

# THERMAL & ACOUSTICAL SPRAY-APPLIED FINISHES





## The Custom Spray System

K-13 insulation is a thermal and acoustical commercial cellulose insulation typically used as an exposed ceiling finish requiring no additional materials. K-13 meets project requirements for insulation (R-value), noise reduction (NRC), condensation control, texture, and color. Additionally, K-13 usually provides these features at lower installed prices than many common alternatives.

## A Total System: Fiber, Binder, Application

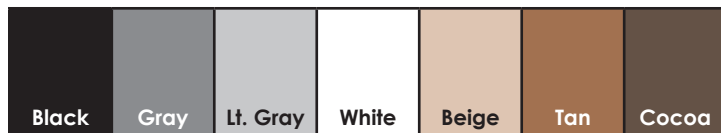
K-13 is a total system of recycled natural fibers, chemical treatment, binding system, and application method. The K-13 system begins in a strict quality-controlled manufacturing process using specially prepared cellulose fibers that are chemically treated to add resistance to fire, mold, and mildew.

K-13 is then applied by an international network of licensed applicators through approved fiber machines and nozzles for control of the fiber/binder ratio. During application, the K-13 fibers combine with a patented water-based adhesive. This unique adhesive adheres to virtually any properly prepared substrate and standard material such as metal, wood, concrete, or glass. The finished product is a strong, durable monolithic coating of a predetermined thickness.

## Naturally Tough – Naturally Attractive

Available in a variety of colors, K-13 is an ideal surface finish in both new construction and renovation projects.

K-13 is available in seven standard colors and can also be specified in specially matched custom colors. Please contact us for more information on customizing your K-13 application.



Color selection will affect the final price.

## Thermal Performance

K-13 insulates by creating dead air spaces between and within its hollow fibers. Because K-13 fibers are sprayed-in-place, the material fills cracks, seams, and voids, forming a monolithic coating over the substrate reducing air infiltration. Unlike prefabricated insulations, K-13 has no voids or compressed areas to reduce thermal efficiency. The result is a more effective in-place product with exceptionally low heat transfer characteristics and an **R-value of 3.7 per inch**.

The patented adhesive utilized in the installation of K-13 provides unequal strength allowing applications from 3/4" up to 5" thick without mechanical support. For an even higher R-value, we recommend the K-13 High-R System, a mechanically supported system for R-values exceeding R-19. For more information about the advantages of the K-13 High-R System, please visit [www.spray-on.com/info/highr](http://www.spray-on.com/info/highr).

## Condensation Control

For areas such as indoor pools and ice arenas, K-13 aids in condensation control. The proper combination of K-13 and ventilation prevents condensation on metal, concrete and other surfaces. K-13 reduces ventilation requirements, saving in both the ventilation equipment investment operating costs.

## Environmental

We manufacture our finishes from 80% recycled material and may contribute to satisfying credits under the LEED® green building program. Additionally, our low emission adhesive provides superior bond strength without compromising indoor air quality. As a UL GREENGUARD Gold Certified product, K-13 complies and surpasses emission standards set by the California Department of Public Health (CDPH) / CA Section 01350, Collaborative for High-Performance Schools (CHPS). K-13 does not contain silica.

## Acoustical Performance

The resilient fibers of K-13 absorb sound energy instead of reflecting it, reducing reverberation and excessive noise often present in modern design, greatly improving ambient sound quality and intelligibility.

K-13 Sprayed Thermal and Acoustical Insulation on Solid Backing | ASTM C-423

Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
.625"	0.05	0.16	0.44	0.79	0.90	0.91	<b>0.55</b>
1"	0.11	0.32	0.84	0.99	1.01	0.98	<b>0.80</b>
1.75"	0.19	0.60	1.05	1.11	1.03	0.98	<b>0.95</b>
2"	0.47	0.90	1.06	1.06	1.08	1.07	<b>1.00</b>
3"	0.57	0.99	1.04	1.03	1.00	0.98	<b>1.00</b>

K-13 Sprayed Thermal and Acoustical Insulation Applied on 1.5" Metal Deck

Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
1.5"	0.36	0.89	1.26	1.07	1.01	1.00	<b>1.05</b>
3"	0.97	1.04	1.13	0.99	0.95	0.98	<b>1.05</b>

K-13 Sprayed Thermal and Acoustical Insulation Applied on 2" Metal Deck

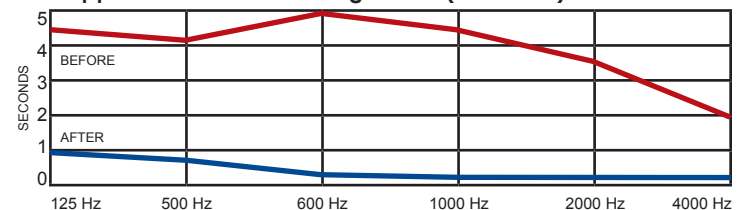
Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
1"	0.39	0.63	0.96	0.99	1.04	1.06	<b>0.90</b>
2"	0.55	0.99	1.13	1.06	1.05	1.10	<b>1.05</b>

K-13 Sprayed Thermal and Acoustical Insulation Applied on 3" Metal Deck

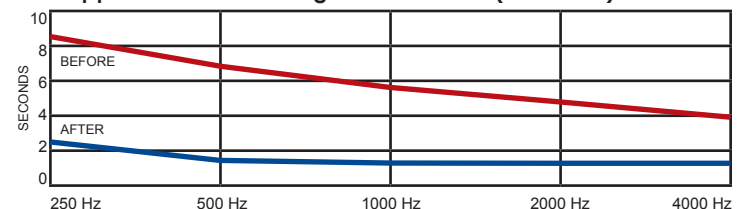
Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
1.5"	0.55	0.92	1.11	1.02	0.95	0.99	<b>1.00</b>
2.75"	0.69	0.98	1.17	1.03	0.97	1.04	<b>1.05</b>

## Sound Results

K-13 Applied at 3" to Recording Studio (Field Test)



K-13 Applied at 1" to Ceiling in Indoor Pool (Field Test)





K-13 is versatile. Typical projects include: Parking Garages, Classrooms, Restaurants, Museums, Warehouses, Airports, Stadiums, Worship Facilities, Open Offices, Auditoriums, Convention Centers, and more.

## Fire Performance Ratings

K-13 has been rated and approved by Factory Mutual Research Corporation for use in the following categories:

- **Category I:** As an interior finish material of low fire hazard (Class I Building Material) over noncombustible surfaces not requiring automatic sprinkler protection in and of itself.
- **Category II:** As a protective coating to delay the ignition and reduce the surface burning rate of combustible wood and cellulosic fiber building materials.
- **Category III:** As a protective coating to delay the ignition and reduce the surface burning rate of low melting, combustible cellular plastic building materials and to protect their dimensional stability for a brief period.
- **Category IV:** As a protective coating for building structural steel to supplement automatic sprinkler protection in preventing structural failure temperatures of the steel in high fire hazard occupancies.
- **Category V:** As a protective coating to the underside of Class II insulated steel roof deck construction to sufficiently lower the rate of fuel contribution from the Class II deck components to qualify the construction as Class I allowing automatic sprinkler protection to be omitted where permissible under Factory Mutual Standards.

These fire ratings are derived from product tests per ASTM standards and are used solely to measure and describe properties of materials and products in response to heat and flame under controlled laboratory conditions. They are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

## Surface Burning Characteristics

K-13 has a Class 1, Class A flame spread rating per ASTM E-84, UL-723, NFPA-255 and UBC-42.

**Flame spread- 5**

**Smoke developed- 5**

Underwriters' Laboratories – Ref. #R5499

## ASTM Standards Compliance

- ASTM C 518** Thermal Conductivity
- ASTM E 84** Surface Burning Characteristics
- ASTM C 423** Noise Reduction Coefficients
- ASTM D 2244** Light Reflectance
- ASTM E 736** Bond Strength
- ASTM E 859** Air Erosion
- ASTM C 739** Moisture Absorption
- ASTM E 90** Sound Transmission Loss
- ASTM E 1042** Acoustical Absorption
- ASTM C 1149** Spray-Applied Cellulose Insulation

Test reports available upon request.

## Miscellaneous Approvals & Specifications

Underwriters Laboratories Classified Code Compliance Report UL ER 5499

Factory Mutual Research – Report Nos. 19678, 20399, & 24703

Federal Defense Logistics Agency Cage Code: ONJU2

Corps of Engineers Guide Specifications – CE-201.01

Department of the Navy Guide Specifications – NFGS-07218

EPA 40 CFR Part 248

Miami-Dade county, FL. NOA #18-0122.09 - Expires Sept. 4, 2020

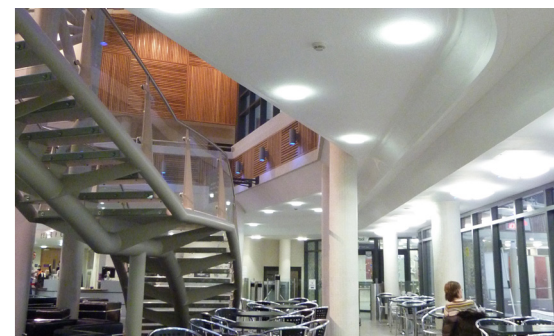
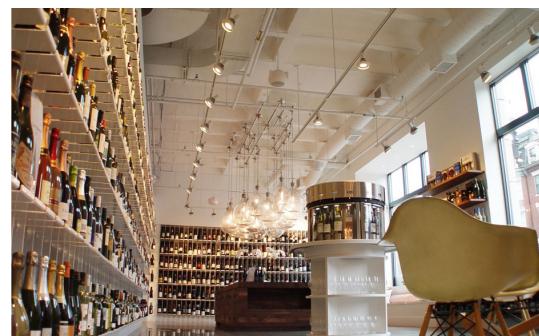
Meets California Bureau of Home Furnishings Standards

Resource Conservation and Recovery Act

Federal Specification – SS-S-111C

Los Angeles – RR-24311

New York – MEA 65-96-M



# SonaSpray "fc"®

## Acoustical finish

CSI 09 83 16



### Product Description

SonaSpray "fc" is a spray-applied acoustical texture designed for a wide range of project types. SonaSpray "fc" provides an attractive, high-performance solution to acoustical and lighting design objectives in both new construction and renovation projects. Typical installations include schools, churches, auditoriums, passenger terminals, libraries, detention facilities, cafeterias, offices, hotels, and condominiums.

SonaSpray "fc" is available in White, Arctic White, Black, and specially matched colors.

### Acoustical Performance

As tested by an NVLAP accredited acoustical laboratory per ASTM C-423, SonaSpray "fc" provides an exceptionally high noise reduction coefficient (NRC). A typical installation of 1/2" thick on solid backing has an unequaled NRC of .65.

#### SonaSpray "fc" on Solid Backing | ASTM C 423

Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
.5"	0.00	0.14	0.49	0.87	1.00	0.99	<b>0.65</b>
.75"	0.10	0.23	0.70	0.98	1.01	0.96	<b>0.75</b>
1"	0.05	0.40	0.94	1.04	0.97	0.99	<b>0.85</b>

#### SonaSpray "fc" on 1.5" Metal Deck | ASTM C 423

Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
.75"	0.17	0.58	0.91	0.89	0.87	0.84	<b>0.80</b>

### Substrate Compatibility

SonaSpray "fc" conforms to any surface configuration such as barrel vaults, concrete "T", corrugated decks, pan construction and other complex surfaces. The high-performance adhesive bonds to virtually all construction materials including gypsum board, plaster, wood, metal, and concrete. Some surfaces (water-stained ceilings, wood, and oxidized metal) require sealing to prevent migratory staining of the SonaSpray "fc".



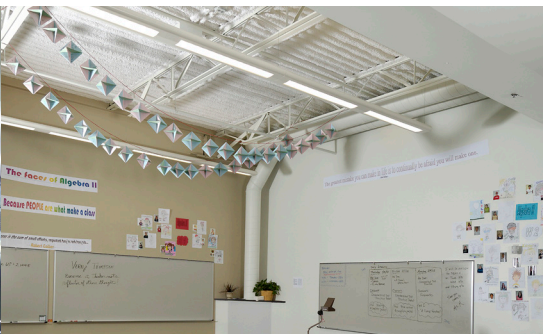
### Durability and Maintenance

The strong, resilient bond of the adhesive used to apply SonaSpray "fc" provides a remarkably durable surface. SonaSpray "fc" resists impact and abrasion without the cracking or spalling typical of many cementitious or plaster-based materials.

In areas where even higher abrasion resistance may be desirable, SonaSpray "fc" Dura-K is specified. This product provides even greater bond and compressive strength without reducing the acoustical performance.

### ASTM Standards Compliance

<b>Flame Spread Index</b>	5	ASTM E 84/UL 723
<b>Smoke Developed</b>	5	ASTM E 84/UL 723
<b>Bond Strength</b>		
SonaSpray "fc"	>600 psf	ASTM E 736
SonaSpray "fc" Dura-K	>900 psf	ASTM E 736
<b>Compression Strength</b>		
SonaSpray "fc"	>400 psf	ASTM E 761
SonaSpray "fc" Dura-K	>600 psf	ASTM E 761





## System Description

Ure-K is a 15-Minute thermal barrier approved to go over polyurethane foam. Foam insulation systems are developed from polyurethane and polyisocyanurate. If foam is left exposed on the interior of a building, it can create a life threatening possibility in the event of a fire.

Ure-K 15-Minute Thermal Barrier is spray-applied over exposed applications of polyurethane foam in existing buildings and new construction projects as a combination system to meet mandatory code requirements.

## Installation & Environmental

Ure-K fibers and a low-emissions patented adhesive are applied to foam applications through equipment engineered to control the adhesive/fiber mixture. The Ure-K adhesive provides superior adhesion to all types of foam insulations without compromising indoor air quality.

Ure-K is manufactured from 80% recycled materials and may contribute to satisfying credits under the LEED® green building program. Ure-K is a UL GREENGUARD Gold Certified product.

## Thermal Barrier

Ure-K is tested and approved as a 15-minute thermal barrier over foam. Ure-K covers interior applications to maintain a sufficiently low surface temperature for a minimum of 15-minutes to prevent ignition and the rapid spread of fire. The average installed thickness of Ure-K is 1.25".

## Thermal Insulator

The combination of Ure-K and polyurethane has the highest efficiency of all available insulations. Ure-K is specified at 1.25" adding R-4.5 to the overall insulation package.

## Noise Reduction

Ure-K reduces reverberation and excessive noise improving sound quality and overall intelligibility. This is an important benefit in controlling noise levels to meet OSHA and other requirements.

### Ure-K over Closed-Cell Polyurethane Foam | ASTM C 423

Inches	125 Hz	250 Hz	500 Hz	1,000Hz	2,000 Hz	4,000 Hz	NRC
1.25"	0.38	0.57	1.00	1.07	1.06	1.07	<b>0.95</b>

## Typical Applications

- Restaurants/ Bars
- Freezers/ Coolers
- Refrigerated Warehouses
- Curtin Wall High-Rise Buildings
- Tilt-up, Pre-cast, & Poured-in-place Concrete Construction
- Underground Parking Decks
- Metal Buildings
- Projects requiring a high R-Value
- Projects concerned with Energy Efficiency

## Testing

Ure-K has been tested according to NFPA 275 Part 1 & Part 2 and is approved to be used as a 15-Minute Thermal Barrier over Polyurethane Foam.

### NFPA 275 - Part 1 & 2

### ASTM E 119 (UBC 26-2)

Full-Scale Fire Wall Test: Passed

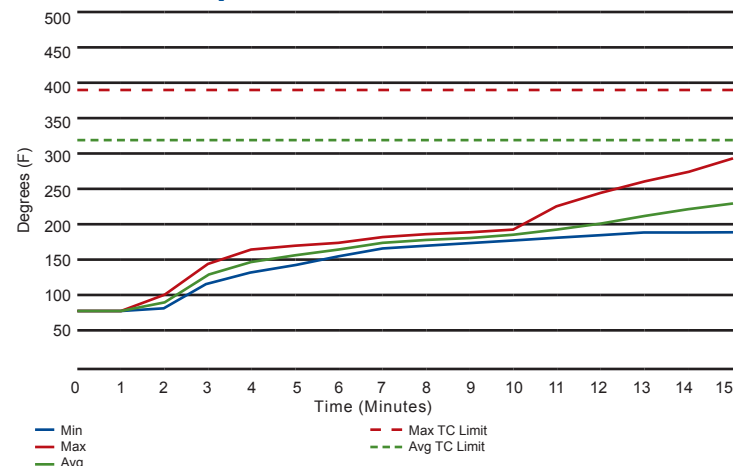
### NFPA 286 (Testing over 2 pound and 0.5 pound foam)

### ASTM E 84 - Class 1 Class A Rated

Flame Spread 5

Smoke Development 5

## Thermocouple Data



## 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 reductions, 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 other conventional batt and soundboard systems. This superior performance is due to the complete coverage and sealing action of Celbar.

Laboratory tests have proven that Celbar produces significantly higher STC values than other identically constructed wall systems.

## Typical Structures

- |              |                |                  |
|--------------|----------------|------------------|
| Homes        | Hotels/Motels  | Theaters         |
| Condominiums | Apartments     | Restaurants      |
| Townhouses   | Shopping Malls | Office Buildings |



## Physical Properties

### Thermal Properties

Thickness	1.0"	2.5"	3.5"
R-value	3.8	9.5	13.3

### Fire Hazard Classification

Underwriters Laboratories;  
Reference #R-5499

### Listings

- HUD-FHA-VA-Permits the use of Celbar in projects they finance based on Celbar's compliance with UMB-80.

## ASTM E-119 Fire Rating - One Hour

Celbar has been tested in accordance with ASTM E-119 including hose stream test and is accepted for use in fire-rated wall assemblies as a one-hour wall.

## Metal Stud Assemblies

STC	Construction Detail
60	24" OC, 4" Metal Studs, Two layers 5/8" Gypsum Board each side, Resilient Furring one side, 3-1/2" Cellulose Spray • Test TL-94-024
51	24" OC, 6" Metal Studs, One layer 5/8" Gypsum Board each side, 6" Cellulose Spray • Test TL-93-298

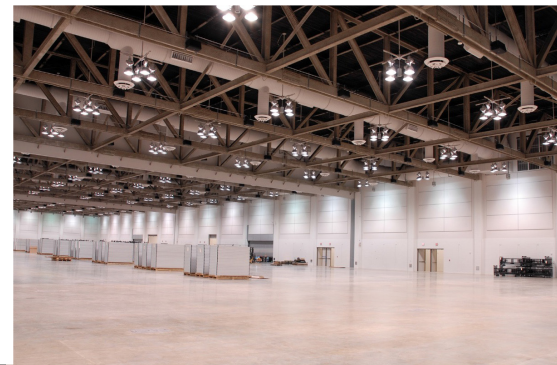
## Wood Stud Assemblies

STC	Construction Detail
54	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 • Test TL-93-232
57	16" OC, 2x6" Wood Studs, Two layer 5/8" Gypsum Board each side, Resilient Furring one side, 5-1/2" Cellulose Spray • Test TL-93-108
62	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 • Test TL-93-236

## Celbar RL

Celbar RL, or Celbar Fire and Sound, is a system with one, two, and three-hour UL rated Firewall Assemblies. One of the most outstanding features is the record-setting weight load design at 1,415 pounds per stud. These wall assemblies can be constructed using 2x4 inch or 2x6 inch wood studs. We are proudest of the sound test results that these three assemblies received with an STC of 56 with one layer of gypsum board on each side, to the highest tested STC of 64.

Architects, contractors, and code officials will find this system affordable, able to meet and exceed all code requirements for fire and sound control, and easy to install. We have hundreds of applicators worldwide that have been trained to install our products.



## Product Limitations

K-13, SonaSpray "fc", and Celbar Spray should not be used in areas where there is prolonged exposure to heat in excess of 150°F (65°C). Nor should they be applied in areas requiring a washable surface, or where combustible contaminants such as dust, oil, etc., exist. Accumulations of combustible contaminants may become hazardous as these contaminants will provide a fuel source that will burn when ignited and fire may spread.

Celbar is applied with water and should not be sprayed on laminated wood paneling as it could cause warping. Celbar should not be used in areas where vinyl or foil wall covering or other vapor barriers are used on both sides of the wallboard, unless Celbar is allowed to dry completely before closing up the wall.

Surfaces receiving K-13 and SonaSpray "fc" should be checked for possible contaminants, i.e., rust, dirt, water stains, etc. prior to application. These areas should be sealed to prevent discoloration from surface contamination bleed through.

**For further information on limitations and precautions refer to ICC Technical Bulletin 001.**

## Warranty

International Cellulose Corporation (ICC) warrants its products to be free from defects in materials and workmanship at the time of shipment. Application warranties are provided by the installing contractor.

It is the responsibility of the user to determine compliance of the product with local building codes and other regulatory bodies.

ICC is herein publishing information and data based on specific and generic tests. ICC believes this data is as reliable as the present state of the art in fire, thermal, and acoustical testing, and can be used only as a guide for design. ICC is not responsible for building design, appearance, or workmanship and makes no guarantee of performance.

ICC specifically disclaims any warranty of merchantability or fitness for a particular purpose. In no event shall ICC be liable for special, indirect or consequential damage.



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