



# DESIGN SOLUTION

MULTI-FAMILY DWELLING



PROJECT	Metro Green Apartments Stamford, CT
DETAILS	250,000 sq. ft. Celbar Spray-on Systems
ARCHITECT	Perkins Eastman Architects Stamford 422 Summer Street Stamford, CT 06901

achieving sound control between floors, and providing thermal control throughout the buildings.

Metro Green is designed as a model for green affordable housing development, meeting the Enterprise Green Community Guidelines and anticipating a LEED Gold certification from the U.S. Green Building Council (USGBC) as both a new building and as a pilot project under the USGBC's LEED Neighborhood Development Program for Neighborhood Design.

**For more information on how Celbar Spray Systems can improve your project, please contact us at:**  
**International Cellulose Corporation**  
**(713) 433-6701 • (800) 444-1252**  
**Fax: (713) 433-2029**  
**icc@spray-on.com • www.spray-on.com**

Celbar Spray Insulation has created quite a positive stir in the new Metro Green Apartment Community with its recent ribbon cutting ceremony. The green, affordable housing units are insulated with Celbar Spray Insulation making the structure environmentally responsible while



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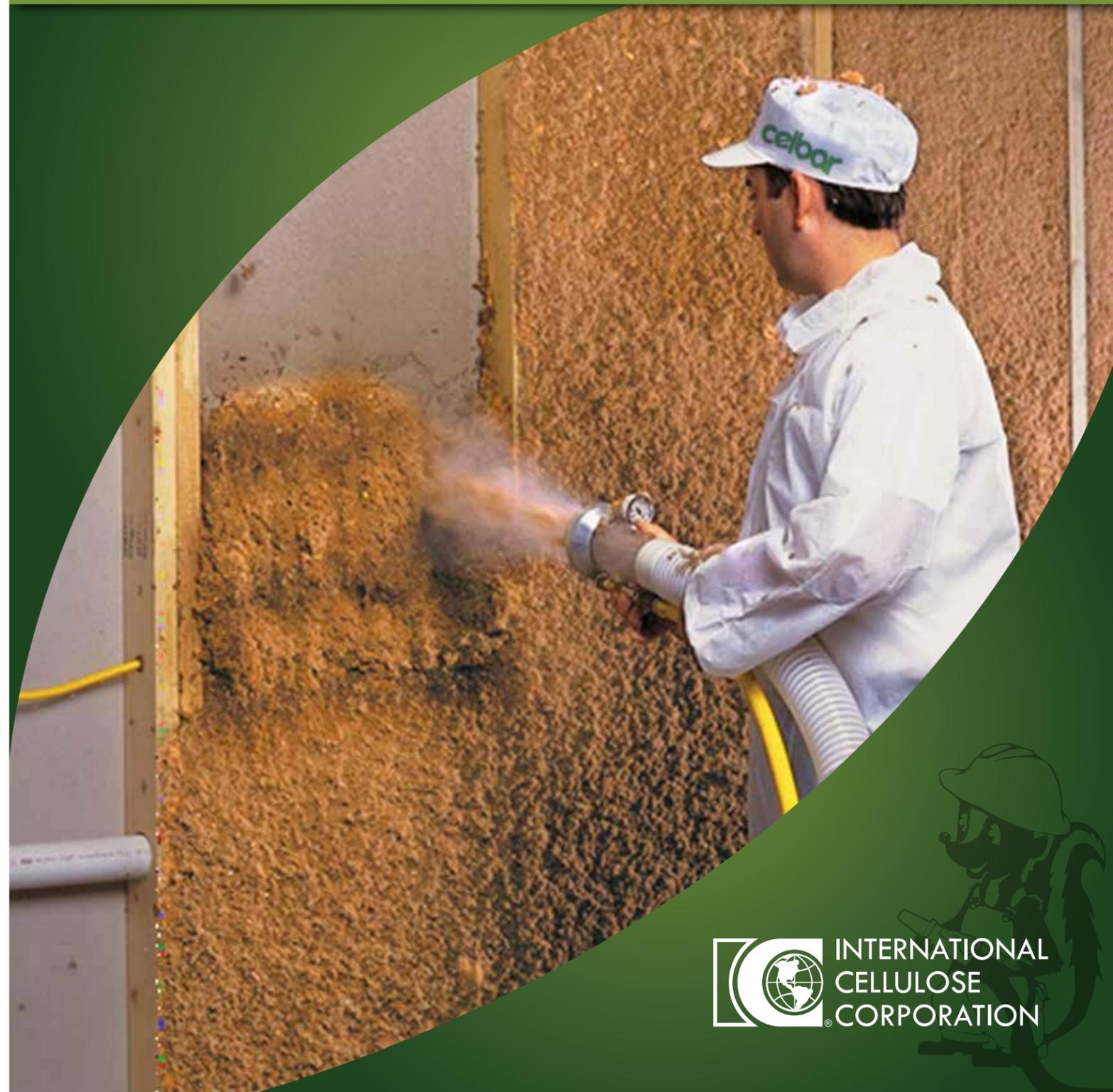
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# THERMAL & SOUND

ATTENUATING MATERIAL

## The Natural Choice®



## SYSTEM DESCRIPTION

Celbar is a blend of specially prepared cellulose fibers, organic in nature, treated with adhesive and fire resistant chemicals. When sprayed in place, the interlocking fibers result in a mass that produces excellent sound and thermal properties.

Celbar is pneumatically spray-applied in wall and floor/ceiling cavities to form a monolithic coating. This process seals cracks and holes in the wallboard, around plumbing and electrical outlets, vent ducts and other irregularities. There are no compressed areas or voids to allow sound leaks, R-value reduction, or air infiltration.

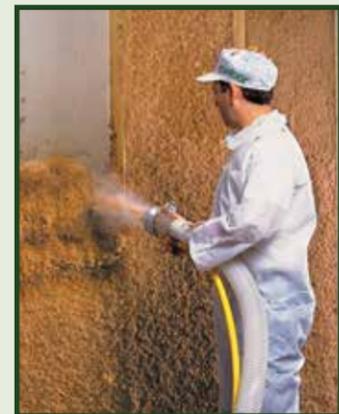
## PERFORMANCE WHERE IT COUNTS

Celbar provides superior sound transfer control demanded by building designers, owners and occupants. Celbar assemblies perform closer to lab tested STC ratings in the field than do other conventional batt and sound board systems. This is due to the complete coverage and the sealing action of Celbar.

## YOU CHOOSE

Do you want an insulation that simply takes up space or an insulation that completely protects the wall?

Yellow ovals denote sources of air infiltration and poor detailing. Celbar's monolithic seal performs better than fiberglass.



**STEP ONE:** A unique spray application that fully insulates around plumbing and wiring, reducing air infiltration and creating a comfortable environment.

**Celweb** provides a backing for all assemblies in which the drywall has not yet been constructed, allowing for the application of Celbar Wall Spray for faster construction.

**STEP TWO:** Applied just beyond the studs ensuring maximum coverage, Celbar is planed flat creating an even, complete thermal barrier.

## STAGGERED STUD WALL PARTITION 16" OC, 2X4" WOOD STUDS ON 6" WOOD PLATES

STC Ratings of wall assemblies insulated with Celbar Spray. Testing done with full scale assemblies.

STC	Description	Diagram
41	Single Layer 5/8" Gypsum Board each side No Insulation • NGC 2008020	
48	Single Layer 5/8" Gypsum Board each side 5-1/2" Celbar Spray • NGC 2008023	
55	Single Layer 5/8" Gypsum Board each side Single Layer 5/8" SoundBreak™ one side 5-1/2" Celbar Spray • NGC 2008024	
51	Double Layer 5/8" Gypsum Board each side No Insulation • NGC 2008019	
56	Double Layer 5/8" Gypsum Board each side 5-1/2" Celbar Spray • NGC 2008025	
59	Double Layer 5/8" Gypsum Board each side Single Layer 5/8" SoundBreak™ one side 5-1/2" Celbar Spray • NGC 2008027	

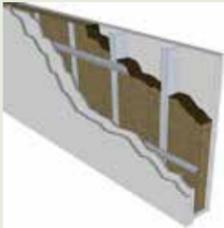
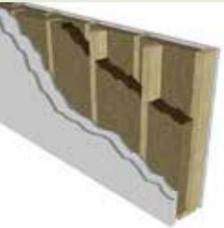
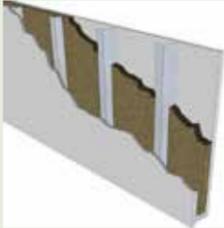
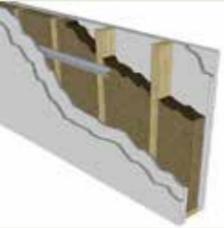
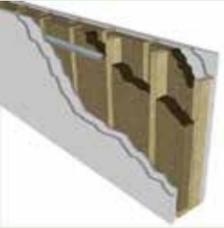


The diagrams and STC ratings listed below are intended to serve as a guide. Construction practices have an influence on field STC ratings. International Cellulose Corporation cannot guarantee actual STC ratings. Flanking sound patterns, the integrity of the wall, and the floor and ceiling construction are important factors in effective sound control.

The Celbar Spray is a cellulose insulation recognized under IBC Section 719 and IRC Section R316. Celbar Spray is a spray-on thermal insulation material and may be used as a component of nonload-bearing, one-hour fire-resistance-rated walls.  
-ICC Evaluation Service, INC., ESR-2110

For more information, please contact International Cellulose Corporation at:  
12315 Robin Blvd., Houston, TX 77045  
icc@spray-on.com  
Toll-free (800)-444-1252 or (713)-433-6701

STC Ratings of wall assemblies insulated with Cellulose Spray. Testing done with full scale assemblies by National Research Council Canada.

STC	Metal Stud Assemblies	STC	Wood Stud Assemblies
60	 <p>24" OC 4" Metal Studs Two layers 5/8" Gypsum Board each side Resilient Furring one side 3-1/2" Cellulose Spray • <i>Test TL-94-024</i></p>	54	 <p>16" OC 6" Plate 2x4" Staggered Wood Studs Two layer 5/8" Gypsum Board one side One layer Gypsum Board other side 5-1/2" Cellulose Spray • <i>Test TL-93-232</i></p>
51	 <p>24" OC 6" Metal Studs One layer 5/8" Gypsum Board each side 6" Cellulose Spray • <i>Test TL-93-298</i></p>	57	 <p>16" OC 2x6" Wood Studs Two layer 5/8" Gypsum Board each side Resilient Furring one side 5-1/2" Cellulose Spray • <i>Test TL-93-108</i></p>
		62	 <p>16" OC 6" Plate 2x4" Staggered Wood Studs Two layer 5/8" Gypsum Board each side Resilient Furring one side 5-1/2" Cellulose Spray • <i>Test TL-93-236</i></p>

## THERMAL PERFORMANCE

The purpose of insulation is to reduce the flow of temperature from one space to another. The higher the temperature resistance, or R-value, of the material, the greater the insulating power. However, high R-values are not the only measure of superior thermal performance.

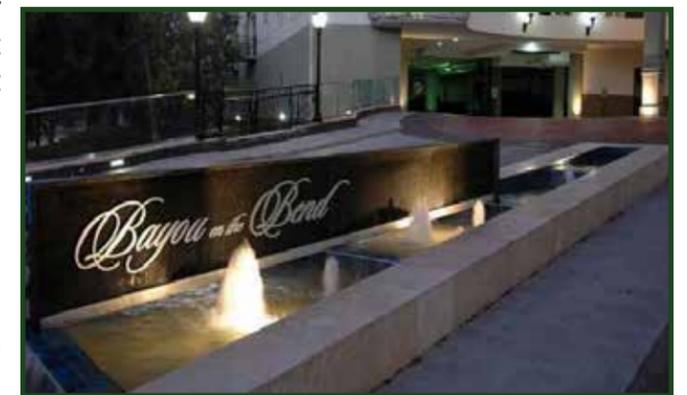
Celbar wall insulation effectively reduces sound transmission from walls or ceilings adjacent to entertainment centers, surround sound systems, bathrooms, and bedrooms to other rooms. The high-density insulation fills voids and creates a monolithic seal resulting in a quieter, more peaceful home. Celbar also provides a very high R-value making a home more energy efficient. Celbar is classified as a green building material, is designed to resist fire, mold, mildew and insects. Celbar has always been formulated with 100% Borate additives and is free of all Ammonia additives.

## REDUCE NOISE BETWEEN FLOORS

Celbar Wall Spray, applied between floors of multilevel dwellings helps reduce airborne noise such as voices, radios, televisions and other annoying sounds. In combination with resilient channels, Celbar Wall Spray reduces the impact or foot-fall noises very common in today's homes.

## INSULATION IS A NECESSITY

The insulation you select is an important decision. The comfort and maintenance of your home and building, the cost of your monthly heating/cooling bill, and many more factors are directly related to the performance of insulation.



Certificate NO. 6250

## LOW EMBODIED ENERGY

According to the Construction Specifier, March 1994, cellulose is the least energy intensive product when compared to vitreous (glassy) materials. To assess the efficiency of any product, the embodied energy must be first factored. This energy factor is the amount of energy required to produce, transport, and install any product.

Unlike cellulose, vitreous fiber insulation is produced by melting sand, slag or rock in a hot furnace that burns fossil fuels, releasing those spent gasses into our air as pollution. To maintain their extreme high temperatures, the furnace operates continually, never shutting down for the weekend.

## THINK GREEN

While people may debate the causes of global warming, it is just common sense to use products that have as little impact on the environment as possible.

Insulation, by reducing the amount of energy required to heat or cool a building, is environmentally friendly. But don't be fooled into thinking all insulating materials are equal. There is plenty of greenwashing taking place to make products look more beneficial, or less harmful, to the environment than they really are.

Cellulose takes less energy to make than any other insulation material. This is known as embodied energy and includes the total energy required to transport raw materials, manufacture and distribute the product. Fiberglass has up to 10 times more embodied energy than cellulose and foam products up to 64 times.

Cellulose has the highest level of recycled content in the insulation industry- up to 85%. Cellulose insulation is made with recycled paper, paper that might otherwise end up in a landfill.



Fiberglass has a maximum of 40% recycled content and foam products little or none.

## CLEAN MANUFACTURING

Celbar Insulation is processed in a clean, efficient, electrically-driven mill that requires relatively little amounts of energy. At the end of the production day, on weekends, and holidays, the mill shuts-down totally. Information supplied to the Canadian Standards Association by a vitreous manufacturer indicated it required 59 times more energy than cellulose on a pound for pound basis.

- Cellulose takes less energy to make than any other insulation.
- Cellulose has the highest level of recycled content in the insulation industry – up to 85%.
- Celbar insulation is made with recycled paper, paper that might otherwise end up in a landfill. Fiberglass has a maximum of 40% recycled content and foam products little or none.
- Celbar reduces the amount of energy needed to heat or cool a building.
- Celbar is fire resistant.
- Celbar helps prevent greenhouse gasses.
- Celbar is regionally produced, using local recycling programs and independent recyclers, and servicing communities close to home.

Type	Installation Methods	R-value per inch (RSI/m)	Raw Materials	Pollution From Manufacture	Indoor Air Quality Impacts	Comments
<b>Celbar</b>	Loose-fill, wall-spray (damp), dense pack, stabilized	3.8	Old Newspapers, cardboard, borates	Negligible	Fibers and chemicals can be irritants	High recycled content and very low embodied energy
<b>Fiberglass</b>	Batts, Loose-fill, semi-rigid board	3.0-4.0 (15-28)	Silica sand, limestone, boron, recycled glass, PF resin or acrylic resin	Formaldehyde emissions and high energy use during manufacture	Fibers can be irritants	High embodied energy
<b>Mineral Wool</b>	Loose-fill, batts, semi-rigid or rigid board	2.8-3.7 (19-26)	Iron ore blast furnace slag, natural rock, PF binder	Formaldehyde emissions and high energy use during manufacture	Fibers can be irritants	High embodied energy; Rigid board can be an excellent foundation drainage and insulator
<b>Cotton</b>	Batts	3.0-3.7 (21-26)	Cotton and polyester mill scraps (especially denim)	Negligible	Considered safe	Two producers, so transportation pollution is higher than other insulation
<b>Closed-cell spray Polyurethane foams</b>	Spray-in cavity-fill or spray-on roofing	5.8-6.8 (40-47)	Fossil fuels; HFC-24.5fa blowing agent; non-brominated flame retardant	High energy use during manufacture; global warming potential from HFC blowing agent	Quite toxic during installation (respirators or supplied air required); allow several days of airing out prior to occupancy	Very High embodied Energy
<b>Open-celled, low-density polyurethane foam (Soy)</b>	Spray-in cavity-fill	3.6-3.8 (25-27)	Fossil fuels and soybeans; water as blowing agent; non-brominated flame retardant	High energy use during manufacture	Quite toxic during installation (respirators or supplied air required); allow several days of airing out prior to occupancy	Very High embodied Energy