

MS POLYMER (SMP), URETHANE OR SILICONE? UNDERSTANDING THE DIFFERENCES

In modern construction and façade engineering, selecting the right adhesive or sealant system is essential for achieving long-term performance, durability, and reliability.

Three of the most used technologies are:

- **MS Polymer (SMP)**
- **Polyurethane (Urethane)**
- **Silicone**

Although these products may appear similar at first glance, their properties, performance, and applications differ significantly.

Understanding these differences helps architects, contractors, façade specialists, and installers make the right choice for every project.

MS Polymer (SMP): The Modern All-Round Solution

MS Polymer (SMP) technology combines the advantages of both polyurethane and silicone systems while minimizing many of their disadvantages.

This makes MS Polymer (SMP) one of the most advanced and versatile bonding technologies available today.

Key Advantages of MS Polymer (SMP)

- excellent adhesion on many substrates,
- permanently elastic,
- UV resistant,
- low odor,
- solvent-free,
- paintable,
- minimal shrinkage,
- and environmentally friendlier formulations.

MS Polymer (SMP) systems also offer:

- strong initial tack,
- durable weather resistance,
- excellent vibration absorption,
- and long-term flexibility.

Because of these properties, MS Polymer (SMP) adhesives are increasingly used in:

- ventilated façade systems,
- interior bonding,
- transportation,
- modular construction,
- and architectural applications.

Polyurethane (Urethane): Strong but Sensitive

Polyurethane adhesives have been widely used for decades because of their:

- high mechanical strength,
- strong adhesion,
- and fast curing properties.

They are often suitable for structural bonding applications where high load-bearing capacity is required.

Advantages of Polyurethane

- very high strength,
- excellent mechanical performance,
- strong load-bearing capacity,
- and good adhesion on many materials.

However, polyurethane systems also have important limitations.

Limitations of Polyurethane

- sensitive to UV exposure,
- may become brittle over time,
- can contain hazardous chemicals,
- often require primers,
- and may shrink during curing.

In exterior façade applications, long-term UV exposure can reduce the durability and elasticity of certain polyurethane systems.

Silicone: Excellent Flexibility and Weather Resistance

Silicone sealants are best known for their:

- outstanding UV resistance,
- excellent weather durability,
- and permanent flexibility.

Silicone performs extremely well in environments exposed to:

- sunlight,
- moisture,
- temperature fluctuations,
- and long-term outdoor exposure.

Advantages of Silicone

- exceptional UV resistance,
- highly flexible,
- excellent weather stability,
- resistant to ageing,
- and very durable outdoors.

Limitations of Silicone

However, silicone also has disadvantages in bonding applications:

- limited paint ability,
- lower mechanical strength,
- difficult surface contamination,
- and reduced adhesion to certain substrates without primers.

For this reason, silicone is often preferred as a sealant rather than as a structural adhesive.

Which Technology Is Best?

There is no universal “best” adhesive technology.

The correct choice always depends on:

- the substrate,
- environmental conditions,
- required elasticity,
- mechanical loads,
- UV exposure,
- and the intended application.

However, for many modern façade and construction applications, MS Polymer (SMP) technology offers the best balance between:

- strength,
- flexibility,
- weather resistance,
- processing ease,
- and environmental performance.

Why TWEHA® Chooses Advanced MS Polymer (SMP) Technology

At TWEHA®, we continuously focus on:

- innovation,
- sustainability,
- long-term durability,
- and practical installation reliability.

That is why many TWEHA® bonding systems are based on advanced MS Polymer (SMP) technology.

These systems provide:

- durable adhesion,
- excellent elasticity,
- primer-free possibilities,
- low environmental impact,
- and reliable long-term façade performance.

Combined with decades of technical expertise and practical experience, TWEHA® delivers bonding solutions designed for the demands of modern architecture.

The Future of Bonding Technology

As construction continues to evolve toward:

- sustainable materials,
- lightweight structures,
- hidden fixing systems,
- and environmentally responsible solutions,

Advanced adhesive technologies have become increasingly important.

Choosing the right bonding system means choosing:

- safety,
- durability,
- efficiency,
- and long-term architectural quality.

And with modern MS Polymer (SMP) solutions, TWEHA® helps professionals build exactly that future.

Performance comparison of MS Polymer, Urethane and Silicone, 10=excellent, 1=very poor			
Property	MS Polymer	Urethane	Silicone
Environmental friendliness	10	5	9
Non-bubbling	10	6	10
Low temperature gunnability	10	8	10
Slump resistance	10	10	10
Quick cure	10	7	10
Storage stability	10	7	9
Body (tooling)	8	10	8
Weather resistance	8	6	10
Adhesion to various substrates	10	5	8
Mechanical properties	10	10	10
Heat resistance, mechanical stability	9	8	10
Non-dirt pickup	10	10	5
Stain resistance	8	8	5
Paintability with water-based paint	10	10	3
Totals	133	110	117

Table from *MS Polymers in "Hybrid" Sealants* by Edward M. Petrie. Used here with permission from the Adhesives and Sealant Council.

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