



TECHNICAL DATA SHEET

Revised: July, 2010

Product Name: "CLIMATIZER PLUS"
Packaging: 33lbs/15kg bag

Product Identifier: Cellulose Fibre Insulation (CFI)
Product Type: Loose-fill thermal/acoustical Insulation

Description: Paper fibres treated with fire retardants

Manufacturer: Climatizer Insulation
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Description

CLIMATIZER PLUS is a loose-fill fibrous insulation type manufactured from selected paper stock that is chemically treated with non-toxic additives for fire resistance and retardation, as well as pest and mould resistance. Each bag of Climatizer's insulation displays Environment Canada's EcoLogo[®] recognizing it as an "environmentally-friendly" product. CLIMATIZER PLUS may be hand-poured or pneumatically placed using a blowing machine and delivery hose. Machine application ensures that the material is properly conditioned, and placed at the required design density. CLIMATIZER PLUS does not settle below its designed density or lose its fire retardant properties with the passage of time. Thermal resistance and noise absorption properties are permanent features of this product.

Composition

CLIMATIZER PLUS is manufactured from selected organic and recycled fibres that are impregnated with additives to resist mould, wood decay, insects, corrosion, and combustion. A unique fiberizing process is employed to obtain the thermal acoustical properties required.

COMPONENTS:
Cellulose fibres (recycled paperstock) $C_6H_{10}O_3$
Boric Acid H_3BO_3
Ammonium Sulphate $(NH_4)_2SO_4$
Mono-Ammonium Phosphate $NH_4H_2PO_4$

Requirement Standards

CLIMATIZER PLUS is manufactured to meet requirements based on the following standards:

1. Canadian Construction Materials Centre (CCMC): "Standard for Cellulose Fibre Insulation (CFI) for Buildings" CAN/ULC S703-01
2. CCMC Evaluation Listing 09217-L
3. ISO 9001 International Quality Standard

Performance Features

CLIMATIZER PLUS offers greater performance value (P-value) than other fibrous insulations. P-value has been adjusted for the detrimental effects of air leakage and moisture accumulation. Because of the high density and ability to fit in to tight spaces and crevices, CLIMATIZER PLUS dramatically reduces air leakage and air convection, so its P-value is substantially better than glass fibre batt or loose fill materials having a similar R-value. In addition, CLIMATIZER PLUS' basic R-value remains more constant than mineral fibre throughout a wide range of ambient temperatures which makes it a superior insulation for reducing summer heat gain.

Application

CLIMATIZER PLUS is a loose-fill, injected or spray applied thermal and acoustical insulation. Loose-fill is appropriate for horizontal or moderately sloped attic area up to 4:12 pitch. Injection may be used to fill areas such as flat or sloped ceiling and vertical walls. Spray applied may be used in open stud cavities or steeply sloped attic surfaces. Choose the most appropriate method of insulation to achieve the desired thermal and/or acoustical performance. CLIMATIZER PLUS can be used in new construction or to retrofit existing structures/dwellings.



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Limitations

Like other insulation types, CLIMATIZER PLUS 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, do not cover recessed light fixtures

with any type of insulation as excessive heat build-up may occur. An air space of 6" or more is required between the fixture and its protective barrier. This consideration also applies to any other heat source such as fan motors, transformers, or incandescent trouble lights. Similarly do not permit insulation to directly contact a chimney or flue. Do not fill fireplace or furnace chases. Maintain the minimum clearance specified by the building code or inspector having jurisdiction. CLIMATIZER PLUS should not be used where the ambient temperature is above 90°C (194°F) continuously.

Technical Data

CAN/ULC Test Criteria:

Thermal Resistance (25 mm) (1 inch)	RSI = 0.676 R = 3.84
Flame Spread Rating:	
CAN/ULC S102	FSC 20
CAN/ULC S102.2	FSC 120
Flame Spread Permanence	Passed
Moisture Absorption	8.8%
Fungal Growth	Passed
Design Density (Settled)	24.9 kg/m ³ (Attic) 3.0 lb/ft ³ (Walls)
Corrosiveness	Passed
Smoulder Resistance	Passed

Thermal Resistance Comparison

The following values for thermal resistance of cellulose insulation at seasonal temperature extremes were taken from the ASHRAE Handbook of Fundamentals (Re: BNL50862):

Winter Value at 5°C	RSI 0.678 (R 3.85)
Design Value at 24°C	RSI 0.652 (R 3.70)
Summer Value at 43°C	RSI 0.629 (R 3.57)

The above value indicated the change in CLIMATIZER PLUS R-Value between winter and summer attic temperatures is only 7.1%, whereas a continuation of the tables for other types of insulation indicates the R-Value loss for mineral fibre under the same circumstances would be 21.4%. Consequently, CLIMATIZER PLUS offers the added advantage of keeping a home cooler during the summer season.

PROPERTIES

Acoustical Properties

CLIMATIZER PLUS offers superior qualities for improving noise suppression in wall, floor or ceiling construction. There are four primary factors to consider: mass; damping; absorption; and sealing.

- Mass (Density): Increased mass per unit of thickness of CLIMATIZER PLUS compared to other types of insulation adds to the overall effectiveness of a wall, floor or ceiling assembly in improving STC (Sound Transmission Class) value.
- Damping: Unlike fibrous batts or foam boards, CLIMATIZER PLUS incorporates itself as an integral part of a wall, floor or ceiling assembly. The natural ability of CLIMATIZER PLUS to fill crevices and gaps produces a significant improvement in the sound damping characteristics of the assembly
- Absorption: CLIMATIZER PLUS, 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.
- Sealing: the field reliability of CLIMATIZER PLUS' natural noise reduction capabilities is realized through its natural ability to fill crevices and voids normally occurring in wall, floor, ceiling or attic construction. CLIMATIZER PLUS will completely seal around complex shapes such as pipes, conduit and electrical boxes thereby ensuring its ability to minimize sound transmission through such interruptions.

Filtration Properties

There is a natural movement of air either by convection currents of air from warm to cold environments or movement by pressure differentials. CLIMATIZER PLUS, due to its perfect fit and greater mass, inhibits this air movement. Other types of insulation may offer a poor fit and in testing have shown to lose up to half their insulation values.

In retrofit conditions where additional attic insulation is desired, CLIMATIZER PLUS can be used as a blanket cover to significantly reduce air movement, fill gaps in existing insulation (despite any type), and between the insulation and adjacent framing members. This can substantially increase the overall insulation value.



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Thermal Resistance vs. Applied Bulk Density

CLIMATIZER PLUS maintains an almost constant R-Value over the full range of densities at which it can be installed, whereas light density glass fibre loose-fill insulation suffers a drastic loss in R-Value if the density is only slightly less (fluffing) than the required density.

Fire Resistance

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

Moisture

CLIMATIZER PLUS has the ability to dissipate excess moisture and maintain a moderate range in moisture content. Canadian homes and buildings can experience a loss of warm moist air from the 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 dissipate that moisture. CLIMATIZER PLUS has the ability to transport moisture to a surface where it can evaporate which is important to keeping moisture levels low and insulation effectiveness high.

Installation Guide

Preparatory Work: In new construction, ensure that spaces to receive insulation are free from 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: Place insulation by manual or pneumatic method in open horizontal or moderately stopped locations and pneumatic method in enclosed horizontal, sloped or vertical locations to ensure full coverage and complete filling of spaces intended for insulation. Maintain a 75mm (3 inch) minimum

clearance from heat sources such as chimney flues or 6" from recessed light fixtures. The installer must be familiar with provincial, municipal and local regulations regarding clearances from heat emitting devices. Because of its higher than average R-Value CLIMATIZER PLUS will deliver greater thermal protection over upper sill plate areas where vertical space limits the depth of insulation which can be installed.

When machine injected into a vertical well cavity to the proper design density, CLIMATIZER PLUS will not settle.

Cleanup: Wall injection – plug drilled holes used when installing insulation. Replace siding or trim that was removed to gain access to spaces. Touch up painted or finished surfaces to match original.

Availability and Costs

CLIMATIZER PLUS is available throughout Canada. Please contact our Sales Representatives to inquire about our product. Pricing will vary according to factors of labour, shipping, quantities and unusual conditions. CLIMATIZER PLUS offers lower cost for comparative performance features.

Warranty

CLIMATIZER PLUS is guaranteed to meet published specifications and standards. The applicator must warrant a specific product installation.

Maintenance

CLIMATIZER PLUS 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 the insulation to contact heat sources.

Technical Services

CLIMATIZER INSULATION has a team of Sales Representatives, Plant Technicians and Engineers available to assist and advise you in addressing your insulation needs. Extensive technical research data and test reports are available to assist designers and applicators in addressing unique situations.

A master guide specification section on CLIMATIZER PLUS is available upon request. This section is written to permit specifiers to quickly edit a pre-organized specification section to suit a specific project.