

The breakthrough
insulation solution

proCell

www.thermocell.com

PRODUCT INFORMATION

1. PRODUCT DESCRIPTION

ProCell is a Type 2 thermal and acoustical cellulose fibre insulation manufactured from selected recycled paper and paperboard stock. Each bag displays Environment Canada's **ECOLOGO**, classifying it as an "environmentally friendly" product.



The product is intended to be pneumatically spray applied using a blowing machine and spray pump delivery system and is appropriate for horizontal, vertical or sloped application regardless of pitch and is suitable for use in both new construction and retrofit applications.

It is a bonded product which contains an internal adhesive. It will not settle or lose its fire retardant properties with passage of time. Thermal resistance and noise absorption properties are also permanent features of this material.

ProCell is impregnated with a special blend of borate additives to resist mould growth, wood decay, insects damage, corrosion and combustion. A special fiberizing process is employed to obtain the thermal and acoustical properties required.

2. TECHNICAL DATA

Applicable Standards: **ProCell** is manufactured in accordance with CAN/ULC-S703 Standard for cellulose fibre insulation.

ProCell has been evaluated by Canadian Construction Materials Centre. Continuing quality control is further assured through ISO 9001:2000 certification (#971012).

Product Standard CAN/ULC-S703-01 Test Criteria:

Thermal Resistance	RSI = 0.0254/mm R = 3.7/in
Surface Burning Characteristics (CAN/ULC-S102) (CAN/ULC-S102.2)	FSC < 25 FSC < 150
Open Flammability	> 0.120W/cm ²
Open Flammability Permanency	> 0.120W/cm ²
Moisture Vapour Sorption	< 20%
Corrosiveness	Passed
Fungal Resistance	Passed

Design Density (Settled)	23.0 kg/m ³ (1.43 lb/ft ³)
Smoulder Resistance	< 15%
Added Water (at time of application)	< 20%
Resistance to Settlement	< 5%

Thermal Resistivity: The primary property of all thermal insulations, **ProCell** provides greater energy savings over other products since it is made with natural wood fibre. By virtue of the fact that wood fibre is organic (i.e. poor conductor) and the fact that the fibre is also hollow (i.e. entraps air within its structure), the product is naturally resistant to heat losses through conduction and convection.

The product also has the unique ability to perform better under extreme cold temperature. Specifically, it has been shown that R-values can increase as much as 7% under extreme cold conditions whereas fiberglass can lose as much as 21% under the same conditions (ASHRAE "Handbook of Fundamentals", BNL50862).

Similarly, **ProCell's** basic R-Value is superior to mineral fibre in the higher ambient temperature range and thus makes it a preferred insulation for reducing summer cooling costs.

ProCell maintains an almost constant R-Value over the full range of densities at which it can be installed, whereas mineral fibre products suffers dramatic losses in R-Value as the installed density decreases.

Infiltration/Convection Properties: (Natural movement of air either by convection of air from warm to cold environments or movement by pressure differential). **ProCell**, due to its perfect fit and greater density, inhibits air movement, whereas test have proven that air movement through and around light density, poorly fitted fibrous glass insulation can reduce its thermal effectiveness by up to one half.

Acoustical Properties: **ProCell**, compared to other insulation products, has superior properties for improving noise suppression in wall, floor or ceiling construction. There are four performance factors to consider; mass, damping, absorption and sealing.

(a) Mass (Density): Increased mass per unit thickness of **ProCell** compared to other fibrous or foam insulation adds to the overall effectiveness of a wall, floor or ceiling assembly by reducing the transmission of lower octave sounds.

(b) Damping: Unlike fibrous batts or foam boards, **ProCell** incorporates itself as an integral part of a wall, roof or ceiling assembly. The natural ability for **ProCell** to fill crevices and



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gaps produces a significant improvement in the sound damping characteristics of the assembly.

(c) Absorption: ProCell, because of the unique porosity of its interwoven fibres, will exhibit a NRC (Noise Reduction Coefficient) of 0.75 at a 25 mm (1 inch) thickness. Increased attenuation in both low and high frequency range is achieved due to absorption within an enclosed wall or ceiling cavity.

(d) Sealing: Field reliability of ProCell's natural noise reduction capabilities is realized through its natural ability to fill crevices and voids normally occurring in wall, floor, ceiling or attic construction. ProCell will completely seal around complex shapes such as pipes, conduit and electrical boxes thereby ensuring its ability to minimize sound transmission through such interruptions.

Fire Resistance: ProCell exhibits a fire resistance capability identified in the physical properties chart. ProCell will not melt or degrade as most other insulation will when exposed to flame or high temperatures. Because ProCell will only char under direct fire exposure it will provide longer heat protection to adjacent building materials, and therefore allow building occupants more time to escape than would be the case with most other insulation materials.

Moisture: ProCell has the unique ability to slowly absorb and dissipate excess moisture thereby reducing the risk of potential condensation problems.

Canadian homes and buildings can experience loss of warm moist air from interior environment to the colder exterior air by several means such as ripped, unsealed or discontinuous vapour barrier, or by piping or electrical wiring and boxes penetrating the vapour barrier.

During the heating season, these disruptions to the vapour barrier permit escaping warm air to condense within the insulation layer or on the cold roof or wall sheathing. To combat this occurrence, insulations should be used which exhibit an ability to absorb and slowly dissipate that moisture. ProCell's ability to transport moisture to a surface where it can evaporate is most important in keeping moisture levels low and insulation effectiveness high.

3. INSTALLATION:

Preparatory Work: In new construction, ensure that spaces to receive insulation are free of foreign objects and are reasonably clean. In retrofit work prepare installation holes, vents and access for installation equipment. Verify that the vapour retarder, if used, is installed with joints sealed and without tears or punctures. Install insulation stops, roof turbines or other devices to ensure attic space is adequately ventilated.

Installation: When installing or handling ProCell adequate dust protection should be worn such as NIOSH N95 approved dust mask, gloves and eye protection.

Pneumatically spray apply the insulation to ensure full coverage and complete filling of spaces intended for insulation. Because of its higher than average R-Value, ProCell will deliver greater

thermal protection over upper wall plate areas where vertical space limits the depth of insulation which can be installed.

When properly sprayed into a vertical wall cavities ProCell will not settle.

Limitations: ProCell (like all other insulation products) should not be placed in direct contact with heat sources such as chimney flues, electric motors or light fixtures.

Unless CSA approved for use with thermal insulation, keep insulation at least 75 mm (3 inches) away from the sides of recessed light fixtures and 50 mm (2 inches) from chimney flues. Do not cover over such fixtures because excessive heat build-up can occur. Also, keep insulation away from exhaust flues of furnaces, water heaters, space heater or other heat emitting devices. To be sure that insulation is kept away from such fixtures and flues, use a barrier to permanently maintain clearance around these items. Do not fill fireplace or furnace chases. Maintain the minimum clearance specified by the building code or inspector having jurisdiction.

ProCell should not be used where the ambient temperature is continuously above 90°C (194°F).

4. AVAILABILITY AND COST: ProCell is available throughout Canada. Contact our representative for advice on special or unusual conditions or geographic locations. ProCell offers lower cost for comparative performance.

5. WARRANTY:

Thermo-Cell warrants that ProCell is manufactured to meet published specifications and retain its thermal performance for the normal life of the building. The applicator must warrant a specific product installation.

6. MAINTENANCE:

ProCell requires no specific maintenance. A building owner should periodically inspect the installation to ensure that traffic has not displaced the insulation or disturbed natural attic ventilation or permitted insulation to contact heat sources.

7. TECHNICAL SERVICES:

Thermo-Cell has Field Representatives, Plant Technicians and Engineers available to assist and advise. Extensive technical research data and test reports are available to assist designers and applicators in addressing unique situations.

A master guide specification on ProCell is available for the asking. This section is written to permit specifiers to quickly edit a pre-organized specification section to suit a specific project.

8. FILING SYSTEMS (For filing data or specifying):

Canadian National Master Specification "Spray Applied Cellulose Insulation" - Section No. 07215