Silicones in other forms are also essential in the assembly of semiconductors and their connection to circuit boards.



Silicone coatings and encapsulants, protect semiconductors from scratch, water, moisture, and air.



Thanks to their stability, silicone made thermal interface materials help semiconductors withstand sudden temperature changes.



Silicone sealants are used in the assembly of protective semiconductor packaging.