

Can I Depend On R-Values When Comparing Insulations?

Yes - and No.

R-values tell only part of the story. Unfortunately, they don't tell you how well the insulation will perform in your home. R-value is a laboratory measurement that measures only one heat transfer mechanism (conduction) and does not effectively measure all 3 methods of heat transfer that occur in your home: convection, conduction, and radiation.

"...conduction, radiation, and convection are the primary mechanisms [of heat transfer]."

-U.S. Department of Energy

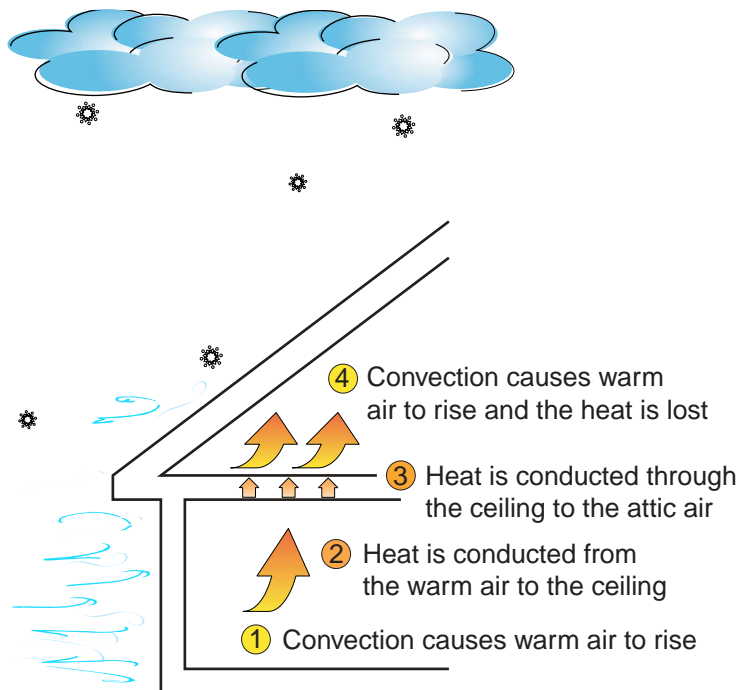
Problem #1: We can not base our choice of insulation on R-value alone.

Your Home Loses and Gains Heat in 3 Ways

Convection

Definition: The transfer of heat by moving air.

Example: Warm air rises and transfers heat to the ceiling



Conduction

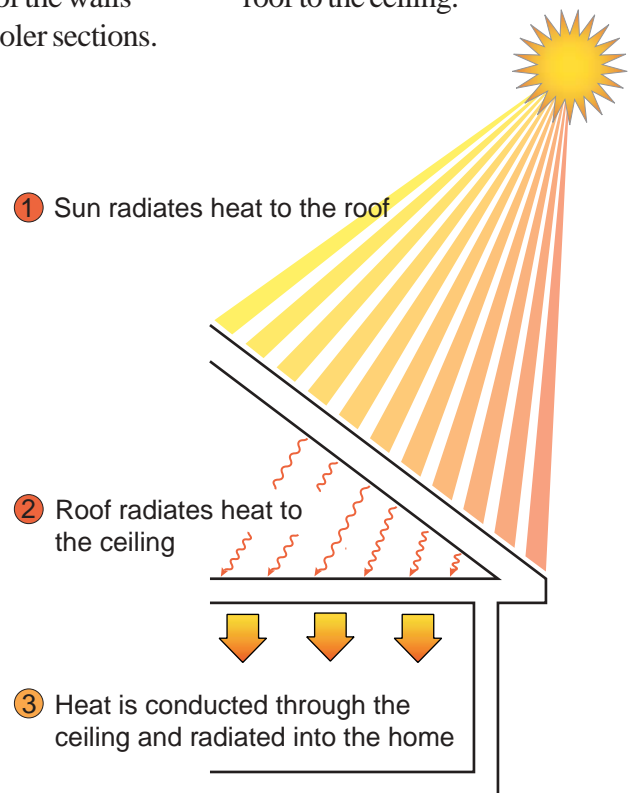
The transfer of heat through a solid material.

Heat is transferred from warmer sections of the walls and ceilings to cooler sections.

Radiation

The transfer of heat in the form of electromagnetic waves.

Heat is transferred from the roof to the ceiling.



R-value is a narrowly focused laboratory measurement. For a comfortable, energy efficient home, insist on insulation that effectively controls all 3 methods of heat transfer: convection, conduction, and radiation.

Will My Choice of Insulation Really Effect My Monthly Heating & Cooling Bills?

Yes!

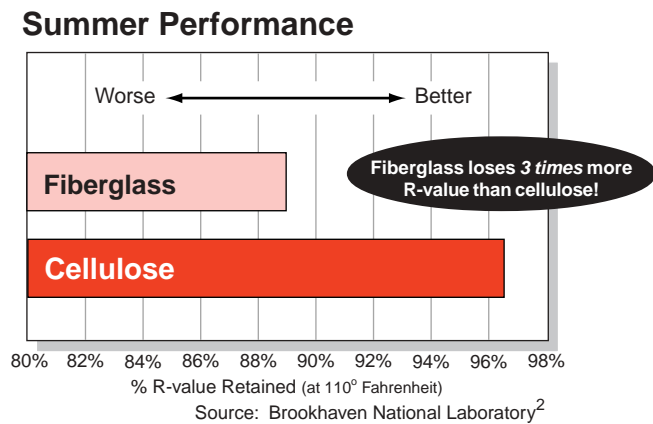
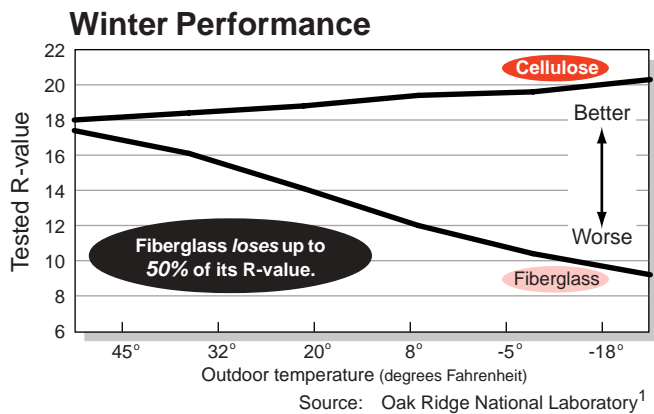
Different insulations are made from fundamentally different materials. Tests at Oak Ridge and Brookhaven National Laboratories and the University of Illinois reveal that insulations with the same laboratory R-values *do not* perform equally in real homes. Researchers found that the effective R-value of blown fiberglass plunges during cold weather, while the effective R-value of cellulose actually increases. The researchers also discovered that summer temperatures offer no relief for fiberglass, since its effective R-value withers then, too.

Utility bills were 32% lower in the cellulose insulated building. -Leominster Housing Authority

Problem #2: Which insulation will provide the best performance and value in my home?

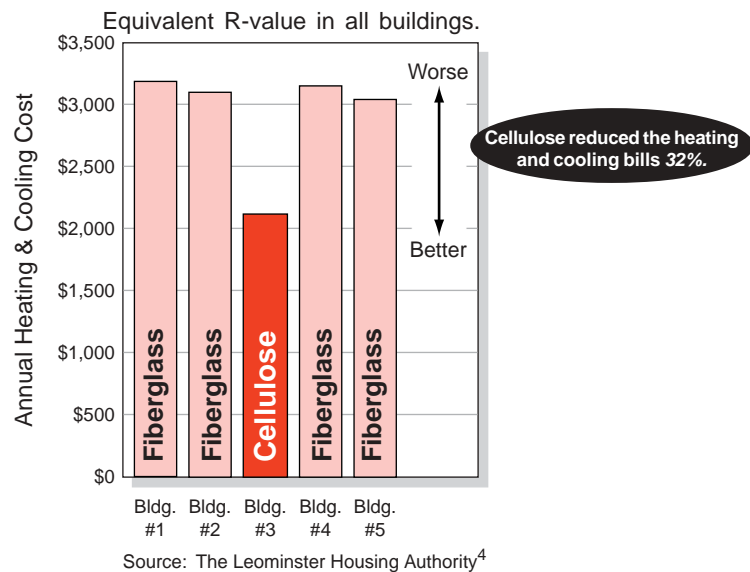
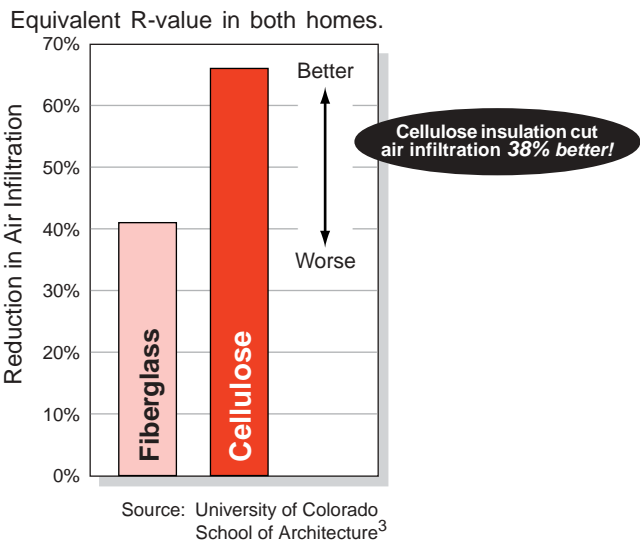
Applegate cellulose helps keep your home *warmer* in the winter,

cooler in the summer,



blocks air infiltration,

and saves you money!



Test after test demonstrates that cellulose insulation significantly outperforms fiberglass.

Properly Insulating Saves You Money

Poor insulation allows air to escape, drives up utility bills and costs you more money.

28% of heating loss in one-story homes can be eliminated with proper attic insulation.

Your utility bills could be going through the roof if your home is not properly insulated!

Poor insulation allows your heating and cooling to escape through your roof, walls, and floor, forcing these systems to work overtime to replace the lost air. This drives up your energy usage and leads to higher utility bills and more money lost.

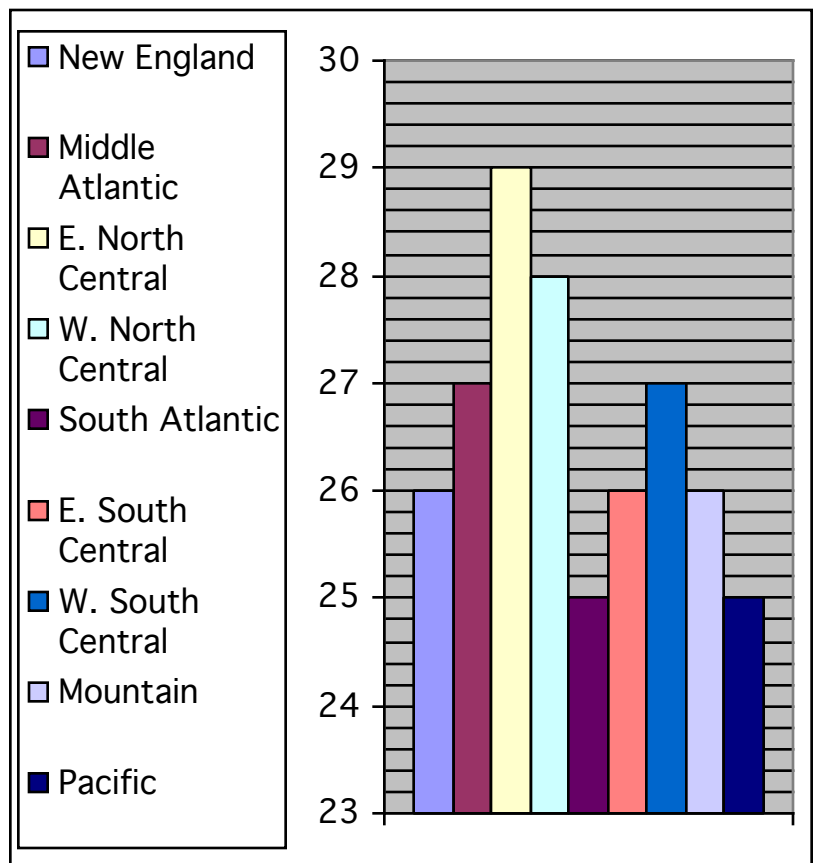
Improperly insulated attics are a major source of heat loss.

In fact, 28% of the heating loss in one story homes and 17% of the heating loss in two story homes can be eliminated with proper attic insulation.

Poor Insulation is a Common Problem

Improper insulation is a common problem across the country.

This chart shows the average amount of attic insulation found in homes across the country.



Amount of Insulation and R-Value

Don't take our word for it:

R-38 is the standard attic insulation in most parts of the country.

Depending on the climate in your area, more insulation may be required.

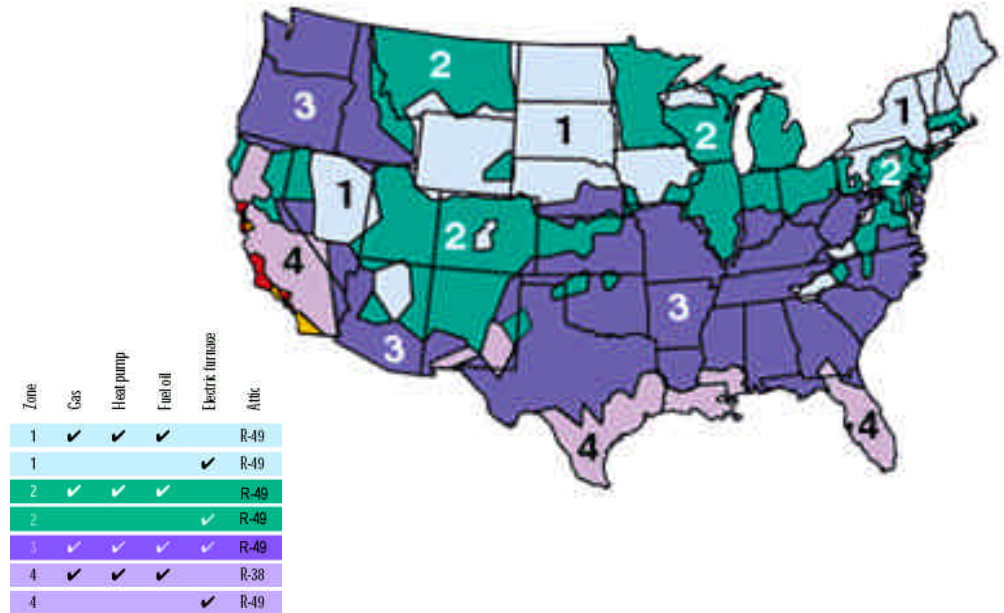
You can refer to the map to determine the most recent guidelines for homes in your part of the country.

Source: US Department of Energy

How is insulation effectiveness measured?

One way is by the R-value, the measure of resistance to heat flow. As the R-value increases, so does the insulation effectiveness. You must have the appropriate amount of insulating material to receive the effective amount of insulation.

Recommended R-Values



What is your R-Value?

Type of Insulation	Number of Inches	R-value per inch	Existing R-value
Fiberglass batts		3.2	
Fiberglass loose-fill		2.5	
Cellulose loose-fill		3.5	
Rockwool		2.8	
Polystyrene beads		2.9	
Formaldehyde foam		4.5	
Insulation board		3.3	



T•A•P™
Thermal Acoustical Pest Control Insulation
FULL WARRANTY



Pest Control Insulation Systems warrants that its T•A•P Pest Control Cellulose Insulation is free from material and manufacturing defects and meets current Consumer Product Safety Commission requirements as well as other applicable requirements of the US Federal Government for cellulose insulation in effect at the time of manufacturing. This warranty commences on the date of purchase and continues for the life of the premises in which it is installed.

This warranty does not apply unless the insulation has been installed by the professional identified below, in accordance with the instructions included with or specified on the package containing the insulation. This warranty will also not apply if other brands of insulation are used with the T•A•P Insulation.

In the event of a material or manufacturing defect, PCIS will replace the defective insulation within a reasonable time at no charge to you, or at your option, refund the purchase price of the defective insulation.

IN NO EVENT SHALL PCIS BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

In order to make a warranty claim, please contact PCIS at the address noted below, or, if applicable, the professional noted below.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

THE EPA APPROVED LABEL ON T•A•P PEST CONTROL INSULATION CONTAINS THE FOLLOWING INFORMATION:

T•A•P THERMAL, ACOUSTICAL, AND PEST CONTROL INSULATION IS A READY-TO-USE INSECT CONTROL INSULATION. THIS PRODUCT IS TOXIC TO LISTED INSECTS AND IS INTENDED TO PREVENT THEIR INFESTATION IN BUILDING VOIDS (ATTICS, WALLS, STUD CAVITIES, BETWEEN-FLOORS, CRAWLSPACES), WHERE THE PRODUCT IS PROPERLY APPLIED. ITS TOXIC EFFECT ON THE LISTED INSECTS BEGINS ONLY AFTER INSECT CONTACT WITH THE PRODUCT.

T•A•P IS NOT RECOMMENDED AS THE SOLE PROTECTION AGAINST TERMITES. USE OF THIS PRODUCT DOES NOT SUBSTITUTE FOR PRE-AND/OR POST-CONSTRUCTION MECHANICAL ALTERATION, SOIL TREATMENT, FOUNDATION TREATMENT OR OTHER CONVENTIONAL PEST CONTROL TREATMENTS. FOR ACTIVE TERMITE INFESTATIONS, GET A PROFESSIONAL INSPECTION.

T•A•P Insulation has been installed in the home of:

Name: _____
 Address: _____
 City, State, Zip Code: _____

T•A•P Insulation has been installed by:

Name of Installer: _____
 Address of Installer: _____
 City, State, Zip Code: _____
 Date Installed: _____
 Signature: _____

Attic: Square Feet: _____ R-Value: _____ # of Bags installed: _____
Walls: Square Feet: _____ R-Value: _____ # of Bags installed: _____



PEST CONTROL INSULATION SYSTEMS
 PO Box 25, Homer, GA, 30547
 706-677-4050; Toll Free 866-BUG-PCIS (284-7247); Fax 706-677-4025;
 www.TAPinsulation.com



PEST CONTROL INSULATION SYSTEMS

PO Box 25
Homer, GA 30547

TOLL FREE 866-BUG-PCIS
www.TAPinsulation.com



1. Scope

This specification provides information relevant to the installation of T•A•P Pest Control Insulation in attics, walls and floors using pneumatic equipment. T•A•P Pest Control Insulation delivers superior R-value per inch, exceptional resistance to air infiltration and superb sound-deadening qualities.

2. Components

T•A•P Pest Control Insulation contains more than 85% recycled, natural cellulose fiber. A proprietary two-stage process injects dry and liquid fire retardants that penetrate and strengthen the fibers while providing permanent flame resistance. When installed properly and under normal conditions of use, these additives are nontoxic to humans, will not adversely affect other building components, and actually help create an environment that is inhospitable to the labeled insects.

3. Purpose

3.1 Thermal Insulation

T•A•P Pest Control Insulation helps buildings stay warmer in the winter and cooler in the summer by effectively controlling all three methods of heat transfer: convective, conductive, and radiant. Buildings are more comfortable and less expensive to operate and maintain. Research at universities and national laboratories has proven that cellulose can provide up to 50% better performance than fiberglass.

3.2 Acoustical Insulation

T•A•P Pest Control Insulation provides superior sound attenuation, in large part, because it is blown or sprayed in. This provides a custom fit that eliminates the acoustical shortcuts that are created by batt insulations: gaps and voids in odd shaped cavities and around obstacles such as plumbing, air ducts, and wiring.

3.3 Pest Control Insulation

T•A•P Thermal, Acoustical, and Pest Control Insulation is a ready-to-use insect control insulation. The product is tested to help control the listed insects and is intended to prevent their infestations in building voids (attic, wall, between-floors, crawlspace) where the product is applied. Its effect begins only after insect contact with the product. **Controls: Cockroaches, Drywood Termites, Subterranean Termites, Ants, Silverfish, Earwigs, Crickets, Sowbugs, Darkling Beetles, Millipedes, Centipedes, and Booklice.** Not recommended as sole protection against termites. Use of this product does not substitute for pre-and/or post-construction mechanical alteration, soil treatment or foundation treatment. For active termite infestations, get a professional inspection.

4. National Standards

Cellulose insulation sold in the US must conform to CPSC Standards 16 CFR Parts 1209 & 1404. T•A•P Pest Control Insulation also conforms to the requirements of ASTM Standard C-739- 00. T•A•P Pest Control Insulation is tested only by nationally certified, NAVLAP-approved laboratories.

4.1 Thermal Resistance

Thermal resistance calculated using ASTM C-518 is R-3.7 per inch.

4.2 Non-Corrosive

T•A•P Pest Control Insulation is tested and certified to be non-corrosive in accordance with ASTM Standard C-739- 00. The test regimen includes aluminum, copper and steel.

4.3 Building Codes

T•A•P Pest Control Insulation, when properly installed, meets the following building code requirements for thermal insulating materials: BOCA, CABO, ICBO, ICC, SBCCI, & the Model Energy Code.

4.4 Fire Safety

T•A•P Pest Control Insulation meets or exceeds all necessary fire safety requirements conducted in accordance with ASTM standards:

- Critical Radiant Flux: >0.12 w/cm²
- Smoldering Combustion: <15%
- Flame Spread (ASTM E-84): 15
- Smoke Developed (ASTM E-84): 5
- Fuel Contribution (ASTM E-84): 0

4.5 Density

As tested by federally required methods, the maximum anticipated density of T•A•P Pest Control Insulation after long-term settling of dry application is determined by ASTM C-739-00 to be 1.45 lb/ft³.

4.6 Moisture Absorption

T•A•P Pest Control Insulation complies with ASTM Standards that require less than 15% weight gain under test conditions. Normal relative humidity variations do not adversely affect the insulation.

4.7 Health and Indoor Air Quality

T•A•P Pest Control Insulation does not contain fiberglass, formaldehyde, or other materials associated with increased health concerns. OSHA cancer warning? No
Contains glass fibers? No
Contains formaldehyde? No

4.8 Other Properties

T•A•P Insulation meets or exceeds ASTM C-739-00 tests for odor emission and fungi resistance.

4.9 Sound Control

T•A•P Pest Control Insulation is an excellent choice for reducing sound transmission through walls, ceilings, and floors. The following Sound Transmission Class (STC) ratings demonstrate its effectiveness in attenuating noise. The higher the STC number, the greater the reduction in sound.

- Cellulose insulated wall: 44 STC
- Fiberglass insulated wall: 39 STC
- Uninsulated wall: 35 STC

Material Safety Data Sheet

Pest Control Insulation Systems
PO Box 25
Homer, GA 30547
(866) BUG-PCIS
www.TAPinsulation.com

Product Name: T•A•P Pest Control Insulation
EPA Registration No.: 72787-1 Cellulose
Technologies Group, Inc.

Product Composition: Active pesticidal
component: boric acid. (CAS No. 10043-35-3.)
Does not contain any hazardous fiberglass,
rockwool, or formaldehyde.

Health Hazard Information

Ingestion: If ingested, rinse mouth and drink large amounts of water.

Inhalation: Dust inhalation may irritate nose or throat.

Skin Contact: Does not normally itch or irritate skin.

Eye Contact: Dust may cause eye irritation upon eye contact.

Carcinogenicity: No.

Physical Information

Appearance & Odor: Gray, milled paper. Slight damp paper odor, if any.

Permissible concentrations: Particulates not

otherwise regulated: 15 mg/m³. OSHA PEL total dust: 15 mg/m³; respirable dust: 5 mg/m³. ACGIH TLV total dust: 10 mg/m³.

Handling Information

In Case of Spill: Shovel or sweep up and place in

container for disposal.

Respiratory & Eye Information

Where dusty conditions exist: Use a NIOSH approved dustmask or respirator. If dust is annoying,

use dust goggles. Follow good personal hygiene and housekeeping practices.

Waste Disposal Information

Dispose of in accordance with all applicable federal,

state and local environmental regulations.

Fire & Explosion Information

Extinguishing Media: Water or any standard agent may be used.

Special Fire Fighting Procedures: Use standard procedures as dictated by the given situation. Material contains fire retardant and has a critical radiant flux greater than or equal to .12 w/cm² and smoldering combustion less than or equal to 15%, per ASTM C-739. Full protective clothing and self-contained

breathing apparatus should be used by firefighters. Unusual Explosion Hazards: None.

Unusual Fire Hazards: None. However, material should not be applied where temperatures may exceed 180° F. (i.e. Make sure duct work is sealed and maintain clearance around recessed lights, exhaust flues of furnaces and other heat producing devices, per National Electrical Code.)

Additional Information

This MSDS applies only to the identified product as of the effective date of this MSDS and the contents may not be valid or useful if the product is altered or combined with other products, or used in an unsafe manner or for other than its intended purpose.

identified herein.

The Manufacturer has endeavored to disclose accurate and current information, as of the effective date of this MSDS. However, the Manufacturer disclaims any warranties, express or implied, representations or guarantees of any kind, regarding accuracy of this information or the properties, fitness, or safety of the product identified herein. The user shall have the sole responsibility for the proper use of the information and for the establishment of proper conditions for, and the safe use of, the product

Disclaimer: This MSDS is offered for your information and consideration only, and is not intended for any other person or purpose. It is your responsibility to conduct such investigations as you deem appropriate under the circumstances. Although the identified product is generally acceptable in homes, and to the best knowledge of the Manufacturer, there are no known serious health hazards related to its normal and intended use, except as may be disclosed, this product (as a whole) has not been tested by the Manufacturer for all potential health hazards or effects. There may be health hazards related to its components.

PCISV3C08