

ADD R4 TO WALL FRAMING

SPACELOFT[®]

RESIDENTIAL
COMMERCIAL
INSTITUTIONAL

INSUL-CAP[™]

aspen | aerogels[™]

NANOTECHNOLOGY AT WORK[™]

Eliminates thermal bridging in steel and wood framing

Improves a steel frame wall to R11, equivalent to a wood frame wall

Saves energy costs without altering standard construction

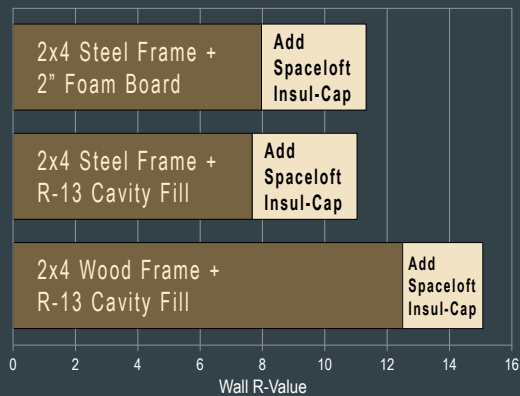


Spaceloft® Insul-Cap™ Improves the Energy Efficiency of Wood- and Steel-Frame Buildings

SOLVES THERMAL BRIDGING PROBLEMS

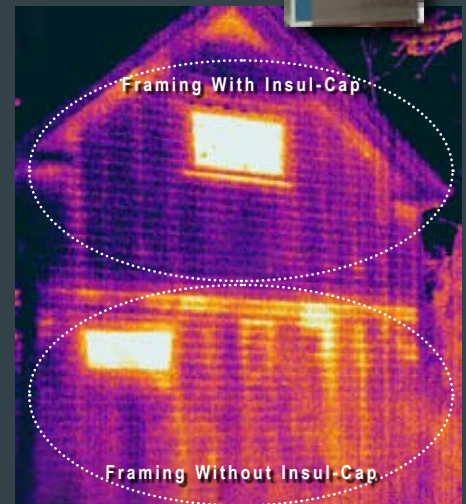
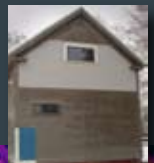
High performance Spaceloft Insul-Cap is made from aerogel, the world's most efficient insulation material. Applied between framing and internal and/or external sheathing, Spaceloft Insul-Cap eliminates thermal bridging and can add up to R4.0 to standard wall framing, with dramatic results.

Typical Wall Thermal Improvement With Spaceloft Insul-Cap



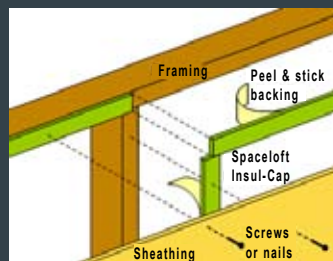
The thermal performance of a **steel-frame wall** can improve up to 40 percent to R11, the equivalent of a wood-frame wall.

The thermal performance of a **wood-frame wall** can improve up to 15 percent.



EASY INSTALLATION

Spaceloft Insul-Cap is made of a 3/8" thick strip of flexible aerogel blanket supplied in standard 8 ft or custom length with a peel-and-stick backing. After framing, simply press Spaceloft Insul-Cap strips onto all framing members prior to installing sheathing or siding. The sheathing or siding is applied as you normally would, screwing or nailing right through the Spaceloft Insul-Cap strip.



THIRD-PARTY VALIDATION TESTING

Steel Frame Full Wall Hot Box Test

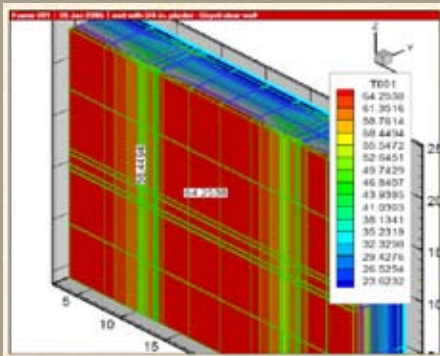
DESCRIPTION

20% framing density, 16"o.c., R13 cavity insulation, spray-applied Johns Manville Spider Insulation

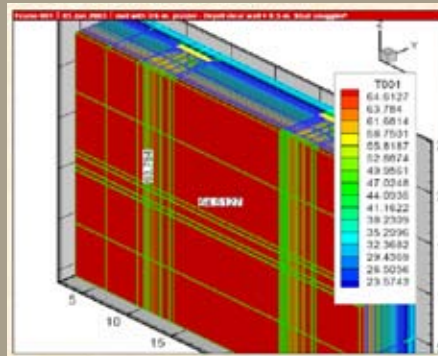
RESULTS

Clear Wall without Spaceloft Insul-Cap
Clear Wall with Spaceloft Insul-Cap

R=7.7
R-11.0



Conventional 2x4 Steel Stud Wall



2x4 Steel Stud Wall With Local Aerogel Insulation

Inside Temperature = 70°F
Outside Temperature = 20°F
Interior Wall Temperature = 64.2°F

Inside Temperature = 70°F
Outside Temperature = 20°F
Interior Wall Temperature = 69.2°F

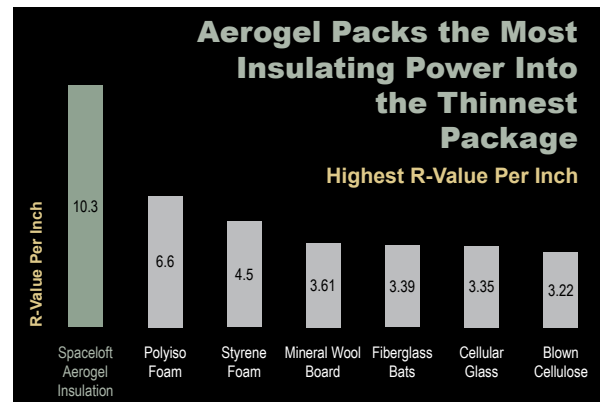
Simulation and analysis conducted by Oak Ridge National Laboratory



Testing conducted by Johns Manville

What is Aerogel?

FIRST DEVELOPED IN 1931, AEROGEL IS COMPOSED OF OVER 90 PERCENT AIR, MAKING IT A HIGHLY EFFECTIVE INSULATOR WITH THE LOWEST THERMAL CONDUCTIVITY OF ANY SOLID. ASPEN AEROGELS HAS TURNED AEROGEL INTO AN EXTREMELY STRONG, DURABLE, THIN, AND FLEXIBLE INSULATION MATERIAL THAT IS TWO TO EIGHT TIMES MORE EFFECTIVE THAN TRADITIONAL INSULATION – THE IDEAL CHOICE FOR A WIDE RANGE OF APPLICATIONS.



SPACELOFT® SPECS



Physical Properties

Thicknesses*	0.12 in (3 mm), 0.24 in (6 mm), 0.36 in (9 mm)
Max. Use Temp.	390°F (200°C)
Color	Dark Gray
Density*	9.4 lb/ft ³ (0.15 g/cc)
Hydrophobic	Yes
Material Form*	57 in (1,450 mm) wide

* Nominal Values

Spaceloft is a flexible, nanoporous aerogel blanket™ insulation designed to meet the demanding requirements of industrial, commercial, and residential applications.

Spaceloft's unique properties – extremely low thermal conductivity, superior flexibility, compression resistance, hydrophobicity, and ease of use – make it essential for those seeking the ultimate in thermal protection.

Using patented nanotechnology, Spaceloft insulation combines a silica aerogel with reinforcing fibers to deliver industry-leading thermal performance in an easy-to-handle and environmentally safe product.

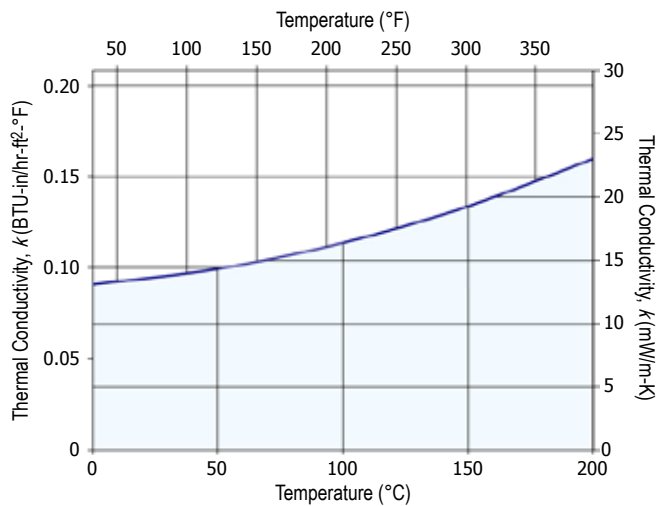
Spaceloft is a proven, effective insulator in Oil and Gas, Building and Construction, Aerospace, Automotive, Cold Chain and other industries requiring maximum thermal protection within tight space and weight constraints.

Fire Performance

Spaceloft has received a Class A rating in the ASTM E 84 fire test. This rating denotes flame spread less than 25.

Thermal Conductivity

ASTM C 177 Results



Mean Temp. °C	0	25	50	75	100	125	150	175	200
°F	32	77	122	167	212	257	302	347	392
k mW/m-K	13.1	13.6	14.3	15.3	16.4	17.7	19.3	21.0	23.0
BTU-in/hr-ft²-°F	0.091	0.094	0.099	0.106	0.114	0.123	0.134	0.146	0.160

Embodied Energy and CO₂ Values for Spaceloft and Other Insulations

Material	Thermal Conductivity (mW/m-K) ¹	Thermal Resistance (R-value per inch) ¹	Embodied Energy (EE) (MJ/kg)	Embodied CO ₂ (kg of CO ₂ /kg)	EE per Thermal Resistance (EE/R-value per inch)	ECO ₂ per Thermal Resistance (ECO ₂ /R-value per inch)
Aspen Aerogels' Spaceloft	12	12.0	53.0 ¹	4.2 ¹	4.42	0.35
Fiberglass (Recycled Glass)	40	3.8	28.0 ²	1.4 ²	7.37	0.36
Fiberglass (Virgin Glass)	40	3.8	39.2 ²	1.9 ²	10.32	0.50
Expanded Polystyrene	32	4.5	111.6 ³	3.0 ²	24.80	0.67
Polyisocyanurate	24	6.0	69.8 ³	5.5 ²	11.63	0.92

¹ Manufacturer data

² Inventory of Carbon and Energy, University of Bath, UK

³ Comparison of Energy Evaluation of Plastic Products and Their Alternatives for the Building, Construction and Transportation Industries - The Society of the Plastics Industry