

650 FLEXone High Performance Polyurethane Sealant



SPECIALTY SEALANTS TECHNICAL DATA SHEET

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NuFlex® 650 FLEXone High Performance Polyurethane Sealant has superior adhesion at a wide range of temperatures and joint movement capability $\pm 35\%$. NuFlex® 650 FLEXone bonds to most construction materials without a primer, suitable for all climates. It provides long-lasting weather tight seals in concrete, masonry, aluminum, wood, expansion wall joints, curtain wall construction, panel walls, precast units, window frames, fascia, structural components and vinyl siding.



FOR BEST PERFORMANCE:

- Do not allow uncured 650 to come into contact with alcohol-based materials or solvents.
- Do not apply polyurethane sealants in the vicinity of uncured silicone.
- 650 should not come in contact with oil-based caulking, uncured silicone sealants, polysulfides, or fillers impregnated with oil, asphalt, or tar.
- Protect unopened containers from heat and direct sunshine.
- In cool or cold weather, store container at room temperature for at least 24 hours before using.
- When 650 is to be used in areas subject to continuous water immersion, cure for 21 days at 23°C (70°F) and 50% relative humidity. Allow longer cure times at lower temperatures and humidity.
- Do not use in swimming pool or other submerged conditions where the sealant will be exposed to strong oxidizers. Avoid submerged conditions where water temperatures will exceed 50°C (120°F).
- Do not apply over freshly treated wood; treated wood must have weathered for at least 6 months.
- Substrates such as copper, stainless, and galvanized typically require the use of a primer. An adhesion test is recommended for any questionable substrates.
- UV exposure may cause white 650 to discolor. This does not affect sealant performance.
- 650 can be applied below freezing temperatures only if substrates are completely dry, free of moisture, and clean.
- Lower temperatures and lower humidity will extend curing times.
- Pursuant to accepted industry standards and practices, using rigid paints and/or coatings over flexible sealants can result in a loss of adhesion of the applied paint and/or coating, due to the potential movement of the sealant. However, should painting and/or coating be desired it is required that the applicator of the paint and/or coating conduct on-site testing to determine compatibility and adhesion.
- Make certain the most current versions of product data sheet and MSDS are being used; call Customer Service (1-800-853-3984) to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by NUCO personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite

APPLICATION:

- 650 comes ready to use. Apply by caulking gun. Do not open cartridges until preparatory work has been completed.
- Fill joints from the deepest point to the surface by holding a properly sized nozzle against the back of the joint.
- Dry tooling is recommended. **DO NOT** use soapy water when tooling. Tooling results in the correct bead shape, a neat joint, and maximum adhesion.
- For roof tile applications apply a bead of 650 FLEXone sufficient to make a bond between two tiles on the upper surface of the down slope tile. Install the upslope tile & press into the sealant bead to ensure good contact between the sealant and both tiles.

CURING TIME

The cure of 650 FLEXone varies with temperature and humidity. The following times assume 75° F (24° C), 50% relative humidity, and a joint 1/2" width by 1/4" depth (13 by 6 mm).

- | | |
|----------------------|------------------------------|
| • Skins: | Overnight or within 24 hours |
| • Functional: | Within 3 days |
| • Full cure: | Approximately 1 week |
| • Immersion service: | 21 days |

MANUFACTURED BY:

NUCO INC.	T:	519.823.4994	TF:	1.800.853.3984
150 Curtis Drive	F:	519.823.1099	E:	sales@nucoinc.com
Guelph, ON N1K 1N5				



FORM: 650_TDS.DOC

REV.: 5 DATE: 04/14

FEATURES:

- Adheres to most substrates.
- Weather resistant.
- $\pm 35\%$ joint movement capability.
- Excellent interior & exterior sealant.
- Above & below grade.
- Water immersable.
- Low VOC.

AVAILABLE SIZES & COLOUR:

- 296 mL (10 fl.oz.) cartridge
Prt. Number: 65001 (WHITE) & 65006 (GREY)
- 12 cartridges per case
- 144 cases per skid (296 mL)
- Available colors include:
white & grey.

**Special order items may require lead times and minimum order quantities.*

WHERE TO USE:

- Expansion joints
- Curtain wall construction
- Panel walls
- Precast walls
- Precast units
- Aluminum & wood window frames
- Roofing
- Fascia
- Parapets
- Structural components
- Vinyl siding
- Wastewater treatment plants
- Dams
- Spillways & storm drains
- Wetwells & manholes



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JOINT PREPARATION

1. The number of joints and the joint width should be designed for a maximum of $\pm 35\%$ movement.
2. The depth of the sealant should be $1/2$ the width of the joint. The maximum depth is $1/2"$ (13 mm) and the minimum is $1/4"$ (6 mm). Refer to table 1.
3. In deep joints, the sealant depth must be controlled by Closed-Cell backer-Rod or Soft backer-Rod. Where the joint depth does not permit the use of backer-rod, a bondbreaker (polyethylene strip) must be used to prevent three-point bonding.
4. To maintain the recommended sealant depth, install backer-rod by compressing and rolling it into the joint channel without stretching it lengthwise. Closed-Cell backer-Rod should be about $1/8"$ (3 mm) larger in diameter than the width of the joint to allow for compression. Soft backer-Rod should be approximately 25% larger in diameter than the joint width. The sealant does not adhere to it, and no separate bondbreaker is required. Do not prime or puncture the backer-rod.

SURFACE PREPARATION

Surfaces must be structurally sound, fully cured, dry, clean, free of dirt, moisture, loose particles, oil, grease, asphalt, tar, paint, wax, rust, waterproofing or curing and parting compounds, and membrane materials.

CONCRETE, STONE, AND OTHER MASONRY

Clean by grinding, sandblasting, or wire brushing to expose a sound surface free of contamination and laitance.

WOOD

New and weathered wood must be clean and sound. Scrape away loose paint to bare wood. Any coating that cannot be removed must be tested to verify adhesion of sealant or to determine an appropriate primer.

METAL

Remove scale, rust, and coatings from metal to expose a bright white surface. Remove protective coatings as well as any chemical residue or film. Aluminum window frames are frequently coated with a clear lacquer that must be removed before the application of 650. Any coating that cannot be removed must be tested to verify adhesion of sealant or determine an appropriate primer. Remove any other protective coatings or finishes that could interfere with adhesion.

PRIMING

1. NuFlex 650 FLEXone is generally considered a non-priming sealant, but special circumstances or substrates may require a primer. It is the user's responsibility to check the adhesion of the cured sealant on typical test joints at the project site before and during application.
2. For immersion applications, a waterproofing primer must be used.
3. Apply primer full strength with a brush or clean cloth. A light, uniform coating is sufficient for most surfaces. Porous surfaces require more primer; however, do not over apply.
4. Allow primer to dry before applying 650. Depending on temperature and humidity, primer will be tack free in 15 – 120 minutes. Priming and sealing must be done on the same work day.

CLEAN UP

1. Immediately after use, clean equipment with a lacquer thinner or xylene. Use proper precautions when handling solvents.
2. Remove cured sealant by cutting with a sharp-edged tool.
3. Remove thin films by abrading

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Yield:

Joint Depth (Inches)	Joint Width		
	1/4"	3/8"	1/2"
1/4	24.8	16.5	12.4

Approx. metres per litre.

Table 1:

JOINT WIDTH AT MIDPOINT, IN (MM)	
1/4 - 1/2 (6 - 13)	1/4 (6)
1/2 - 3/4 (13 - 19)	1/4 - 3/8 (6 - 10)
3/4 - 1 (19 - 25)	3/8 - 1/2 (10 - 13)
1 - 1-1/2 (25 - 38)	1/2 (13)

SUBSTRATES:

- Concrete
- Masonry
- Aluminum
- Wood
- Clay & concrete roof tiles

* Flexone 650 is not recommended for application on glass.

COMPLIANCES:

- ASTM C920, type S, Grade NS, Class 35, use NT, M, A, G*, O** and I
- Federal Specification TT-S-00230C, type II, Class A
- Corps of Engineers CRD-C-541, type II, Class A
- Canadian Specification CAN/CGSB-19.13-M87, Classification MCG-2-25-A-N, No. 81026
- USDA compliant for use in meat and poultry areas
- SWR Institute validated
- ISO 11600-F-25LM
- ** Refer to substrates in Where to Use



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Health and Safety

Warning:

650 contains Stoddard solvent and crystalline quartz silica.

Risks:

May cause skin, eye or respiratory irritation. May cause dermatitis and allergic responses. Potential skin and/or respiratory sensitizer. Ingestion may cause irritation. Reports associate repeated or prolonged occupational overexposure to solvents with permanent brain, nervous system, liver and kidney damage.
INTENTIONAL MISUSE BY DELIBERATELY INHALING THE CONTENTS MAYBE HARMFUL OR FATAL.

Precautions:

Keep container closed. Use only with adequate ventilation. Prevent contact with skin, eyes and clothing. Wash thoroughly after handling. Avoid breathing vapors. **DO NOT** take internally. Use impervious gloves, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSA/MSHA approved respiratory protection in accordance with applicable Federal, state and local regulations.

First Aid:

In case of eye contact, flush thoroughly with water for at least 15 minutes. **SEEK IMMEDIATE MEDICAL ATTENTION.** In case of skin contact, wash affected areas with soap and water. If irritation persists, **SEEK MEDICAL ATTENTION.** Remove and wash contaminated clothing. If inhalation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs or if swallowed, **SEEK IMMEDIATE MEDICAL ATTENTION.**

VOC Content:

650 contains 35g/L or 0.29 lbs/gal, less water and exempt solvents.

TYPICAL PROPERTIES:

These values are not intended for use in preparing specifications. Spec Writers; please contact NUCO Inc. before writing specifications if any further information is required.

Description	Specification
Service temperature:	-40°F to 180°F (-40°C to 82°C)
Movement capability (ASTM C719):	+35%
Tensile strength, psi (MPa) (ASTM D412):	350 (2.4)
Tear strength, pli (ASTM D1004):	50
Ultimate elongation at break (ASTM D412):	800%
Rheological (ASTM C639): (sag in vertical displacement) at 49°C (120°F)	No sag
Extrudability, 3 seconds (ASTM C603):	Passes
Hardness, Shore A (ASTM C661):	
At standard conditions:	25 – 30
After heat aging (max. Shore A: 50):	25
Weight loss, after heat aging (ASTM C792):	3%
Shrinkage:	None
Cracking and chalking, after heat aging (ASTM C792):	None
Tack-free time, hrs, (maximum 725 hours) (ASTM C679):	Passes
Stain and colour change (ASTM C510):	Passes (no visible stain)
Bond durability, on glass, aluminum, concrete (ASTM C719):	Passes, +/- 35% movement
Adhesion* in peel, pli (min. 5 pli) (ASTM C794):	30
Adhesion* in peel after UV radiation through glass (min. 5 pli):	Passes (ASTM C794)
Artificial weathering, Xenon arc, 250 hours (ASTM C793):	Passes
Artificial weathering, Xenon arc, 3,000 hours (ASTM G26):	No surface cracking
Water immersion*, 50°C (122°F) (ASTM C1247):	Passes 10 weeks with movement cycling

*Primed for water immersion dictated by ASTM C920. Concrete, aluminum & glass primed prior to application.
Test results are typical values obtained under laboratory conditions. Reasonable variations can be expected.

SHELF-LIFE & STORAGE:

Shelf-life is 12 months from date of shipment from our plant when stored in clean, dry area with temps between 4°C to 32°C (40°F to 90°F).

CAUTION:

Use in well ventilated areas and avoid breathing vapors. On contact, uncured sealant irritates eyes. Flush eyes with lukewarm water. Call physician. Avoid skin contact and **DO NOT** ingest or induce vomiting, seek medical attention. **Keep out of reach of children.** For complete safety information consult the Material Safety Data Sheet. Make certain the most current versions of product data sheet and MSDS are being used; call Customer Service (1-800-853-3984) to verify the most current versions.

WARRANTY INFORMATION:

NUCO Inc., warrants only that its product will meet its specifications. NUCO shall in no event be liable for incidental or consequential damage. NUCO's liability, expressed or implied is limited to the stated selling price of any goods found to be defective.

DISCLOSURE:

The information and data contained herein is BASED ON INFORMATION WE BELIEVE TO BE RELIABLE. Please read all statements, recommendations or suggestions herein in conjunction with our CONDITIONS OF SALE which apply to all goods supplied by us. We assume no responsibility for the use of these statements, recommendations or suggestions, nor do we intend them as recommendation for any use which would infringe any patent or copyright.

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