

## **1 GENERAL**

### 1.1 REFERENCES

- .1 Canadian General Standards Board (CGSB)
  - .1 ASTM C920, Type S, Grade NS, Class 35, Use NT, M, A and O, High performance, medium modulus, one-part, neutral-cure silicone sealant.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

### 1.2 SUBMITTALS

- .1 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for caulking sealants and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Manufacturer's product to describe:
    - .1 Caulking compound.
    - .2 Primers.
    - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
  - .3 Submit 2 copies of WHMIS MSDS.
- .2 Samples:
  - .1 Submit 2 samples of each type of material and colour.
  - .2 Cured samples of exposed sealants for each colour where required to match adjacent material.
- .3 Manufacturer's Instructions:
  - .1 Submit instructions to include installation instructions for each product used.

### 1.3 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

### 1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:

- .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect joint sealants from freezing and contamination.
- .3 Replace defective or damaged materials with new.

#### 1.5 SITE CONDITIONS

- .1 Ambient Conditions:
  - .1 Proceed with installation of joint sealants only when:
    - .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above -29 degrees C and below 49 degrees C.
    - .2 Joint substrates are dry.
    - .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .2 Joint-Width Conditions:
  - .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
  - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

#### 1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.
- .2 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

### **2 PRODUCTS**

#### 2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas

time.

- .3 Where sealants are qualified with primers use only these primers.

## 2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Silicones one part: to CAN/CGSB-19.13.
- .2 Preformed compressible and non-compressible back-up materials:
  - .1 Polyethylene, urethane, neoprene or vinyl foam:
    - .1 Extruded closed cell foam backer rod.
    - .2 Size: oversize 30% to 50%.
  - .2 Neoprene or butyl rubber:
    - .1 Round solid rod, Shore A hardness 70.
  - .3 High density foam:
    - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m<sup>3</sup> density, or neoprene foam backer, size as recommended by manufacturer.
  - .4 Bond breaker tape:
    - .1 Polyethylene bond breaker tape which will not bond to sealant.

## 2.3 SEALANT SELECTION

- .1 Perimeters of exterior upper skylight openings (refer to drawings) where frames meet exterior facade of building (i.e. brick, block, precast masonry) and perimeters of all upper skylight glazing units (refer to drawings): sealant type:
  - .1 Medium modulus silicone joint sealant.
    - .1 Colour: To be selected from standard available range to match aluminum finish.
    - .2 Tack free time in 50% humidity conditions: 3-6 hours.
    - .3 Curing time for 9mm deep seal, 50% RH and 25 degrees C: 7-14 days.
    - .4 VOC content: 35 g/L.
    - .5 Durometer hardness, Shore A: 20-30 points.
    - .6 Ultimate tensile strength: 1.24 MPa.
    - .7 Ultimate elongation: 550%.
    - .8 Peel strength: 109 - 152 N/m.
    - .9 Joint extension / compression: +/- 40%.
    - .10 Application temperature range: -29-49 degrees C.
    - .11 Acceptable product:
      - .1 Dow Corning Silicone Medium Modulus Contractors Weatherproofing Sealant OR approved equal.

## 2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's

written recommendations.

- .2 Primer: in accordance with sealant manufacturer's written recommendations.

### **3 EXECUTION**

#### 3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

#### 3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Remove existing caulking by approved means.
- .3 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .4 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .5 Ensure joint surfaces are dry and frost free.
- .6 Prepare surfaces in accordance with manufacturer's directions.

#### 3.3 JOINT DESIGN

- .1 Minimum joint depth to be 4 X the anticipated movement but not less than 6mm wide.
- .2 Joint depth shall be 6mm for joints 6mm - 13mm in width.
- .3 Maximum joint depth shall be 9mm.
- .4 Maximum joint size shall be approximately 32mm width X 9mm depth

in a single application.

### 3.4 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking. Remove immediately after tooling.
- .2 Prime sides of joints where required for substrate and in accordance with sealant manufacturer's instructions immediately prior to installing the backer rod and caulking.
- .3 Apply a bead of silicone sealant to the substrate material to test adhesion prior to general use.

### 3.5 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install backer material or joint filler to achieve correct joint depth and shape, with approximately 30% compression.

### 3.6 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

### 3.7 APPLICATION

- .1 Sealant:
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant using gun with proper size nozzle.
  - .5 Use sufficient pressure to fill voids and joints solid.
  - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
  - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:
  - .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.

### 3.8 CLEANING

- .1 Progress Cleaning:
  - .1 Leave Work area clean at end of each day.
  - .2 Clean adjacent surfaces immediately using xylene or toluene as the work progresses.
  - .3 Remove excess and droppings, using recommended cleaners as work progresses.
  - .4 Remove masking tape after initial set of sealant.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

### 3.9 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION