Silicones – Diverse properties and applications

General properties
→ Adjusted by viscosity
→ Properties unaffected by changes in temperature
→ Biological tolerance
→ High stability to weathering

Contradictory properties
→ Transparency/impermeability to light
→ Electrically insulating/conducting
→ Resistance to high/low temperatures
→ Adhesive/nonstick properties
→ Hydrophobic/hydrophilic
→ Antifoams/foam stabilizers

Other applications
→ Fire protection
→ Shock absorbers
→ Restoration/dental prosthetics

Silicones – Biological tolerance

Si-O and Si-C bonds in silicone polymers
Physiologically inert

Medical...
(Insulin pump, catheters...)

Pharmacological...
(Tablets/capsule coating, toothpastes)

Cosmetics...
(Creams, lipsticks...)

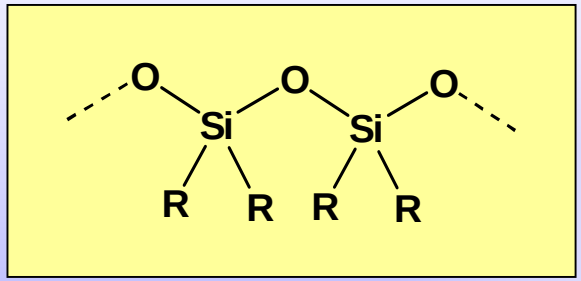
Silicones – Resistant to weathering

Silicone polymers: resistant to weathering, ozone and UV radiation; Stability of the SiC and SiO bonds and water repellency of silicones

Highly durable facade protection

Durable, scratch and UV resistant automotive finishes

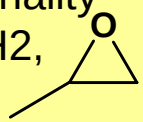
Silicones – Colored or colorless



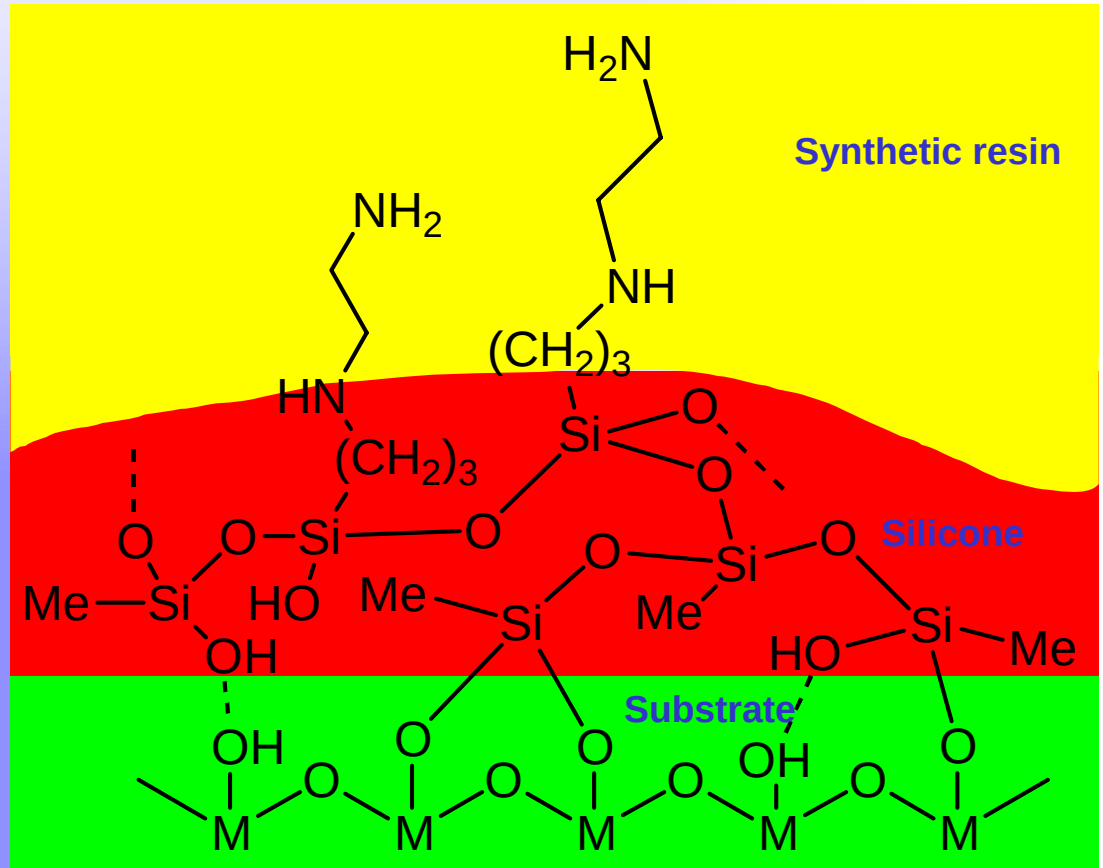
Colorless
- **Refractive index determined by R (Me, Ph,....)**

Pigmented
- **Almost any color**
- **Control over properties (Elastic, ceramifying, corrosion protection)**

Silicones – Adhesion promoters

Adhesion to organic surfaces (polymers)
- Organic functionality (NH2, C(R)=CH2, )

Adhesion to inorganic surfaces (glass, metal)
- Si-O-M bonds
- SiOH HO-M bridges



Silicones – Structural glazing

Extremely powerful, flexible combinations of metal and glass make innovative structures possible

Silicone release agents