ISO 9001 REGISTERED
Certificate NO. 6250

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THERMAL & ACOUSTICAL

SPRAY-APPLIED FINISHES

INTERNATIONAL CELLULOSE CORPORATION

CSI 07 21 29

The Custom Spray System

K-13 is the spray-applied insulation tailored to your specific project requirements for insulation (R value), noise reduction (NRC), color, durability, condensation control, texture, and aesthetics. In addition, it usually provides these features at lower installed prices than many common systems such as rigid board and batt insulations, sprayed plasters, and acoustical ceilings.

It is applied to virtually any properly prepared surface configuration of wood, steel, concrete, glass, and other common construction surfaces. K-13 can be sprayed up to five inches thick overhead in one application without mechanical support. Additionally, K-13 serves as the exposed finish requiring no additional materials.

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 with specially prepared cellulose fibers that are chemically treated to add resistance to fire, mold and mildew. K-13 is produced in a strict quality controlled manufacturing process.

K-13 is 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 are combined with a patented adhesive. The finished product is a strong, durable monolithic coating of a predetermined thickness. Some surfaces will require priming prior to being sprayed.

Naturally Tough – Naturally Attractive

With its texture and wide variety of colors, K-13 is especially attractive as a surface finish in new construction as well as renovation projects. Available in seven standard colors, K-13 can also be specified in specially matched custom colors.

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, they fill cracks, seams, and voids, forming a monolithic coating over the substrate that reduces 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.

The patented adhesive utilized in the installation of K-13 adheres to virtually all common construction materials including: metal, wood, concrete, urethane, Styrofoam, and glass. Some surfaces may require pretreatment prior to installing K-13. This unique adhesive provides unequaled strength allowing applications of 3/4 inch to over 5 inches providing R-values from 3 to over 19 without mechanical support. For an R-value of up to 38, ICC recommends the K-13 High-R System. For more information about the advantages of the K-13 High-R System, please visit www.spray-on.com/info/highr.

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 actually reduces ventilation requirements, saving in both the ventilation equipment investment and operating costs.

Acoustical Performance

The resilient fibers of K-13 absorb sound energy instead of reflecting it, reducing reverberation time and making speech and music more intelligible. Excessive noise is eliminated with the application of K-13 while greatly improving ambient sound quality in a wide variety of building projects including auditoriums, sports facilities, detention facilities, television and sound studios, convention centers, and parking garages.

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

Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
0.63	0.05	0.16	0.44	0.79	0.90	0.91	**0.55**
1.00	0.08	0.29	0.75	0.98	0.93	0.96	**0.75**
1.00**	0.47	0.90	1.10	1.03	1.05	1.03	**1.00**
1.50	0.15	0.51	0.95	1.06	0.99	0.98	**0.90**
2.00	0.26	0.68	1.05	1.10	1.03	0.98	**0.95**
2.50	0.41	0.84	1.05	1.07	1.02	0.99	**1.00**
3.00	0.57	0.99	1.04	1.03	1.00	1.00	**1.00**

K-13 Sprayed Thermal and Acoustical Insulation Applied at 1.5" Ribbed Metal Deck*

Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
1.50	0.36	0.89	1.26	1.07	1.01	1.00	**1.05**
2.00	0.56	0.94	1.22	1.04	0.99	0.99	**1.05**
2.50	0.77	0.99	1.17	1.02	0.97	0.99	**1.05**
3.00	0.97	1.04	1.13	0.99	0.95	0.98	**1.05**

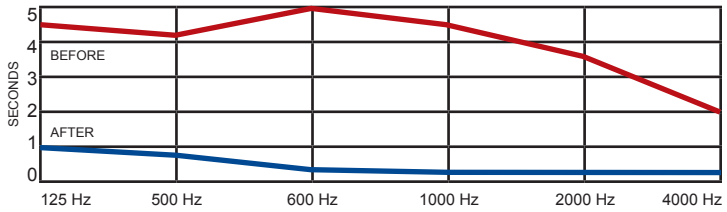
K-13 Sprayed Thermal and Acoustical Insulation Applied to 3" Fluted Metal Deck

Inches	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
1.50	0.55	0.92	1.11	1.02	0.95	0.99	**1.00**
2.75	0.69	0.98	1.17	1.03	0.97	1.04	**1.05**

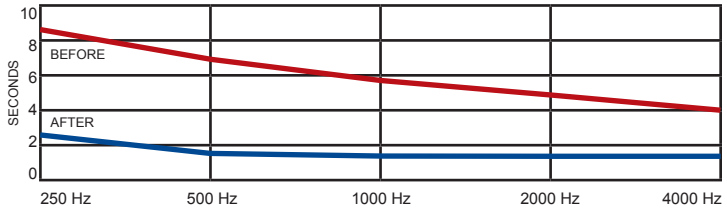
* Some values interpolated
** On Lath

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-413	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, and 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

New York – MEA 65-96-M

Corps of Engineers Guide Specifications – CE-201.01

Miami-Dade county, FL. NOA #15-0518.05
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

FM APPROVED

CLASSIFIED UL

CONFORMS TO EPA 40 CFR PART 248


WELKOM

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 a 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 unequalled NRC of .65.

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 to many cementitious or plaster-based materials.

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

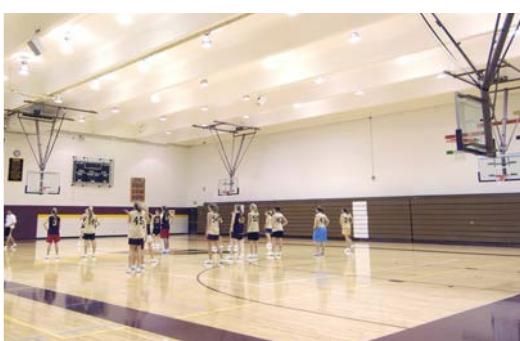
ASTM Standards Compliance

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

Technical Information

Sound Absorption Values- ASTM C-423

Hertz	125	250	500	1000	2000	4000	NRC
On Solid Backing							
0.50"	.00	.14	.49	.87	1.00	.99	.65
0.75"	.10	.23	.70	.98	1.01	.96	.75
1.00"	.05	.40	.94	1.04	.97	.99	.85
On Lath/ Plaster							
0.75"	.25	.36	.74	.98	.99	.99	.75
On Ribbed Metal Deck							
0.75"	.17	.58	.91	.89	.87	.84	.80



System Description

Ure-K is a thermal barrier approved as a building interior insulation to delay the ignition and reduce the surface burning rate of low melting, combustible rigid spray-on polyurethane foam. Ure-K may be sprayed over foam in existing buildings or it can be used as a protective coating over foam in new construction projects as a combination system.

Unlike other products that are "Ignition Barriers", Ure-K fully complies with the thermal barrier requirements of 15-minute protection. Insurance carriers know that Ure-K has been a proven performer for many years and often times require its use. Plastic foam products have a very high smoke rating and the use of Ure-K will provide precious time to evacuate the building in the unfortunate case of a fire.

When used with an overall insulation package, Ure-K, at 1.25", adds another R-4.5 to the system, providing more performance per dollar than competing barriers that do not add insulation value.

Thermal Barrier

Ure-K has been tested and approved as a 15-minute thermal barrier over foam plastic insulation. 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 inches.

Thermal Insulator

Ure-K applied over polyurethane provides additional thermal resistance that meets the stringent "R" values required for today's energy conservation needs. The combination of Ure-K and polyurethane has the highest efficiency of all available insulations.

Noise Reduction

Ure-K is a monolithic coating that provides a highly efficient sound absorption surface in either new or existing buildings. This is an important benefit in controlling noise levels to meet OSHA and other requirements.

Installation

Ure-K fibers and liquid binder are applied to the surfaces simultaneously in separate streams through equipment especially engineered to control the adhesive/fiber mixture. The Ure-K binder provides excellent adhesion to all types of foam insulations.

Typical Applications

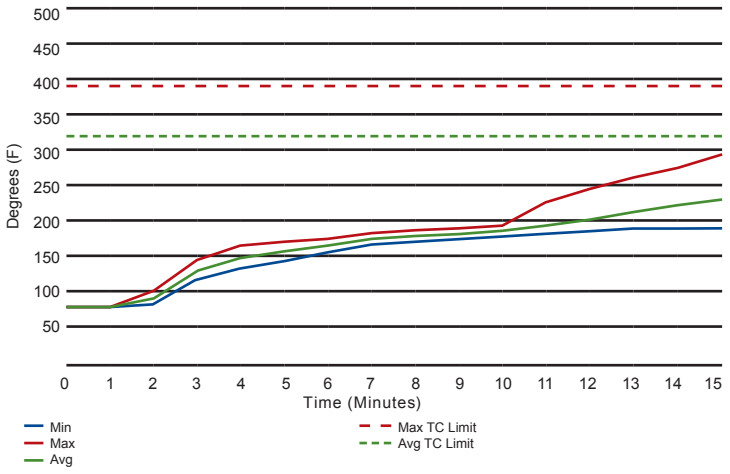
- Freezers
- Coolers
- Refrigerated Warehouses
- Underground Parking Decks
- Curtin Wall High-Rise Buildings
- Metal Buildings
- Tilt-up, Precast & Poured in Place Concrete Construction
- Projects Requiring a High R-Value
- Projects Concerned with Energy Conservation

Testing

ASTM E-119 (UBC 26-2)
NFPA 286 (Testing over 2 pound and 0.5 pound foam)
ASTM E-84

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.

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 do other conventional batt and sound board systems. This is due to the complete coverage and the 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

Testing done with small-scale assemblies at Riverbank Laboratories.

STC RATING	Construction Detail
55	$2^1/_2$" metal studs, 24" OC, 2 layers $^5/_8$" gypsum board one side, 1 layer $^5/_8$" gypsum board other side: $2^1/_2$" Celbar Spray. Test RAL-TL90-41
53	$3^5/_8$" metal studs, 24" OC, 1 layer $^5/_8$" gypsum board each side: 2" Celbar Spray. Test RAL-TL90-44
51	$2^1/_2$" metal studs, 24" OC, 1 layer $^5/_8$" gypsum board each side: 2" Celbar Spray. Test RAL-TL90-3

Wood Stud Assemblies

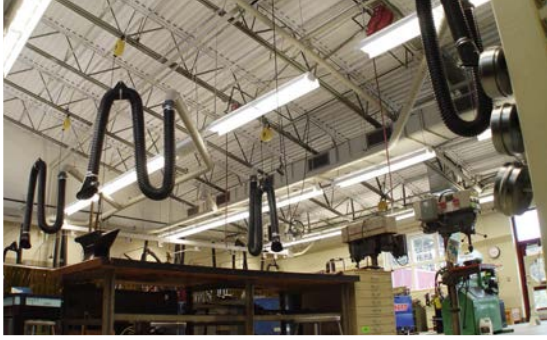
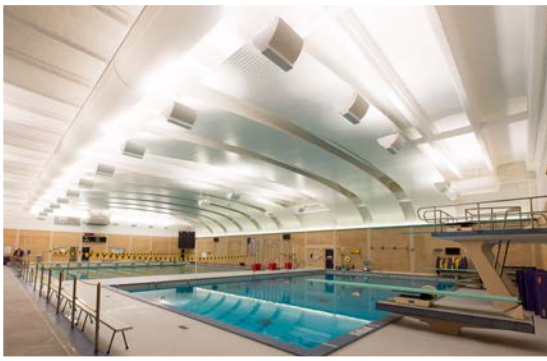
Testing done with small-scale assemblies at Riverbank Laboratories.

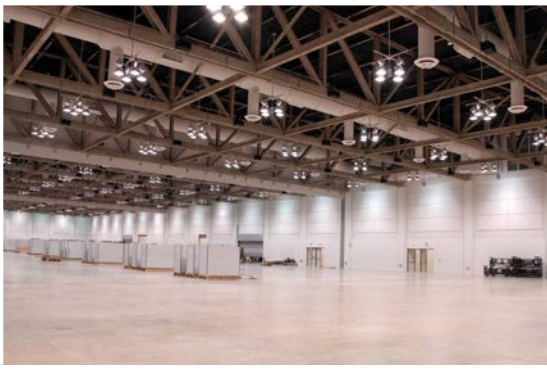
STC RATING	Construction Detail
51	2"x4" wood studs, 24" OC, 1 layer $^5/_8$" gypsum board each side: $3^1/_2$" Celbar Spray. Test RAL-TL90-46
50	2"x4" wood studs, 24" OC, 1 layer $^5/_8$" gypsum board each side: 2" Celbar Spray. Test RAL-TL90-42

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, which is 1415 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. They were a 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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K-13, SonaSpray "fc", SonaKrete, Ure-K, and Celbar are manufactured from recycled fibers.

08/15