Technical Data Sheet

NEMPAL 111 Weatherproof Silicone Sealant

Versatile 100% Neutral Silicone Sealant

Description

NEMPAL 111 Weatherproof Silicone Sealant is a one-part, high-performance, neutral-curing, 100% silicone sealant recommended for weather sealing applications in curtain wall, building facades, door and window systems, roofing systems, and various other architectural or industrial sealing applications where long-term durability is expected.

The excellent adhesion on a wide range of substrates and the tooling characteristics of the sealant make it a superior choice for applicators. It will cure under the action of atmospheric moisture and form an elastomeric silicone sealant rubber that is waterproof. Its long durability meets the service performance requirements of most architectural joints. It has excellent resistance to outdoor weathering, UV radiation, temperature extremes, moisture, vibration, airborne pollutants, etc., thus it will not crack or harden even after a prolonged period.

Technical Properties

		111T *(translucent)*	**111M** *(colored)*
Curing System	:	Neutral - Curing by Moisture	
Base Material	:	Silicone Polymer (Oxime)	
Appearance (before cure)	:	Non-sagging Soft Paste	
Appearance (after cure)	:	Elastomeric Rubber	
Standard Colours	:	Translucent	(Matt) White, Black, Grey
Specific Gravity, g/mL	:	1.00 ± 0.05	1.40 ± 0.1
Tack-Free, minutes (at 25 °C & 50% R.H.)	:	10 – 15	30 – 90
Curing Rate, mm/24h	:	3 – 4	2 – 2.4
Ultimate Elongation, % (ASTM D412)	:	600 – 800	200 - 600
Resistance to Flow, mm (ASTM D2202)	:	0	0
Ultimate Tensile Strength, MPa (ASTM D412)	:	1.6	1.8
Low VOC Compliance (SCAQMD Rule 1168)	:	Yes	
Application Temperature, °C	:	5 – 50	
Service Temperature, °C	:	-40 – 150	

Applications*

Suitable for a wide range of architectural weatherproof sealing applications on common building materials such as glass, aluminium, galvanized and zinc-coated steel, painted surfaces, uPVC, masonry, concrete, bricks, non-oily wood, most plastics, etc.

Typical sealing applications include:

- Façade Cladding – Aluminium Composite Panel, Stone
- Curtainwall, Aluminium Canopy, Stickwall, Skylight, Frameless Glass Systems, Glass Balustrade, etc.
- Glass Window & Door Systems (Aluminium or uPVC)
- Connection and Expansion Joints
- Lap Joints of Metal Roofing
- Roof Flashing & Guttering
- Splashback
- HVAC, Plumbing, Flooring
- Coaches, Trucks, Trailers, RVs, and Boats
- Storage & Cabinet

** Users are responsible to carry out test prior to installation to confirm compatibility with actual substrates, work conditions, and service requirements.*

Features & Benefits

- ASTM C 920 compliant
- Green product - low VOC compliant (SCAQMD rule 1168)
- 100% neutral silicone
- Primer-less adhesion on most substrates
- Non-sagging - superior gunning & tooling
- No shrinkage after cure
- Good flexibility after cure
- Excellent weather resistance and durability
- Indoor and outdoor use
- Non-corrosive to metal
- Works well with alkaline substrates like concrete and stone

Directions for Use

1. Remove all residual dirt, grease, oil, frost, water, and old sealant thoroughly. Clean the surface with a piece of white cloth with solvent, then wipe immediately with another piece of clean cloth. Do not use soap or detergent.
2. For a neat finish and less clean up works, apply masking tape and remove it before sealant skins over.
3. Cut the nozzle to desired bead width at 45° angle, screw it onto cartridge and place cartridge into caulking gun to apply sealant.
4. Apply sealant into the bottom of the joint so that it completely fills the joint, wetting both sides, before moving the caulking gun. Avoid moving too quickly and leave air traps in joint. Do not simply lay a bead on the surface as the sealant will not penetrate the joint by itself. Use backing material or bond breaker tape in joint to avoid three-sided bonding.
5. Tool the sealant immediately after application to provide a smooth finish, and to ensure the sealant wets both sides of the joint for proper bonding. Sealant tooled in a concave profile is recommended. Do not use soap or water as tooling aids.
6. Depending on environment variables, the sealant will have its skin formed in 10-30 minutes after application. Do not disturb the joint until the sealant is cured thoroughly, or adhesion will be affected. It will cure to a depth of 10mm in about 7 days. Longer curing time is expected in dry and low humidity area. Uncured sealant can be cleaned up with

solvent or mineral spirit. Cured sealant can only be removed mechanically.

Joint Design

- Joint design should take various factors into considerations, like type of adjacent substrates, temperature changes, etc., please refer to ASTM C1472 for details.
- Sealant should be applied in bead size that complies with the movement capability of the sealant (+-50%) in relation to the anticipated joint width due to joint movements.
- In general, for joint width
    - between 6 to 12 mm, width:depth ratio = 1:1
    - between 12 to 25 mm, width:depth ratio = 2:1
    - between 25 to 50 mm, sealant depth is =<13 mm.
- If sealant is applied in a corner/fillet joint profile, ensure a minimum of 6 mm bonding on both sides of the substrates.

Coverage

- Sealant coverage per cartridge / sausage depends on actual joint width and depth, application style and wastages during application. Calculations can only be a rough reference.

Joint Width	Joint Depth	Coverage (300 ml) **
0.6 cm	0.6 cm	794 cm
1.0 cm	1.0 cm	286 cm
2.0 cm	1.0 cm	142 cm

** Based on 5% wastage assumption. Actual coverage may vary. Formula:

***Coverage* = *V* / [W x D x *1.05*]**

Coverage = linear run in cm per cartridge (or sausage)
V = volume of cartridge (or sausage) in ml
W = joint width in cm, **D** = joint depth in cm
1.05 = 5% wastage assumption (to revise accordingly)

Limitations

Like other silicone sealant products, it is NOT recommended for the following applications:

- Polyethylene, polypropylene, and polytetrafluoroethylene (Teflon).
- Bitumen/Asphalt, natural / Chloroprene / EPDM rubber.
- Traffic areas subject to abrasion.
- Structural glazing or Insulating Glass bonding.
- Permanent water immersion.
- Polycarbonate and polyacrylate, if under tension.
- Materials that bleed oil, plasticizers or solvents or release by-products that may inhibit the curing of sealant, affect its adhesion, or discolor the sealant.
- Applications where sealant surface should be painted – silicone sealants are not paintable.
- Brass, copper or other sensitive metals as it may get discolored.
- Bleeding may occur on porous substrates such as concrete, marble, granite or other natural stones.
- In unventilated areas, or at low temperatures as the moisture content in the air is lower, the curing reaction will take place more slowly.

Storage, Shelf Life, and Packaging

- Store properly in a dry and well-ventilated place with temperature between +5°C to +30°C.
- Use within 12 months from date of production.
- Cartridge – 300 ml (24 cartridges / carton)
- Sausage – 600 ml (20 sausages / carton)

Handling Precautions

Always test before use - user is responsible to test before using to confirm the sealant produces desirable results.

Be careful with the temperature during application. If the temperature of the substrate surface is above 50°C, it may cause sealant to cure too fast – with bubbles in sealant bead. Likewise, if the substrate temperature is below 5°C, the sealant may cure slower.

In case sealing ACP (Aluminium Composite Panel) cladding, DO NOT leave excess sealant onto the protective film of ACP as it risks staining depending on the type of film material and ACP coating.

Product releases methylethylketoxime during application and curing. May cause an allergic skin reaction if inhaled in high concentration, use in well-ventilated areas. Keep out of reach of children. For further health and safety information, please refer to the latest Safety Data Sheet.

For Enquiry

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