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# Submittal Form

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## Cellulose Insulation Products

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**Date:** \_\_\_\_\_

**Submitted to:** \_\_\_\_\_

**Submitted by:** \_\_\_\_\_

**Job Reference:** \_\_\_\_\_ **Job Name** \_\_\_\_\_

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This submittal form is provided to assist you in specifying and selecting the proper GREENSHIELD™ Cellulose Insulation Product. Basic product descriptions and performance data are included. For additional information or technical assistance, please contact your local GREENSHIELD™ representative or call 866-476-3278.

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PRODUCT	DESCRIPTION	MINIMUM THICKNESS Depth in inches	THERMAL RESISTANCE @ 3.7 per inch R-VALUE
GREENSHIELD™ Performance Cellulose Formulations	Dry, natural organic insulation made from a combination of paper fibers, dry adhesive or binder with a borate based fire retardant chemical system	1.5	R-6
		2.5	R-9
		3.5	R-13
		4.0	R-15
		4.5	R-17
		5.0	R-19
		5.5	R-20
		6.0	R-22
		8.0	R-30

## PRODUCT INFORMATION

GREENSHIELD™ cellulose insulation is manufactured from recycled paper fiber and treated with a borate based fire retardant chemical system. GREENSHIELD™ provides superior thermal performance when compared to many other insulation products.

GREENSHIELD™ performance cellulose can be used in vertical assemblies and attics for residential and commercial structures as well as cathedral ceilings, interior walls and between floors. When GREENSHIELD™ stabilized cellulose is used in an attic application, there should be no slope restrictions.

GREENSHIELD™ insulation products are provided for dry installation processes and for moisture added installation processes.

- GREENSHIELD™ Loose Fill insulation is installed dry with universal application for attics, dense pack vertical walls, cathedral ceilings, retrofit attics and sidewalls, and between floor applications. May be available in retail outlets and used in the DIY market.
- GREENSHIELD™ Stabilized Attic insulation is installed with a small amount of moisture, which activates a binder that creates a strong monolithic fiber matrix. *(The moisture added during installation is released within a short time after installation).* The application requires less installed inches [less material] to achieve the same R-value compared to the dry installation process. Recommended installation by a professional contractor.
- GREENSHIELD™ Stabilized Sidewall is designed for vertical installations, typically new construction open vertical cavities, and is spray applied with a small amount of moisture that activates a binder that creates a strong fiber matrix that stabilizes the material in the wall cavity. *(The moisture added during installation is released within a short time after installation).*



- Spray applied GREENSHIELD™ is typically installed at between 2.6 and 3.0 lbs. ft<sup>3</sup>. Installed moisture will measure between 25% and 35%. Installed moisture will be a function of the climate and the builder production schedule. The moisture level for GREENSHIELD™ spray applied needs to be less than 25% before being covered.
- Installers of GREENSHIELD™ spray applied insulation should have a moisture management system in place to assure installations are within manufactures guidelines. The moisture management system should include an oversight protocol with a random sampling of installations the following day.
- Where GREENSHIELD™ is installed dry in a vertical assembly, the installed density is typically between 3.0 and 3.5 lbs. ft<sup>3</sup>. Managing installed density is important to ensure a stable and complete cavity installation without settling. Where GREENSHIELD™ is installed between floors or in a dense pack retrofit applications, installed densities will be between 3.0 and 3.5 lbs. ft<sup>3</sup>.

## R-value

GREENSHIELD™ R-value has been tested to be 3.7 per inch. Cellulose has been shown to maintain its R-value even at extreme temperatures as compared to other blown-in insulation products. This characteristic is important for an attic installation where the unconditioned space can see temperatures as low as 15 – 20° F or as high as 140 -160° F. Cellulose provides an excellent monolithic thermal separation between conditioned and unconditioned space.

GREENSHIELD™ in a wall assembly is a “complete cavity fill system”. The complete cavity fill system is a performance based installation that eliminates the chances for gaps, voids, compressions, or misalignment that can occur with a standard batt installation. This complete cavity fill system completely fills the cavity including hard reaching places like behind wiring, plumbing runs, and electrical boxes.

*The GREENSHIELD™ full cavity installation system improves the effective R-value for the assembly because the insulation fills the entire cavity and remains in contact with the air barrier (dry wall) which is necessary for the insulation to be effective and perform to the stated R-value.*

*Full cavity installation plus higher density installed product reduces air infiltration through the cavity; reduces energy loss; reduces sound typically carries with air; reduces exterior and interior nuisance noise; improves fire safety due to less air available for combustion in the event of a fire, and provides optimal energy performance for the homeowner. This means less cost to heat and cool and more homeowner comfort.*

## SOUND

Higher installed density and the full cavity fill system with GREENSHIELD™ helps to significantly improve the sound transmission across the assembly. This reduces exterior and interior nuisance noise from bonus rooms, media rooms, laundry rooms, attached garages, or plumbing chases.



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## **FIRE SAFETY**

GREENSHIELD™ cellulose is treated with a borate based fire chemical system for fire retardancy. GREENSHIELD™ cellulose is constantly tested for fire retardant protection according to ASTM test methods for cellulose manufacture. All chemicals used are non-toxic, non-corrosive and will not irritate the skin.

## **ENVIRONMENTAL RESPONSIBILITY**

GREENSHIELD™ is manufactured from post consumer paper fiber with a recycled content of approximately 80% or more. GREENSHIELD™ can be considered a part of any environmentally responsible program because of its recycled content and because (1) it reduces the demand for landfill space; (2) it reduces overall energy demand for buildings, (3) its process is virtually emissions free, and (4) it requires less energy to produce per pound of insulation. GREENSHIELD™ *can be a critical component of many Green Building initiatives and Performance Building programs.*

## **GUARANTEE**

GREENSHIELD™ insulation is tested by 3<sup>rd</sup> party certified laboratories to assure it meets the stringent performance standards and meets or exceeds national building code requirements. Carolina Precision Fibers offers a written limited lifetime warranty to meet the strong standards for the industry and those standards as established by the federal government.

## **CONSIDERATIONS**

GREENSHIELD™ performance cellulose should be installed according to ASTM C-1015. The material should not be installed where temperatures will exceed 194° F or in areas of excessive or continuous moisture. Cellulose should not be installed in spaces where it will come in contact with heat sources such as light fixtures, stove pipes, chimneys, etc., which are not rated for zero clearance from combustibles.

## **TESTING**

- GREENSHIELD™ has been tested and complies with ASTM C-739 and HHI-515-E.
- GREENSHIELD™ is class 1 fire rated
- GREENSHIELD™ conforms with CSPC Standard 16 CFR Parts 1209 and 1404
- R-value has been tested at 3.7 per inch.

## **HANDLING AND STORAGE**

No special handling is required. Storage in dry indoor location is recommended. To insure the integrity of the product and optimal performance, material should be used on a first-in first-out basis. Storage conditions can be ambient.

## **EXPOSURE CONTROLS AND PERSONAL PROTECTION**

- No specific controls are necessary. Good housekeeping and engineering controls should be in place to manage nuisance dust levels. If nuisance dust levels are not maintained, use a NIOSH approved air purification respirator. If the working environment is excessively dusty, use ANSI approved eye protection equipment.



- If skin is broken or sensitive gloves should be used.
- Provide normal and adequate ventilation
- Cellulose is listed / regulated by OSHA, Cal/OSHA and ACGIH as “*Particulates Not Otherwise Classified*” or as “*Nuisance Dust*”.

## PHYSICAL AND CHEMICAL PROPERTIES

- Gray odorless fiber
- Cellulose is not soluble. Chemical additive is soluble at a rate of  $\pm 4.7\%$  @ 20° C
- pH is measured @  $\pm 7.4$  (20% solution @ 25°C)

<p><b>GREENSHIELD™ for Attic Applications</b></p> <ul style="list-style-type: none"><li>▪ Monolithic layer of separation</li><li>▪ Performance at extreme temperatures</li><li>▪ Superior attic separation from unconditioned space</li><li>▪ Less energy loss</li><li>▪ Less cost to heat and cool</li><li>▪ More Homeowner <b>COMFORT</b></li></ul> <p>→ GREENSHIELD™ preferred specification for every attic installation</p>	<p><b>GREENSHIELD™ for Wall Applications</b></p> <ul style="list-style-type: none"><li>▪ Installed R-value</li><li>▪ Installed density</li><li>▪ Install visual comparison</li><li>▪ In contact with air barrier (without gaps, voids, misalignments)</li><li>▪ Less air infiltration</li><li>▪ Less nuisance noise (exterior or interior)</li><li>▪ Less energy loss</li><li>▪ Less cost to heat and cool</li><li>▪ Improved fire safety due to less air available for combustion</li><li>▪ Improved sound</li><li>▪ Improved <i>Peace of Mind</i></li><li>▪ Improved <b>COMFORT</b></li></ul>
<p> <b>Carolina Precision Fibers</b> PO Box 624 Elkin, NC 28621</p> <p><b>Office: 866-476-3278</b> Fax: 336-527-4145 <a href="mailto:info@carolinafibers.com">info@carolinafibers.com</a></p> <p><b>Manufacturing</b> 145 Factory Street Ronda, NC 28670</p>	<p><b>GREENSHIELD™ Vertical Wall Considerations</b></p> <ul style="list-style-type: none"><li>→ <b>Energy Upgrade Option</b></li><li>→ <b>Sound and Energy Upgrade Option</b></li><li>→ <b>Builder Sales Training</b></li><li>→ <b>Most effective Full Cavity Installation System</b></li></ul>

GREENSHIELD is a high performance insulation product and should be considered for energy performance homes and Green / Sustainable projects.

As with any construction material GREENSHIELD should be used in compliance with all applicable building codes, sound building science processes and installed in compliance with manufacturers specifications.