

Polysulphide Sealants for Expansion Joints

Polysulphide sealants are high-performance, chemically resistant elastomeric materials designed specifically for **sealing movement joints** in a wide range of construction and industrial applications. These sealants are particularly well-suited for **expansion joints**, where flexibility, weather resistance, and durability are critical.

Composition and Chemistry

Polysulphide sealants are based on **liquid polysulphide polymers**, which contain sulfur atoms in their backbone structure. These polymers are typically formulated as **two-component systems** (base and curing agent) that undergo a chemical curing reaction to form a **flexible rubber-like seal**.

Key components:

- **Base Component:** Liquid polysulphide polymer with fillers and plasticizers
- **Curing Agent:** Usually includes a catalyst (often manganese dioxide or lead dioxide) for vulcanization

Key Properties

- **Excellent Flexibility:** Remains elastic over a wide temperature range (-40°C to $+80^{\circ}\text{C}$), making it ideal for dynamic joints that experience frequent expansion and contraction.
- **Outstanding Chemical Resistance:** Resistant to fuels, oils, solvents, water, and many aggressive chemicals—making it suitable for chemical processing plants and fuel-handling areas.
- **Waterproofing Capability:** Provides an impermeable barrier against water ingress, even under submerged conditions.
- **UV and Weather Resistance:** Withstands prolonged exposure to sunlight, rain, and temperature extremes without cracking or degradation.
- **Adhesion:** Strong adhesion to a variety of substrates such as concrete, metal, glass, and masonry—often enhanced with a primer.
- **Applications**

Polysulphide sealants are extensively used for **expansion joints** in:

Infrastructure & Civil Construction

- Bridges, flyovers, and tunnels
- Dams, water treatment plants
- Podiums, terraces, and facades
- Basements and retaining walls

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Industrial & Commercial

- Fuel stations and chemical storage facilities
- Airports and runways
- Precast concrete panel joints
- Floor joints in warehouses and parking decks

Marine and Water Containment

- Dockyards and harbors
- Swimming pools and water tanks

Advantages Over Other Sealants

- **Long Service Life:** Proven durability of over 20 years in many installations
- **No Shrinkage or Cracking:** Maintains integrity over time under continuous movement
- **Custom Formulations:** Available in gun-grade (non-sag) and pour-grade (self-leveling) types
- **Low Maintenance:** Requires minimal upkeep once applied

Application Guidelines

- **Joint Preparation:** Clean and dry the joint. Remove dust, oil, grease, and any loosely bonded material.
- **Primer Application:** A suitable primer is recommended for improved adhesion.
- **Backer Rod Installation:** Insert a closed-cell polyethylene backer rod to control sealant depth.
- **Mixing (for two-part systems):** Mix base and curing agent thoroughly as per manufacturer's ratio.
- **Sealant Application:** Apply with a suitable caulking gun (gun-grade) or pour directly into the joint (pour-grade).
- **Tooling:** Tool the surface to ensure good contact with joint walls and a smooth finish.
- **Curing Time:** Initial cure within 6–12 hours; full cure in 7 days, depending on humidity and temperature

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