

Shades of Green

How Green is Your Underlayment?

Selecting and Specifying LEVELROCK® for Green Projects





Integrity, dependability and innovation are the standards by which USG® operates. We have a long standing commitment to our employees, our customers and our communities to:

- Provide product and manufacturing solutions that reduce environmental impact
- Eliminate manufacturing waste at our plants
- Use recycled materials in product formulation and development

As one of a limited number of underlayment manufacturers to solely develop, manufacture and distribute our underlayment products, we are committed to sustainable development. USG has a solid history of environmental responsibility and is constantly seeking and providing environmentally sound products and manufacturing solutions.

USG LEVELROCK® poured floor underlayments provide industry leading compressive strengths and trusted performance in a wide range of new construction and renovation projects including multi-family dwelling buildings, hotels, commercial office spaces, education facilities and light-industrial buildings.

One key factor in the sustainability of a product is its life-cycle. When evaluating an underlayment product for inclusion in your project, durability is a key performance characteristic. LEVELROCK floor underlayment will contribute to the long term performance of the finished floor system by providing a durable and high-performance underlayment surface with compressive strengths ranging from a minimum 2500 psi up to 8000 psi. LEVELROCK floor underlayment provides a durable high-strength and high-performance substrate that can handle the changes a building may see over its life span.

LEVELROCK Green floor underlayments utilize recaptured gypsum as a key material component. Incorporating recaptured gypsum into LEVELROCK products reduces the overall environmental impact and provides a high-strength underlayment with a recycled content of up to 94%. Most LEVELROCK sound attenuation products also contain recycled content of 40% or more.

How Green is your Underlayment?

Within the green building ratings systems, recycled content, manufacturing location, material sourcing and VOC content are all key product factors to evaluate when selecting and specifying your underlayment systems. The following chart provides the information on LEVELROCK floor underlayment and systems to highlight our commitment to the environment as well as our commitment to providing quality, high performance and green product options from LEVELROCK for our valued and committed customers and certified applicators.

USG LEVELROCK and Green Building Ratings Systems

The most widely accepted national guidelines for environmentally conscious building is the LEED® (Leadership in Energy and Environmental Design) Green Building Rating System developed by the United States Green Building Council (USGBC). As a founding member of the USGBC, USG® is committed to helping architects, developers and contractors create structures that efficiently meet the needs of occupants while also protecting the surrounding environment.

LEVELROCK® products can contribute to the following credits and may help a project qualify for certification under the Green Building Rating System.

LEED Category	Available Credits	Products/Programs that May Assist in Qualifying for Credit
Materials and Resources		
	MR 4.1 and 4.2: Recycled Content MR Credit 4: Recycled Content for LEED 2009 New Construction and Major Renovations	LEVELROCK® Green floor underlayments contain recaptured gypsum, a byproduct of emissions controls at coal-fired utility plants, contributing to a pre-consumer recycled content of 94% and are manufactured in Gypsum, OH 43433 and Baltimore, MD 21226.* LEVELROCK™ SRM-25™ sound reduction mat, SAM-N12™, SAM-N25™, SAM-N40™ and SAM-N75™ sound attenuation mats and SRB™ sound reduction board contain recycled materials contributing to a pre-consumer recycled content of 40% or more. See specific product data sheet for exact product recycled content information.
	MR 5.1 and 5.2: Regional Materials: Extracted, Processed and Manufactured Regionally MR Credit 5: Regional Materials for LEED 2009 New Construction and Major Renovations	Many LEVELROCK floor underlayments are job site mixed and manufactured with locally obtained sand and water which can contribute to this credit area. The portion of material obtained locally can apply. If only a fraction of a product or material applies, then only that percentage shall contribute to the combined regional value. Our applicators also have the option of pre-sanded LEVELROCK floor underlayments which include LEVELROCK 2500 Pre-Sanded, 3500 Pre-Sanded, 4500 NXG® Pre-Sanded, RH Pre-Sanded, QUIK-Top™, QUIK-Top™ Gray and PROFLOW™ . These products are pre-sanded at the bagged material manufacturing location with sand which has been obtained locally. The percentage of locally obtained sand would contribute to this credit area.
Indoor Environmental Quality		
	EQ 4 or 4.1, 4.2, 4.3 and 4.4: Low-Emitting Materials	All LEVELROCK floor underlayments, primers and sealers contain low VOCs.
	EQ 3.1 and 3.2 Construction IAQ Management Plan IEQ Credit 3.1 and 3.2 for LEED 2009 New Construction and Major Renovation	As part of the plan and action of this credit area, the use of LEVELROCK floor underlayment products can contribute by providing materials that contain up to 33% less water than competitive underlayments contributing to a lower relative humidity as well as reduced drying time of the underlayment which allows for the construction schedule to be maintained. LEVELROCK floor underlayment products contain low VOCs.
	LEED 2009 for Schools New Construction and Major Renovations IEQ Prerequisite 3: Minimum Acoustical Performance and IEQ Credit 9 – Enhanced Acoustical Performance	This prerequisite outlines minimum STC and IIC requirements for classrooms and core learning spaces per ANSI Standard S12-60-2002. LEVELROCK floor underlayment along with LEVELROCK sound board and sound mat options will contribute to the STC and IIC performance of a floor/ceiling assembly. Floor/Ceiling sound test results and information is available in USG system brochure <i>Poured Cementitious Floor Systems</i> (SA305), or go to http://www.usgdesignstudio.com/floorselector.asp to select a system for your application.

Note: MR 5.1 and 5.2: Regional Materials - Extracted, Processed and Manufactured Regionally: Many poured underlayment products are bagged mix materials that require job site manufacturing with water and locally obtained sand. The process of job site mixing and manufacturing allows for un-sanded LEVELROCK floor underlayment products to contribute to this credit area when the manufacturing location is within 500 miles of the project location.

* See page 5 for a list of LEVELROCK manufacturing plants.



Understanding the Calculation of Recycled Content and Regional Material Credits

According to USGBC, the intent of LEED Version 2.2 MR Credit 4.1 and 4.2, MR Credit 5.1 and 5.2, and LEED 2009 credit MR 4 and MR 5, is to increase the demand for building products that contain recycled materials and are manufactured regionally to reduce the impact of extraction and processing of virgin materials.

While the use of locally manufactured materials with recycled content is highly desirable, it is important to understand how to achieve the point(s) allotted for these credits.

LEED Version 2.2 MR 4.1 and 4.2 Version 2.2 or LEED 2009 MR 4: Recycled Content

The credit(s) are determined by the total recycled content value of the materials on the project constituting 10% or 20% based on cost of materials.

Example project: 40msf residential building – total project materials cost: \$750,000
 A total recycled content value would need to be \$75,000 for MR 4.1 at 10% and \$150,000 for MR 4.2. at 20%

Credit Formula:

$$\text{Post-Consumer Recycled Content} + \frac{1}{2} \text{ of Pre-Consumer-Recycled Content} \times \text{Material Cost} = \text{Total Combined Value}$$

LEED Version 2.2 MR 5.1 and 5.2 or LEED 2009 MR 5: Regional Materials

The credit(s) are determined by the percentage of materials, by weight, on the project which are extracted, harvested, or recovered, as well as manufactured within 500 miles of the project site. The percentage must constitute 10%, 20% or 40% to achieve exemplary performance based on cost of the total materials value. If only a fraction of a product or material is extracted, harvested or recovered and manufactured locally, then only that percentage will contribute to the total value. This applies to materials used in Divisions 2-10.

For material evaluation and project point contribution, the following information is necessary:

- Percentage by weight of material which is sourced locally or regionally
- Distance in miles between material source(s) and project location
- Distance in miles between manufacturing location and project location
- Product cost

This information is evaluated and calculated to obtain the total material value qualifying for this credit area.

Project example as used for MR 4.1/4.2 above: 40msf residential building – Total project materials cost: \$750,000

The total regionally obtained material percentage by weight, based on cost, would need to be \$75,000 for MR 5.1 at 10% and \$150,000 for MR 5.2 at 20%. Exemplary performance is also available for this credit category if the total percentage meets or exceeds 40%.

To better understand how this applies to a bagged product that is job site mixed/manufactured with local sand and/or water such as LEVELROCK floor underlayment, a breakdown is included below.

Component Material	Approximate % of Job Site Mixed and Finished Material
Bagged LEVELROCK	25-35%
Locally obtained sand	50-60%
Locally obtained water	10-15%

Other Green Building Rating Systems

In addition to contributing to a USGBC Green Building Rating System, LEVELROCK products can also contribute to a school following the CHPS green building rating program, NAHB Model Homes Green Building Standard, ANSI approved ICC-700-2008 National Green Building Standard, along with many other green building rating systems and guidelines. For detailed information on additional green building rating systems contact your local USG representative.



USG LEVELROCK Recycled Content Sources – The Story of Recaptured Gypsum

Mined gypsum traditionally had been the raw material used in the production of gypsum construction products; more and more recaptured gypsum is used in the manufacturing process. Recaptured gypsum (often called recycled or synthetic gypsum) is a material that is the result of a chemical/man-made process. For example, the most common source for recaptured gypsum used by USG is an industrial processed material obtained through the cleaning of the burning of coal (a process that produces undesirable emissions of sulfur dioxide, a leading cause of acid rain) to produce power.

A flue gas scrubber is a common method for removing this pollution from the air. It is installed on the exhaust (smoke stack) of the coal-burning furnace; as the exhaust (flue gas) rises through the scrubber, the pollutants are chemically removed. The byproduct of this process is calcium sulfate and water (gypsum). This environmentally friendly material, recaptured gypsum, is then used in the manufacturing of LEVELROCK Green floor underlayments.

Materials & Resources – Manufacturing & Material Source Locations and Product Recycled Content*

Manufacturing Location and Zip Code	Gypsum, Recaptured Gypsum, and/or other Component Material Source Location	Percentage Recycled Content	Levelrock Product Category
Baltimore, MD 21226	Baltimore, MD 21226	94%	Underlayment, Radiant Heat, and Corrugated Steel Deck (CSD) products
Gypsum, OH 43433	Westmoreland, PA 15692	94%	Underlayment, Radiant Heat, and Corrugated Steel Deck (CSD) products
Ft. Dodge, IA 50501	Local and On-Site	0%	Underlayment, Radiant Heat, Corrugated Steel Deck (CSD), and high strength wear surface products
Southard, OK 73770	Local and On-Site	0%	Underlayment, Radiant Heat, Corrugated Steel Deck (CSD), pre-sanded, and high strength wear surface products
Torrance, CA 90501	Local	0%	Underlayment, Radiant Heat, and Corrugated Steel Deck (CSD) products
Cloquet, MN 55720	Local 55720	49.7%	Sound Reduction Board: SRB
St. Louis, MO 63197	Local	15%	Sound Reduction Mat: SRM-25
Sanford, ME 04073	Local	40%	Sound Attenuation Mat: SAM-N12/N25/N40/N75

Note *Percentages are accurate as of July 2009. Manufacturing and material source locations as well as product recycled content are subject to change without notice.



LEVELROCK Floor Underlayment Performance – Fire, Sound and Green Product and System Solutions

Designing assemblies requires a balance between acoustic separation and fire protection. Both elements are important to prevent architect, owner and builder liability. All rated assembly components must conform to the limits specified in the UL design. Acoustical performance requirements for multi-unit dwellings must meet the minimum code requirements outlined in Section 1207 of the International Building Code.

Often, measures taken to address acoustical performance in any construction type (i.e. insulation in the floor/ceiling cavity, resilient channels or additional layers of gypsum board) if not included or installed correctly, can have a detrimental impact on the fire protection as well as the acoustical performance of the assembly.

LEVELROCK floor underlayment systems provide 1- and 2-hour fire-resistance ratings for wood-framed floor/ceiling assemblies and up to 3- and 4-hour ratings for structural concrete assemblies. Fire testing by Underwriters Laboratories (UL) is conducted in compliance with ASTM E119 (Test Methods for Fire Tests of Building Construction and Materials).

Protection from the intrusion of airborne and impact sounds starts with floors that reduce the passage of sound. LEVELROCK floor underlayment systems, which include LEVELROCK UL Listed sound mat and sound board components, are tested for their ability to isolate sound from different sources, providing an affordable acoustical solution that can significantly improve the privacy and comfort of any space.

Combine high-strength, exceptional LEVELROCK floor underlayments and LEVELROCK Green floor underlayments with superior LEVELROCK sound attenuation products to meet and exceed the demands of your next green project.

For the most up-to-date product information please visit us at:

levelrock.com

LEVELROCK floor underlayment system and product home page.

usgdesignstudio.com

An online design and specification tool for walls, ceilings, and floors providing detailed assembly fire rating and acoustical performance information.

usg.com

USG Web site for full company and USG product information.



Frequently Asked Questions

1. For my current project I am considering an underlayment whose manufacturer does not publish their product's recycled content. They indicate credit contribution areas, but not exact percentages. What should I look out for?

A. With many green building ratings systems it is important for a manufacturer to provide easily attainable information on the percentage of recycled component material as well as the extraction and sourcing location. Vague information may create questions that require further investigation and confirmation which can be frustrating and timely.

2. USG incorporates recaptured gypsum as a recycled material component into their LEVELROCK floor underlayment products, while other poured underlayment manufacturers incorporate fly ash into their product. What is fly ash?

A. Fly ash, like recaptured gypsum, is a by-product of burning coal to generate power. It is important to check into and verify the fly ash source as the recycled component material for your underlayment selection. While there are a number of coal burning utility plants in the western United States, the source of the coal for these locations may be serviced by a loading terminal with materials obtained from outside the region which may exceed the 500 mile radius applicable to LEED Credits 5.1 & 5.2. USG does not incorporate fly ash into its LEVELROCK underlayment products as it is not required for our product formulations.

USG does incorporate fly ash into various other products such as DUROCK® cement board. The fly ash used in the manufacturing of DUROCK cement board must meet ASTM C618-08 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete requirements along with additional internal quality control measures and is sourced through this coal burning process.

An additional source of fly ash is also a by-product of solid waste incineration. It is important to evaluate the source of fly ash material to be sure that its contribution is not limited by the project's rating system. An example of the limitation on fly ash related to its source would be the 2009 Texas Collaborative for High Performance Schools which states in ME Credit ME 4.1 Recycled Content, "Fly ash generated from municipal solid waste incinerators is not an acceptable recycled content material under this credit, nor is fly ash generated as a coal combustion by-product where the coal plant is fired with hazardous waste, medical waste or tire-derived fuel."

3. I am near the three USG locations (Ft. Dodge, IA; Southard, OK; Torrance, CA) with little or no Recycled Content according to your chart; can I still use the LEVELROCK products from these locations in my green project?

A. Yes, absolutely. LEVELROCK floor underlayment products can still contribute to many of the other credit areas listed in the Green Building Rating System table for a LEED certified project (see page 2). LEVELROCK floor underlayment products can also contribute to the many other green building ratings systems as a local/regional sourced material and as a product with low VOC content. Many LEVELROCK floor underlayments are also job site manufactured with local sand and water which will contribute as well.

4. Does job site mixing/manufacturing generate waste material?

A. Very little waste material is generated through job site manufacturing. Our applicators use only as much material as the job requires. In addition, water is pumped directly from the water source into the mixing equipment or pump truck.

5. What other USG products can contribute to my green building project?

A. USG has a wide range of products that can contribute to your green building project. SHEETROCK® brand gypsum panels, USG acoustical ceiling products, DUROCK cement board, FIBEROCK® underlayment, interior and sheathing products, as well as LEVELROCK floor underlayment products, all have options with recycled content. USG operates a wide manufacturing network. Visit usg.com for specific product sustainability information.



Technical Service

800 USG.4YOU

Web Sites

levelrock.com
usgdesignstudio.com

Literature

888 874.2450

Samples

817 329.1808

Customer Service

800 621.9523

Product Information

See levelrock.com for the most up-to-date product information.

LEED Information

For the most up-to-date information on LEED rating systems, project certification and the U.S. Green Building Council, please visit usgbc.org.

Trademarks

The following trademarks used herein are owned by United States Gypsum Company or a related company: DUROCK, FIBEROCK, LEVELROCK, NXG, PROFLOW, QUIK-TOP, SAM-N12, SAM-N25, SAM-N40, SAM-N75, SHEETROCK, SRB, SRM-25, USG, USG in stylized letters. LEED is a registered trademark of U.S. Green Building Council.

Notice

We shall not be liable for incidental or consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instruction or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered. **Safety First!** Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read MSDS and literature before specification and installation.

