

Product Data Sheet

INSULATING AIR SEALANT

Two-Component Polyurethane

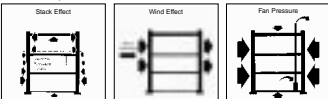
ZERO DRAFT

Professional Weatherization Materials

EXPLANATION

Buildings with gaps, cracks, and "holes" in them that suffer from uncontrolled air flow (air leakage) cost more money to heat and air condition, are drafty and uncomfortable, have poorer quality indoor air, deteriorate faster, and generate more occupant complaints than buildings where air leakage is properly controlled.

Air leakage through openings in the building envelope is caused by air pressure differences due to stack effect, wind and ventilation. Alone, or in combination, the three effects typically represent 15 to 40% of the building's thermal load, or roughly 4 – 8% of the total energy requirement (ASHRAE Handbook*).



Uncontrolled air flow is responsible for the corrosion and decay of building materials (thereby reducing life expectancy), increased maintenance costs, poor appearance – and in the event of a fire – the rapid spread of flames and smoke.

Zerodraft Insulating Air Sealant seals gaps, cracks, and holes in walls, roof-wall connections, the perimeter of door and window openings, mechanical and electrical penetrations, and similar locations to help provide a continuous, impermeable barrier to air infiltration or loss.

DESCRIPTION

Zerodraft Insulating Air Sealant is a polyurethane foam consisting of a mix of chemicals (MDI Monomer and Isobutane/Propane propellant) in a pressurized container and is formulated so that it will react and cure chemically in ambient air.



Zerodraft Insulating Air Sealant being applied at roof-wall junction.

The material mix is ejected from a portable/disposable self-contained applicator with an advanced metering system that controls foam flow, prevents over-application and

reduces waste. Zerodraft Insulating Air Sealant also provides high yield and quick curing. For application purposes, the gun foam system is the most efficient means of dispensing foam, offers the greatest control, optimum accuracy and unlimited range of applicator motion – an installer convenience when going up and down ladders, around corners, or moving from room to room.

Zerodraft Insulating Air Sealant is available in two convenient size containers – Z2-200 and Z2-600, and the gun applicator

is available with three types of accessory nozzles i.e. Fan, High Velocity, and Pour-In-Place, to suit a variety of installer requirements.

USES

Zerodraft Insulating Air Sealant is intended to be installed at junctions between different building elements, in voids, and around penetrations in a building assembly to control air leakage.

Zerodraft Insulating Air Sealant is dispensed as a high yield foam for filling "holes" over 50mm (2") width in size. Zerodraft is generally used where appearance is not critical however the foam sealant can be trimmed and painted.

Note: Zerodraft Foam Sealant – another Zerodraft product – is dispensed as a bead for crack and gap filling. A "gap" is generally between 6 mm (1/4") and 50 mm (2") wide. A "crack" is less than 6 mm (1/4") wide.

Example areas of use for Zerodraft Insulating Air Sealant include:

- drill and inject applications, e.g. window and curtainwall mullions, beam and column enclosures, and other hidden cavities.
- voids in walls and at roof-wall connections.
- at beams and columns to eliminate thermal bridging.
- perimeter of door and window openings.
- spray application for continuity in other insulation



Z2-200 A B



Z2-600 A



Z2-600 B

systems i.e. gaps in board insulation and surrounding surfaces.

- mechanical and electrical penetrations in walls, floors and roofs (pipe, duct, conduit, etc.).
- similar locations, to provide a continuous impermeable barrier to air infiltration or loss.



Zerodraft Insulating Air Sealant being applied behind window frame.

In addition to general construction, other industries where Zerodraft Insulating Air Sealant is used include agricultural, boating and marine, cold storage, mining, petrochemical, pools and spas, refrigeration, transportation, and utilities.

LIMITATIONS

Do not use Zerodraft Insulating Air Sealant:

- where subject to a continuous service temperature outside the range of -60°C to $+80^{\circ}\text{C}$ (-47°F to 176°F) such as in contact with chimneys, heater vents, steam pipes, etc. unless the sealant has been designed for use at other service temperatures as specified by Zerodraft.
- on or in the vicinity of heat emitting devices such as recessed lighting fixtures, at a lesser distance than 75 mm (3") or as specified by the authority having jurisdiction.
- inside electrical outlets or junction boxes.
- left exposed to continuous ultraviolet light.
- immersed in water for long periods of time.

FEATURES

High yield; expands 3 times from initial application or injection. See Packaging on back page.

Quick cure; cures in 45 seconds.

Fire retardant; self-extinguishing in absence of flame. Produces Flame Spread Rating of less than 25 and Smoke Developed Rating of less than 50 when tested to CAN/ULC-S102 and ASTM E-84 in a range of bead sizes. (Not a fire stop; see Zerodraft Air Seal/Fire Stop Systems literature).

Safe formula; does not contain ureaformaldehyde, CFC's (chlorofluorocarbons), or hazardous solvents.

Excellent insulating properties; over 90% closed cell content provides RSI Value of 1.057 per 305 mm thickness (R Value of 6.0 per 1" thickness) which helps in reducing heating and cooling costs.

STANDARDS CONFORMANCE

Zerodraft Insulating Air Sealant conforms to:

CAN/ULC-S711.1 Standard For Thermal Insulation – Bead Applied Two-Component Polyurethane Air Sealant Foam, Part 1: Material Specification.

CAN/ULC-S711.2 Standard For Thermal Insulation – Bead Applied Two-Component Polyurethane Air Sealant Foam, Part 2: Application.

INSTALLATION

Storage/Shelf Life: Do not expose to heat or store above 50°C (120°F). Do not leave in vehicle. Shelf life is 12 months.

Surface Preparation: Apply to clean substrates free of oil, grease or excessive moisture.

Application: Zerodraft Insulating Air Sealant is applied only by accredited Zerodraft applicators.

Essentially, these specialist contractors seal gaps, cracks and holes with appropriate materials and systems thereby ensuring a continuous plane of airtightness in the building envelope.

In addition, the specialist contractors are familiar with the need for "decoupling" and "compartmentalization" within buildings. Floors are decoupled from each other to prevent vertical leakage while other areas of the building are compartmentalized to help equalize pressure differences.

For example, at the top of the building mechanical rooms are isolated and compartmentalized by weatherstripping doors, fire stopping relevant penetrations through fire rated walls, reducing the size of cable holes in the elevator shafts and door controller cable penetrations, as well as busbar and other electrical penetrations through the floor of the elevator rooms. At the bottom of the building, the many penetrations found in the underground parking areas are effectively sealed. Doors are weatherstripped. Open cable, conduit, duct, and pipe penetrations and gaps between block infill and slabs are sealed. Vertical shafts, where fire doors with large gaps – some up to 50 mm (2") – are weatherstripped, thereby decoupling floor to floor areas and reducing stack effect pressures.

Other areas to consider include fire cabinets, garbage disposal rooms, electrical rooms and other service shafts.

Zerodraft Insulating Air Sealant is also effective in sealing and insulating thermal "bridges" at roof-wall junctions, beam penetrations, and other interruptions affecting the integrity of wall and roof systems.

Zerodraft Insulating Air Sealant is only one product used in the air leakage sealing process. Zerodraft Foam Sealant for smaller holes (cracks and gaps), Zerodraft Air Seal/Fire Stop Systems, and Zerodraft Door and Window Weatherstripping are all employed for sealing, decoupling and compartmentalization work. See other Zerodraft literature.

TECHNICAL DATA*

| PROPERTY | TEST METHOD (ASTM) | RESULT |
|---|--------------------|--|
| Density | D-1622 | 1.75 ± 0.2 pcf |
| K-Factor | C-177 | 0.144 |
| R-Factor | C-177 | 6.9/in |
| Compressive Strength 10%, parallel 10%, perpendicular | D-1621 | 19 psi 13.4 psi |
| Tensile Strength parallel perpendicular | D-1623 | 34 psi 24.1 psi |
| Dimensional Stability -40°F, 2-wks 158°F, 100% RH 2-wks | D-2126 | +0.88%, vol. change +14%, vol. change |
| Water Absorption | D-2842 | 1 – 3.5% |
| Closed Cell Content | D-2856 | 90%, min. |

* Test reports are available upon request.

Finishing: Zerodraft Insulating Air Sealant, a cream coloured product, is typically covered up with interior finishes such as plaster, drywall, paneling, trim or other finish. Alternatively the sealant may be cut smooth (trimmed) and painted. In plenum or other areas not exposed to ultraviolet radiation, where it is used strictly as an air sealant, Zerodraft Insulating Air Sealant may be left exposed.

Building Codes: Zerodraft Insulating Air Sealant complies with the following Sections of the National Building Code:

- 3.1.5.2 Minor Combustible Components (Zerodraft Insulating Air Sealant is permitted in buildings required to be of non-combustible construction).
- 5.4.1.2 Air Barrier System Properties (Zerodraft Insulating Air Sealant falls within the maximum allowable air leakage rate of 0.02 l/s-m²) measured at an air pressure difference of 75 Pa. (See Appendix A reference following).
- A-6.4.1.2 (1) and (2) Air Leakage Through The Air Barrier System (Zerodraft Insulating Air Sealant falls within the recommended maximum allowable leakage rates as related to warm and cold side temperatures and humidity conditions).

Health/Safety: A Material Safety Data Sheet is provided with every Zerodraft Insulating Air Sealant kit. Instructions for the safe handling, use and disposal of the materials and/or containers are provided on the label of each container.

WARRANTY

Normal 1 year construction warranty.

MAINTENANCE

No maintenance required.

AVAILABILITY & BUDGET PRICING

Zerodraft products and services are available throughout North America. Zerodraft will review drawings (and/or the building for retrofit work) and provide budget pricing on a project-by-project basis. Ultimately, the cost of sealing is estimated on a lineal metre, square metre and/or unit cost basis for doors, windows and different types of penetrations.

TECHNICAL SERVICES

Zerodraft provide air leakage control advisory services from preliminary design through to application, including the following:

- Air sealing recommendations and technical advice for both new work and retrofit applications (asset protection).
- Design and specification assistance.
- Air leakage investigation/testing, including energy audits and pay back projections.

RELATED DATA

- Zerodraft Foam Sealant literature (for smaller cracks and gaps).
- Zerodraft Air Seal/Fire Stop Systems literature (for ULC fire rated assemblies).
- Zerodraft Door and Window Weatherstripping literature.
- CSC (Construction Specifications Canada) Air Barriers "Digest" and "Master Specification", March 1990.
- "Does Your Building Suck?", CONDOBUSINESS Magazine, September 2001.
- "Sealing the Envelope", Canadian Property Management Magazine, September 2001.

Packaging:

| CONTAINER SIZE | YIELD | | | | CONTAINER DIMENSIONS (L x W x H) | | KITS PER PALLET |
|---------------------|---------|----------|-----------|-----------|----------------------------------|---------------------|--------------------|
| | Cubic m | Board m* | Board Ft. | Cubic Ft. | mm (Nominal) | Inches (Nominal) | |
| Z2-200 | 0.47 | 5.66 | 200 | 16.67 | 380 x 190 x 368 | 15 x 7-1/2 x 14-1/2 | 36 |
| Z2-600 (1A + 1B) | 1.400 | 16.99 | 600 | 50.00 | 318 x 305 x 432 | 12-1/2 x 12 x 17 | 16 (8A + 8B) |

* Board metres = board feet x 0.02832

- "Urethane Foams as Insulating Sealants", Construction Canada Magazine, March/April 1997.
- "Urethane Foams and Air Leakage Control", Home Energy Magazine, July/August 1995.

Insulating air sealant: Zerodraft Insulating Air Sealant bead applied gun foam two-component polyurethane sealant to CAN/ULC-S711.1 (Material Specification) as manufactured and distributed by Zerodraft (Division of Canam Building Envelope Specialists Inc.), 125 Traders Blvd. E., Unit # 4, Mississauga, ON, L4Z 2H3 Tel. 1-877-272-2626.

SPECIFICATION (Short Form)

SPEC NOTE: Zerodraft Insulating Air Sealant is often used with Zerodraft Foam Sealant, Zerodraft Air Seal/Fire Stop Systems and Zerodraft Door and Window Weatherstripping. Collectively, with the main air barrier, these products provide a complete system to achieve a continuous impermeable barrier to air infiltration or loss. Refer to the respective Zerodraft literature and Zerodraft Insulating Air Seal/Fire Stop Master Specification.

Sealant to be installed by accredited Zerodraft applicators in accordance with manufacturer's instructions and CAN/ULC-S711.2 (Application Standard). Install sealant where indicated on the drawings and/or as specified in the Air Barrier Section (07270) of the Specification.



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