

USG
Gypsum
Solutions

USG LEVELROCK® BRAND

MASS TIMBER ASSEMBLIES
BROCHURE





TABLE OF CONTENTS

INTRODUCTION..... 3

USG LEVELROCK® MASS TIMBER SOUND SELL SHEET 4-5

USG LEVELROCK MASS TIMBER ASSEMBLIES SELL SHEET 6-9

PROJECT PROFILE – BROWN UNIVERSITY..... 10-11

USG LEVELROCK SAM-N25™ SUPREME SUBMITTAL 12-13

USG LEVELROCK FLOOR UNDERLAYMENT SELECTOR CHART.....14

USG LEVELROCK 2500 SUBMITTAL 15-17

USG LEVELROCK 3500 SUBMITTAL18-20

USG LEVELROCK 4500 SUBMITTAL21-23

YOU MAKE IT BEAUTIFUL. WE'LL MAKE IT BEAUTIFULLY SOUND.

Mass timber construction provides a beautiful and more sustainable alternative to steel and concrete framing. However, wood transmits sounds more easily, making it difficult to meet strict STC and IIC sound code requirements.

With **USG Levelrock® Brand SAM-N25™ Supreme Sound Attenuation Mat**, function successfully follows form.

Designed specifically for mass timber construction such as Cross-Laminated Timber (CLT), USG Levelrock SAM-N25 Supreme sound attenuation mat is a thin, single mat solution that helps to meet or exceed STC and IIC sound code requirements in mass timber construction. Explore the possibilities.

USG. Your sound choice for mass timber construction.

SOUND CONTROL IN MASS TIMBER CONSTRUCTION

**USG LEVELROCK® BRAND
SAM-N25™ SUPREME**
SOUND ATTENUATION MAT



SOUND SOLUTION

How do you mitigate sound in mass timber construction? By adding **USG Levelrock® Brand SAM-N25™ Supreme Sound Attenuation Mat** to your floor system.

Because wood transmits sounds more easily, it can be difficult to meet strict STC and IIC sound code requirements. Designed specifically for mass timber construction such as Cross-Laminated Timber (CLT), USG Levelrock SAM-N25 Supreme sound attenuation mat:

- Is a multi-layered mat engineered with lightweight glass fibers
- Provides a superior acoustical performance
- Offers a thin, 5/16 in. profile
- Installs faster and easier than comparable mats

When used in conjunction with USG Levelrock® 2500, 3500 or 4500 Floor Underlayment, you can meet or exceed STC and IIC requirements. See IG359621 *USG Levelrock® Mass Timber Assemblies Sell Sheet* for more information or visit usg.com.

USG Levelrock® Brand SAM-N25™ Supreme Sound Attenuation Mat



Width	39.5 in. (1 m)
Roll length	100 lf. (30.5 m)
Coverage per roll	330 sq. ft. (30.7 m²)
Mat thickness	5/16 in. (8 mm)
Roll diameter	22 in. (559 mm)
Weight per roll	49 lbs. (22 kg)

For more information, see IG277625 *USG Levelrock® Brand SAM-N25™ Supreme Sound Attenuation Mat Submittal* at usg.com.

SOUND MITIGATION.

USG offers several mass timber solutions to meet or exceed STC and IIC requirements.

CLT with 6.5mm LVP.....



Confirmed third-party acoustical test performance

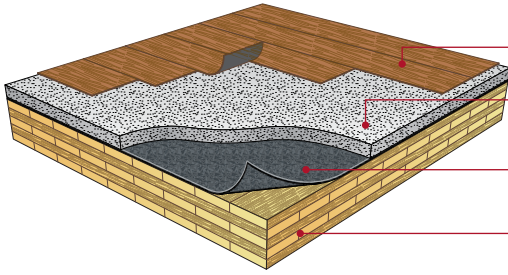
STC = 56

IIC = 53

**USG LEVELROCK® BRAND
MASS TIMBER ASSEMBLIES**



CLT with 5mm LVT



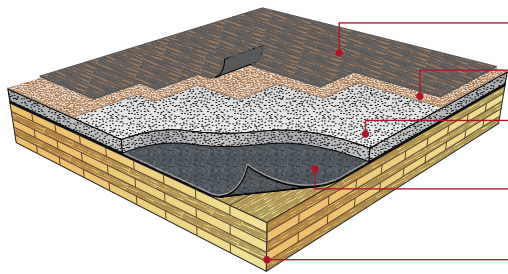
- Luxury Vinyl Tile with Integrated Pad, 5mm
- USG Levelrock® 2500 Floor Underlayment, 2 in.
- USG Levelrock® SAM-N25™
Supreme Sound Attenuation Mat
- 5-ply CLT

Confirmed third-party acoustical test performance

STC = 56

IIC = 51

CLT with 2mm LVT



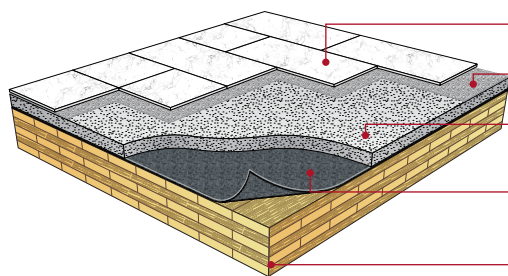
- Luxury Vinyl Tile, 2 mm
- Acoustical Underlayment, 1.4 mm
- USG Levelrock® 2500 Floor Underlayment, 2 in.
- USG Levelrock® SAM-N25™
Supreme Sound Attenuation Mat
- 5-ply CLT

Confirmed third-party acoustical test performance

STC = 56

IIC = 50

CLT with Ceramic Tile



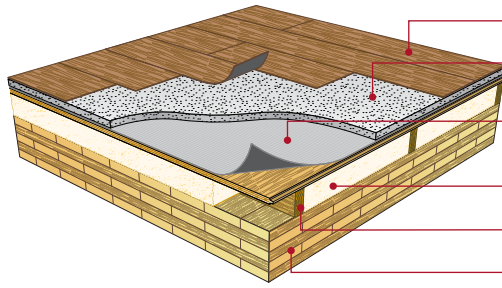
- Ceramic Tile, 10.5 mm
- Crack Isolation Membrane, 0.8 mm
- USG Levelrock® 2500 Floor Underlayment, 2 in.
- USG Levelrock® SAM-N25™
Supreme Sound Attenuation Mat
- 5-ply CLT

Confirmed third-party acoustical test performance

STC = 55

IIC = 50

CLT with a Sleeper System, 2mm LVT



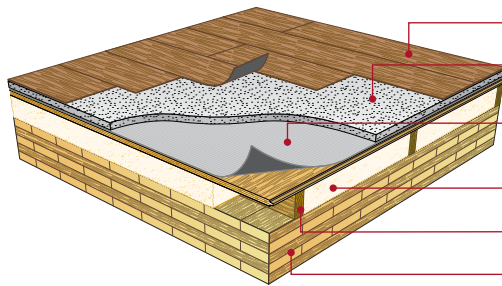
- Luxury Vinyl Tile, 2 mm
- USG Levelrock® 2500 Floor Underlayment, 1-1/2 in.
- USG Levelrock® SAM-N25™ Ultra Sound Attenuation Mat
- Fiberglass Insulation, 3-1/2 in.
- 2 x 4 Sleepers, 24" o.c.
- 5-ply CLT

Confirmed third-party acoustical test performance

STC = 58

IIC = 53

CLT with a Sleeper System, 6.8mm LVT



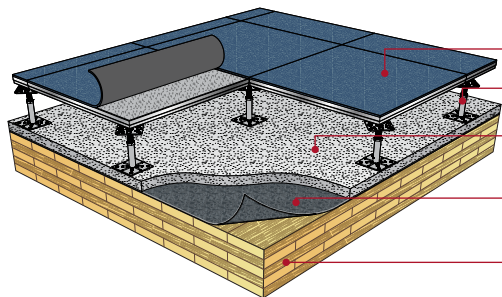
- Luxury Vinyl Tile, 6.8 mm
- USG Levelrock® 2500 Floor Underlayment, 1-1/2 in.
- USG Levelrock® SAM-N25™ Ultra Sound Attenuation Mat
- Fiberglass Insulation, 3-1/2 in.
- 2 x 4 Sleepers, 24" o.c.
- 5-ply CLT

Confirmed third-party acoustical test performance

STC = 58

IIC = 55

CLT with Raised Access Floor, Carpet Tile



- Carpet Tile, 5.5 mm
- Raised Access Floor System
- USG Levelrock® 2500 Floor Underlayment, 2 in.
- USG Levelrock® SAM-N25™ Supreme Sound Attenuation Mat
- 5-ply CLT

Confirmed third-party acoustical test performance

STC = 58

IIC = 59

CLT with Raised Access Floor, 2mm LVT



Confirmed third-party acoustical test performance **STC = 59** **IIC = 54**

MPP with 5mm LVT



Confirmed third-party acoustical test performance **STC = 51** **IIC = 51**



SILENCING ANXIETY:

USG LEVELROCK® BRAND SAM-N25™ SUPREME SOUND ATTENUATION MAT SAVES THE DAY ON MASS TIMBER RESIDENCE HALL PROJECT

Construction on the new mass timber Brook Street Residence Hall on Brown University's campus was underway, but the architect was becoming increasingly worried about one thing...meeting sound code.

The sound mat system the architect had specified for the project was a heavy, two-layer mat system that didn't have any independent testing to confirm its ratings for mass timber.

Enter USG Levelrock® SAM-N25™ Supreme Sound Attenuation Mat to save the day.

USG Levelrock® SAM-N25™ Supreme Sound Mat is a high-density, acoustic mat system designed specifically for mass timber construction, like CLT. What's more, the USG Levelrock® SAM-N25™ Supreme What's more, SAM-N25™ Supreme is certified by third-party acoustic testing of mass timber assemblies, with confirmed ratings as high as 56/53, which exceeded the code requirements for the Brook Street Residence Hall project with confirmed ratings as high as 56/53, which exceeded the code requirements for the Brook Street Residence Hall project.

And, unlike competitor mats, USG Levelrock® SAM-N25 Supreme is a single, thinner, multi-layered mat featuring uniquely engineered lightweight glass fibers with high acoustical absorption. As a result, crews at Brook Street Residence Hall were able to use fewer mats, install faster, and save significantly on labor and material costs. All while achieving better acoustical ratings than competitor sound mats.

In the end, USG Levelrock® Brand SAM-N25™ Supreme Sound Attenuation Mat not only helped meet code requirements and eased architect anxiety, it also brought down costs and sped up construction. A win for everyone involved.

PROJECT PROFILE

**BROOK STREET
RESIDENCE HALL**

BROWN UNIVERSITY

PROVIDENCE, RI

AN EASY CHOICE

“The testing data made it easy for the architect to approve the Supreme Mat over the rubber product that had been previously specified.”

DOUG EDWARDS
Project Manager,
Flooring Solutions



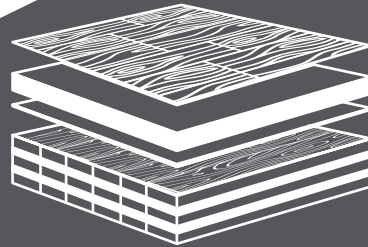
LOW PROFILE
5/16 IN. (8 MM)

LIGHTWEIGHT



PRODUCT HIGHLIGHT

USG Levelrock® SAM-N25™ Supreme Sound Attenuation Mat is made of a combination of lightweight, high-density materials designed specifically for CLT and mass timber construction. USG Levelrock® SAM-N25™ Supreme will meet and exceed even the toughest building code requirements for sound attenuation, with independent, third-party testing showing STC and IIC ratings as high as 56/53.



DESIGNED FOR **MASS
TIMBER CONSTRUCTION**



**SUPERIOR SOUND
ABSORPTION**



EASY TO INSTALL
= **COSTS SAVINGS**





USG LEVELROCK® BRAND SAM-N25™ SUPREME SOUND ATTENUATION MAT

Uniquely engineered for superior sound absorption

- 5/16 in. (8 mm) profile
- Three layered mat with lightweight glass fibers that provide superior sound absorption
- STC and IIC values exceed code requirements for sound attenuation
- Designed for the demanding sound requirements of cross-laminated timber (CLT) construction
- Installed by USG Levelrock authorized applicators

DESCRIPTION

USG Levelrock® Brand SAM-N25™ Supreme Sound Attenuation Mat is a premium sound mat designed to help meet or exceed the most demanding IIC requirements. It is a multi-layered mat featuring uniquely engineered lightweight glass fibers with high acoustical absorption. USG Levelrock SAM-N25 Supreme Sound Attenuation Mat can be installed over a variety of subfloors. It is ideal for use in CLT construction. Its 5/16 in. (8 mm) thickness can help address overall floor thickness limitations without having to sacrifice acoustical performance. USG Levelrock SAM-N25 Supreme Sound Attenuation Mat requires a minimum 1 in. (25 mm) topping of USG Levelrock® Brand Floor Underlayment.

LIMITATIONS

1. Do not use in exterior applications.
2. Do not use as a wear surface.
3. Do not use mechanical fasteners to install the sound attenuation mat as mechanical fasteners conduct impact sound, eliminating acoustical isolation.
4. Do not install where continuous exposure to moisture is a possibility.
5. Structure shall be designed so that deflection does not exceed L/240 from combined dead and live loads and L/360 from live loads. Certain floor coverings such as marble, limestone, travertine and wood may have more restrictive deflection limits. Consult the appropriate floor-covering manufacturer.
6. For wood subfloors, do not install on plywood/OSB subfloors lacking tongue and groove edges without back-blocking.

INSTALLATION

USG Levelrock SAM-N25 Supreme Sound Attenuation Mat can be used over a variety of subfloors including plywood, OSB, pre-cast concrete, concrete and corrugated steel deck and CLT. For plywood or OSB subfloors, the edges must be tongue and groove or the use of back-blocking is required. For corrugated steel deck subfloors, the flutes must be pre-filled with USG Levelrock Floor Underlayment. The subfloor must be clean and free of construction debris and dirt. The building temperature should be maintained at a 50 °F (10 °C) minimum.

USG Levelrock SAM-N25 Supreme Sound Attenuation Mat should be installed with the white fabric side facing up. Priming USG Levelrock SAM-N25 Supreme Sound Attenuation Mat is not required prior to installing USG Levelrock Floor Underlayments provided the sound mat is clean and free from construction debris, dirt and dust.

USG Levelrock® Perimeter Isolation Strip must be installed between the sound attenuation mat and walls or floor protrusions. The perimeter isolation strip must be installed so that there is no leakage of USG Levelrock engineered cementitious underlayment as any breach will compromise the sound system performance. Follow the detailed drawings in *Assemblies* (pg. 2) for specific instructions for USG Levelrock SAM-N25 Supreme Sound Attenuation Mat. For further perimeter isolation strip instructions, see *USG Levelrock® Brand Perimeter Isolation Strips Submittal* (IG1874) at usgperformanceflooring.com.

Protect USG Levelrock underlayment floors poured over sound attenuation mat from heavy trade traffic loads (i.e. loaded drywall carts, heavy tool cabinets, etc.) with plywood.

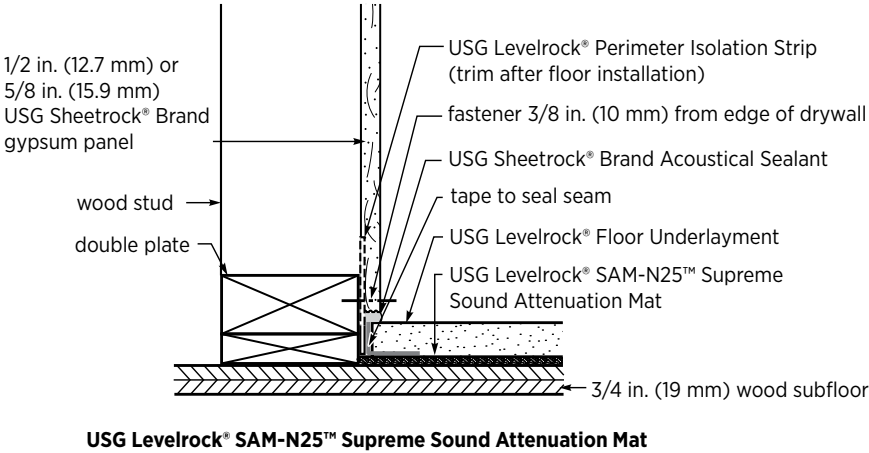
For further details on installation requirements, specifications and the most up-to-date product information, please see usg.com.

PRODUCT DATA

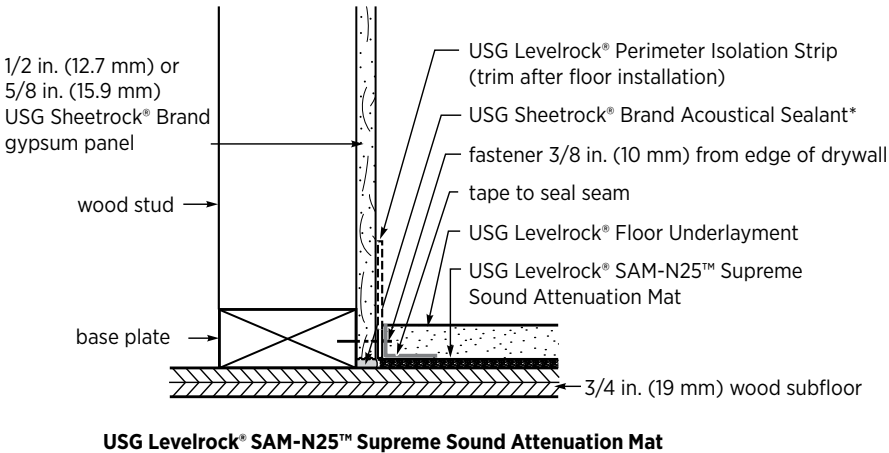
	USG Levelrock® SAM-N25™ Supreme Sound Attenuation Mat
Width	39.5 in. (1 m)
Roll length	100 lf. (30.5 m)
Coverage per roll	330 sq. ft. (30.7 m²)
Mat thickness	5/16 in. (8 mm)
Roll diameter	22 in. (559 mm)
Weight per roll	49 lbs. (22 kg)

ASSEMBLIES

WOOD SUBFLOOR, WOOD FRAME—
USG LEVELROCK INSTALLED BEFORE DRYWALL



WOOD SUBFLOOR, WOOD FRAME—
USG LEVELROCK INSTALLED AFTER DRYWALL



* optional

NOTE Drawings not to scale.

EXTENDED WARRANTY

An extended warranty may apply when using USG Levelrock SAM-N25 Supreme Sound Attenuation Mat in a system application. Please contact USG for further details.

SUBMITTAL APPROVALS

Job Name	
Contractor	Date

USG LEVELROCK® FLOOR UNDERLAYMENT SELECTOR CHART

	USG Levelrock® 2500 Series 2,000 - 3,200 psi (13.8 - 22.1 MPa)	USG Levelrock® 3500 Series 3,500 - 4,500 psi (24.1 - 31.0 MPa)	USG Levelrock® 4500 Series 4,000 - 5,000 psi (27.6 - 34.5 MPa)
SPECIFICATIONS			
MasterSpec	X	X	X
SpecLink	X	X	X
BUILDING TYPE			
Single-Family	X	X	
Multi-Family	X	X	
Light-Commercial	X	X	X
Commercial/Retail/Office			X
Hotel/Motel		X	X
Institutional			X
SUBSTRATE TYPE			
Cross-Laminated Timber (CLT)	X	X	X
Dowel-Laminated Timber (DLT)	X	X	X
Glue-Laminated Timber (Glulam)	X	X	X
Nail-Laminated Timber (NLT)	X	X	X
Mass Plywood Panel (MPP)	X	X	X
Radiant Heat (RH)	X	X	X

Note

* USG Levelrock® Brand engineered cementitious underlayments are mixed with sand and water at the job site to yield a lightweight underlayment with a smooth and monolithic surface.



USG LEVELROCK® BRAND 2500 FLOOR UNDERLAYMENT

DESCRIPTION

Premium engineered cementitious underlayment

- Fast application, fast setting, allows for quick return of light trade traffic within hours
- Industry's most economical and highest compressive strength in class
- Ideal for wood-frame and multi-family construction
- Applied by USG Levelrock® authorized applicators
- GREENGUARD Gold Certification; qualifies as a low VOC emitting material (meets CA 01350)

USG Levelrock® Brand 2500 Floor Underlayment is an economical, fast-applying engineered cementitious underlayment. It is formulated to provide typical compressive strengths from 2000 psi to 3200 psi at a 3/4 in. (19 mm) minimum thickness over plywood subfloors.

USG Levelrock 2500 Floor Underlayment is mixed with approved sand and potable water at the job site to yield a lightweight underlayment that weighs approximately 7.2 lbs./sq. ft. (35.2 kg/m²) at 3/4 in. (19 mm) thickness and has an approximate dry density of 115 lbs./cu. ft. (1,842 kg/m³).

INTENDED FOR

- Light-commercial, residential, hotel/motel and rehab construction
- Concrete slabs, pre-stressed concrete, concrete planks, concrete repair/leveling, existing gypsum, radiant heat systems, OSB and plywood and USG Levelrock sound attenuation products
- UL fire-rated assemblies with UL Designation Type LRK
- Floor systems with USG Levelrock sound attenuation products
- Use with a variety of floor coverings, including vinyl, carpet, hardwood, and natural and man-made stone

LIMITATIONS

1. Do not use in exterior applications.
2. Do not over water or over sand.
3. Do not use as a wear surface.
4. Do not install where continuous exposure to moisture is a possibility.
5. For wood subfloors – install only on tongue-and-groove edge plywood or OSB, or square-edge wood subfloor with back-bracing.
6. Do not install in below-grade applications without a USG-approved moisture vapor reducer.
7. Do not pour over expansion or isolation joints. Continue all movement joints in the concrete slab up through the layer of underlayment. In areas where the expansion or isolation joints are not present in the floor or where the concrete slab has developed systematic cracks in response to slab movement, consult with an engineer on the project or request the services of a licensed structural engineer.
8. Structure shall be designed so that deflection does not exceed L/240 from combined dead and live loads and L/360 from live loads. Certain floor coverings such as marble, limestone, travertine and wood may have more restrictive deflection limits. Consult the appropriate floor covering manufacturer.
9. Adhere to the Radiant Panel Association (RPA) Guidelines for Hydronic Radiant Floor Heating regarding temperature and fluid temperatures. Fluid temperatures of radiant systems shall not exceed 140 °F (60 °C) at the exit of the heating device. To limit risk, floor temperatures shall not exceed 100 °F (38 °C) in general and shall be limited to 85 °F (29 °C) in areas of direct contact by building occupants. To minimize any potential of shocking the USG Levelrock 2500 Floor Underlayment, the radiant heat system should be ramped up slowly over several days until the underlayment is fully dry. Startup of radiant systems shall be in accordance with manufacturers' and RPA-recommended startup procedures.
10. Published acoustical and durability performance is based on testing USG Levelrock Floor Underlayments with USG Levelrock sound attenuation products. If USG Levelrock Floor Underlayment is installed over any non-USG Levelrock sound attenuation product, the manufacturer of the sound attenuation product shall be responsible for the acoustical and durability performance of the flooring system.

INSTALLATION

During the entire installation process, the building must be enclosed and temperature maintained at 50 °F (10 °C) minimum. Adequate ventilation must be provided to ensure uniform drying of the installed floor underlayment, which typically occurs within 5-7 days at a 3/4 in. (19 mm) thickness. Protect floors from heavy trade traffic loads (i.e. loaded drywall carts, heavy tool cabinets, etc.) with plywood. This may cause the protected areas to take longer to dry. Check for dryness in these areas before installing floor covering.

When the MVER exceeds 5 lbs. (2.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours or an RH greater than 80% per ASTM F2170, treat the concrete subfloor with an approved moisture vapor reducer. USG Levelrock Floor Underlayments are not vapor or moisture barriers. Transmission of excessive water vapor or moisture from the concrete subfloor through the floor underlayments can interfere with floor coverings and/or floor-covering adhesives, thus compromising their performance. For on-grade concrete applications, use an approved moisture vapor reducer. A moisture mitigation system may not be needed if a vapor retarder is installed below the concrete slab in accordance to industry specifications and practice (ASTM E1745, ASTM E1993, ASTM E1693) and the MVER value of the concrete slab is below 5 lbs. (2.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours or has an RH less than 80% per ASTM F2170. If the concrete subfloor has been treated with an approved moisture vapor reducer, it must be primed with USG Levelrock® Acrylic Concrete Primer prior to application of the USG Levelrock 2500 Floor Underlayment.

Cracks in the existing concrete subfloor must be inspected to determine if the crack is due to typical concrete “shrink” or if it is a result of a structural movement. In the case of the latter, remediation of the crack must be addressed or eventually the crack will telegraph through. Consult with the engineer on the project or request the services of a professional structural engineer for all suspected structural cracks.

Repair all non-structural cracks in old and new concrete to minimize and control their ability to telegraph. Note that repair of existing cracks in the concrete subfloor only subdues but does not completely prevent their ability to telegraph. Respect existing expansion and control joints.

To minimize the effect of expansion and cracking, wrap USG Levelrock® Brand Perimeter Isolation Strip 2.5 (1/4 in. (6 mm) thick) around all door jambs, columns and pipes. For outside corners, the strip should extend a minimum of 24 in. (610 mm) from the corner on both sides. For more information on perimeter isolation strip installation, see *USG Levelrock® Brand Perimeter Isolation Strip Submittal* (IG1874).

USG Levelrock floor underlayments are not structural and will not resist movement in buildings. Structural movement resulting in stress to the USG Levelrock floor underlayment will cause cracking to occur.

PRODUCT DATA

	USG Levelrock 2500 Floor Underlayment
Approximate Compressive Strength (aggregated) ASTM C472 (modified)	2000–3200 psi (13.8–22.1 MPa)
Approximate Dry Density (aggregated)	115 lbs./cu. ft. (1,842 kg/m ³)
Set Time Range	60 - 90 minutes
Surface-Burning Characteristics ASTM E84	Flame Spread – 0 Smoke Developed – 0

NOTE Results for the properties published above were achieved under controlled laboratory conditions. Actual field results may differ due to environmental conditions, regional sand variations, inconsistent proportioning of field applied water, sand and USG Levelrock floor underlayment, as well as differences in mixing/pumping equipment.

TEST DATA
SOUND

USG Levelrock floor underlayments and systems have been tested in accordance with ASTM E90 and E492. See *USG Levelrock® & USG Durock™ Sound Systems Fire & Sound Rating Guide* (IG1685) for STC and IIC results or visit usgperformanceflooring.com for further information on sound test results.

DURABILITY

Tested per ASTM C627 *Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester*. Contact USG for further information.

UL DESIGNATION TYPE LRK

L501, L502, L503, L504, L505, L506, L507, L508, L509, L510, L511, L512, L513, L514, L515, L516, L517, L518, L519, L520, L521, L522, L523, L524, L525, L526, L527, L528, L529, L530, L532, L533, L534, L535, L536, L537, L538, L539, L540, L541, L542, L543, L545, L546, L547, L549, L550, L551, L552, L556, L557, L558, L559, L562, L563, L564, L565, L568, L569, L570, L571, L573, L574, L577, L579, L581, L583, L585, L587, L588, L589, L590, L592, L593, M500, M501, M502, M503, M504, M505, M506, M508, M510, M511, M513, M515, M517*, M521*, M522*.

For the most up-to-date UL Designation Type LRK, contact your USG representative.

Note *UL Design requires greater minimum pour depths and compressive strengths and/or additional requirements. See individual UL Designs for specifics.

Type LRK is UL/ULC Classified as a non-combustible material in accordance with ASTM E136 and CAN/ULC-S114.

EXTENDED WARRANTY

An extended warranty may apply when using USG Levelrock floor underlayments in a system application. Please contact USG for further details.

SUBMITTAL APPROVALS

Job Name	
Contractor	Date





USG LEVELROCK® BRAND 3500 FLOOR UNDERLAYMENT

DESCRIPTION

Premium engineered cementitious underlayment

- Fast application, fast setting, allows for quick return of light trade traffic within hours
- Meets the vinyl industry's commercial performance requirements
- Applied by USG Levelrock® authorized applicators
- GREENGUARD Gold Certification; qualifies as a low VOC emitting material (meets CA 01350)

USG Levelrock® Brand 3500 Floor Underlayment is a high-quality, versatile engineered cementitious underlayment. It can be applied at thicknesses from featheredge (with proper sand) to 3 in. (76 mm), while meeting commercial vinyl floor-covering requirements as a high-performance underlayment with compressive strengths ranging from 3500 psi to 4500 psi (24.1 to 31.0 MPa).

USG Levelrock 3500 Floor Underlayment is mixed with approved sand and potable water at the job site to yield a lightweight underlayment that weighs approximately 7.5 lbs./sq. ft. (36.6 kg/m²) at 3/4 in. (19 mm) thickness and has an approximate dry density of 120 lbs./cu. ft. (1,922 kg/m³).

INTENDED FOR

- Light-commercial, residential, institutional, hotel/motel and rehab construction
- Concrete slabs, pre-stressed concrete, concrete planks, concrete repair/leveling, existing gypsum, radiant heat systems, OSB and plywood and USG Levelrock sound attenuation products
- UL fire-rated assemblies with UL Designation Type LRK
- Floor systems with USG Levelrock sound attenuation products
- Use with a variety of floor coverings, including vinyl, carpet, hardwood, and natural and man-made stone

LIMITATIONS

1. Do not use in exterior applications.
2. Do not over water or over sand.
3. Do not use as a wear surface.
4. Do not install where continuous exposure to moisture is a possibility.
5. For wood subfloors – install only on tongue-and-groove edge plywood or OSB, or square-edge wood subfloor with back-bracing.
6. Do not install in below-grade applications without a USG-approved moisture vapor reducer.
7. Do not pour over expansion or isolation joints. Continue all movement joints in the concrete slab up through the layer of underlayment. In areas where the expansion or isolation joints are not present in the floor or where the concrete slab has developed systematic cracks in response to slab movement, consult with an engineer on the project or request the services of a licensed structural engineer.
8. Structure shall be designed so that deflection does not exceed L/240 from combined dead and live loads and L/360 from live loads. Certain floor coverings such as marble, limestone, travertine and wood may have more restrictive deflection limits. Consult the appropriate floor covering manufacturer.
9. Adhere to the Radiant Panel Association (RPA) Guidelines for Hydronic Radiant Floor Heating regarding temperature and fluid temperatures. Fluid temperatures of radiant systems shall not exceed 140 °F (60 °C) at the exit of the heating device. To limit risk, floor temperatures shall not exceed 100 °F (38 °C) in general and shall be limited to 85 °F (29 °C) in areas of direct contact by building occupants. To minimize any potential of shocking the USG Levelrock 3500 Floor Underlayment, the radiant heat system should be ramped up slowly over several days until the underlayment is fully dry. Startup of radiant systems shall be in accordance with manufacturers' and RPA-recommended startup procedures.
10. Published acoustical and durability performance is based on testing USG Levelrock Floor Underlayments with USG Levelrock sound attenuation products. If USG Levelrock Floor Underlayment is installed over any non-USG Levelrock sound attenuation product, the manufacturer of the sound attenuation product shall be responsible for the acoustical and durability performance of the flooring system.

INSTALLATION

During the entire installation process, the building must be enclosed and temperature maintained at 50 °F (10 °C) minimum. Adequate ventilation must be provided to ensure uniform drying of the installed floor underlayment, which typically occurs within 5-7 days at a 3/4 in. (19 mm) thickness. Protect floors from heavy trade traffic loads (i.e. loaded drywall carts, heavy tool cabinets, etc.) with plywood. This may cause the protected areas to take longer to dry. Check for dryness in these areas before installing floor covering.

When the MVER exceeds 5 lbs. (2.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours or an RH greater than 80% per ASTM F2170, treat the concrete subfloor with an approved moisture vapor reducer. USG Levelrock Floor Underlayments are not vapor or moisture barriers. Transmission of excessive water vapor or moisture from the concrete subfloor through the floor underlayments can interfere with floor coverings and/or floor-covering adhesives, thus compromising their performance. For on-grade concrete applications, use an approved moisture vapor reducer. A moisture mitigation system may not be needed if a vapor retarder is installed below the concrete slab in accordance to industry specifications and practice (ASTM E1745, ASTM E1993, ASTM E1693) and the MVER value of the concrete slab is below 5 lbs. (2.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours or has an RH less than 80% per ASTM F2170. If the concrete subfloor has been treated with an approved moisture vapor reducer, it must be primed with USG Levelrock® Acrylic Concrete Primer prior to application of the USG Levelrock 3500 Floor Underlayment.

Cracks in the existing concrete subfloor must be inspected to determine if the crack is due to typical concrete “shrink” or if it is a result of a structural movement. In the case of the latter, remediation of the crack must be addressed or eventually the crack will telegraph through. Consult with the engineer on the project or request the services of a professional structural engineer for all suspected structural cracks.

Repair all non-structural cracks in old and new concrete to minimize and control their ability to telegraph. Note that repair of existing cracks in the concrete subfloor only subdues but does not completely prevent their ability to telegraph. Respect existing expansion and control joints.

To minimize the effect of expansion and cracking, wrap USG Levelrock® Brand Perimeter Isolation Strip 2.5 (1/4 in. (6 mm) thick) around all door jambs, columns and pipes. For outside corners, the strip should extend a minimum of 24 in. (610 mm) from the corner on both sides. For more information on perimeter isolation strip installation, see *USG Levelrock® Brand Perimeter Isolation Strip Submittal* (IG1874).

USG Levelrock floor underlayments are not structural and will not resist movement in buildings. Structural movement resulting in stress to the USG Levelrock floor underlayment will cause cracking to occur.

PRODUCT DATA

	USG Levelrock 3500 Floor Underlayment
Approximate Compressive Strength (aggregated) ASTM C472 (modified)	3500–4500 psi (24.1–31.0 MPa)
Approximate Dry Density (aggregated)	120 lbs./cu. ft. (1,922 kg/m ³)
Set Time Range	60 - 90 minutes
Surface-Burning Characteristics ASTM E84	Flame Spread – 0 Smoke Developed – 0

NOTE Results for the properties published above were achieved under controlled laboratory conditions. Actual field results may differ due to environmental conditions, regional sand variations, inconsistent proportioning of field applied water, sand and USG Levelrock floor underlayment, as well as differences in mixing/pumping equipment.

TEST DATA
SOUND

USG Levelrock floor underlayments and systems have been tested in accordance with ASTM E90 and E492. See *USG Levelrock® & USG Durock™ Sound Systems Fire & Sound Rating Guide* (IG1685) for STC and IIC results or visit usgperformanceflooring.com for further information on sound test results.

DURABILITY

Tested per ASTM C627 *Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester*. Contact USG for further information.

UL DESIGNATION TYPE LRK

L501, L502, L503, L504, L505, L506, L507, L508, L509, L510, L511, L512, L513, L514, L515, L516, L517, L518, L519, L520, L521, L522, L523, L524, L525, L526, L527, L528, L529, L530, L532, L533, L534, L535, L536, L537, L538, L539, L540, L541, L542, L543, L545, L546, L547, L549, L550, L551, L552, L556, L557, L558, L559, L562, L563, L564, L565, L568, L569, L570, L571, L573, L574, L577, L579, L581, L583, L585, L587, L588, L589, L590, L592, L593, M500, M501, M502, M503, M504, M505, M506, M508, M510, M511, M513, M515, M517*, M521*, M522*.

For the most up-to-date UL Designation Type LRK, contact your USG representative.

Note *UL Design requires greater minimum pour depths and compressive strengths and/or additional requirements. See individual UL Designs for specifics.

Type LRK is UL/ULC Classified as a non-combustible material in accordance with ASTM E136 and CAN/ULC-S114.

EXTENDED WARRANTY

An extended warranty may apply when using USG Levelrock floor underlayments in a system application. Please contact USG for further details.

SUBMITTAL APPROVALS

Job Name	
Contractor	Date





USG LEVELROCK® BRAND 4500 FLOOR UNDERLAYMENT

DESCRIPTION

Premium engineered underlayment with a high compressive strength

- Innovative, self-sealing technology
- Fast application, fast setting, allows for quick return of light trade traffic within hours
- High compressive strength—stands up to commercial and institutional use
- Applied by USG Levelrock® authorized applicators
- GREENGUARD Gold Certification; qualifies as a low VOC emitting material (meets CA 01350)

USG Levelrock® Brand 4500 Floor Underlayment is an engineered cementitious underlayment which provide a smooth, hard, self-sealing underlayment surface. It can be applied at thicknesses from featheredge (with proper sand) to 3 in. (76 mm), while exceeding commercial vinyl floor-covering requirements as a high-performance underlayment with compressive strengths of up to 5500 psi (37.9 MPa).

USG Levelrock 4500 Floor Underlayment is mixed with approved sand and potable water at the job site to yield a lightweight underlayment that weighs approximately 5 lbs./sq. ft. (24.4 kg/m²) at 1/2 in. (13 mm) thickness and has an approximate dry density range of 123-130 lbs./cu. ft. (1,970-2,082 kg/m³).

INTENDED FOR

- Commercial, light-commercial, residential, institutional and rehab construction
- Concrete slabs, pre-stressed concrete, concrete planks, concrete repair/leveling, existing gypsum, radiant heat systems, OSB and plywood and USG Levelrock sound attenuation products
- UL fire-rated assemblies with UL Designation Type HSLRK
- Floor systems with USG Levelrock sound attenuation products
- Use with a variety of floor coverings, including vinyl, carpet, hardwood, and natural and man-made stone
- Use as a wear surface with decorative protective coating system

LIMITATIONS

1. Do not use in exterior applications.
2. Do not over water or over sand.
3. Can be used as a wear surface with a tested decorative, protective coating system. Coating systems must be tested for adhesion. The bond test and performance of coatings are the responsibility of the coating manufacturer.
4. Do not install where continuous exposure to moisture is a possibility.
5. For wood subfloors – install only on tongue-and-groove edge plywood or OSB, or square-edge wood subfloor with back-bracing.
6. Do not install in below-grade applications without a USG-approved moisture vapor reducer.
7. Do not pour over expansion or isolation joints. Continue all movement joints in the concrete slab up through the layer of underlayment. In areas where the expansion or isolation joints are not present in the floor or where the concrete slab has developed systematic cracks in response to slab movement, consult with an engineer on the project or request the services of a licensed structural engineer.
8. Structure shall be designed so that deflection does not exceed L/240 from combined dead and live loads and L/360 from live loads. Certain floor coverings such as marble, limestone, travertine and wood may have more restrictive deflection limits. Consult the appropriate floor covering manufacturer.
9. Adhere to the Radiant Panel Association (RPA) Guidelines for Hydronic Radiant Floor Heating regarding temperature and fluid temperatures. Fluid temperatures of radiant systems shall not exceed 140 °F (60 °C) at the exit of the heating device. To limit risk, floor temperatures shall not exceed 100 °F (38 °C) in general and shall be limited to 85 °F (29 °C) in areas of direct contact by building occupants. To minimize any potential of shocking the USG Levelrock 4500 Floor Underlayment, the radiant heat system should be ramped up slowly over several days until the underlayment is fully dry. Startup of radiant systems shall be in accordance with manufacturers' and RPA-recommended startup procedures.

INSTALLATION

- 10.** Published acoustical and durability performance is based on testing USG Levelrock Floor Underlayments with USG Levelrock sound attenuation products. If USG Levelrock Floor Underlayment is installed over any non-USG Levelrock sound attenuation product, the manufacturer of the sound attenuation product shall be responsible for the acoustical and durability performance of the flooring system.

During the entire installation process, the building must be enclosed and temperature maintained at 50 °F (10 °C) minimum. Adequate ventilation must be provided to ensure uniform drying of the installed floor underlayment, which typically occurs within 3-5 days at a 1/2 in. (13 mm) thickness. Protect floors from heavy trade traffic loads (i.e. loaded drywall carts, heavy tool cabinets, etc.) with plywood. This may cause the protected areas to take longer to dry. Check for dryness in these areas before installing floor covering.

When the MVER exceeds 5 lbs. (2.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours or an RH greater than 80% per ASTM F2170, treat the concrete subfloor with an approved moisture vapor reducer. USG Levelrock Floor Underlayments are not vapor or moisture barriers. Transmission of excessive water vapor or moisture from the concrete subfloor through the floor underlayments can interfere with floor coverings and/or floor-covering adhesives, thus compromising their performance. For on-grade concrete applications, use an approved moisture vapor reducer. A moisture mitigation system may not be needed if a vapor retarder is installed below the concrete slab in accordance to industry specifications and practice (ASTM E1745, ASTM E1993, ASTM E1693) and the MVER value of the concrete slab is below 5 lbs. (2.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours or has an RH less than 80% per ASTM F2170. If the concrete subfloor has been treated with an approved moisture vapor reducer, it must be primed with USG Levelrock® Acrylic Concrete Primer prior to application of the USG Levelrock 4500 Floor Underlayment.

Cracks in the existing concrete subfloor must be inspected to determine if the crack is due to typical concrete “shrink” or if it is a result of a structural movement. In the case of the latter, remediation of the crack must be addressed or eventually the crack will telegraph through. Consult with the engineer on the project or request the services of a professional structural engineer for all suspected structural cracks.

Repair all non-structural cracks in old and new concrete to minimize and control their ability to telegraph. Note that repair of existing cracks in the concrete subfloor only subdues but does not completely prevent their ability to telegraph. Respect existing expansion and control joints.

For UL assemblies, the minimum thickness required when pouring USG Levelrock 4500 Floor Underlayment over OSB or plywood is 3/4 in. (19 mm) at a 1.4 mix design. For non-UL assemblies, install galvanized wire lath at less than 3/4 in. (19 mm) thickness.

USG Levelrock 4500 Floor Underlayment is specially formulated with a built-in sealer. Thus, for most floor coverings, the application of a primer or sealer is neither necessary nor recommended, but a bond test for compatibility should always be conducted. Check with floor-covering and adhesive manufacturers for installation guidelines and suitability of their manufactured products over USG Levelrock.

To minimize the effect of expansion and cracking, wrap USG Levelrock® Brand Perimeter Isolation Strip 2.5 (1/4 in. (6 mm) thick) around all door jambs, columns and pipes. For outside corners, the strip should extend a minimum of 24 in. (610 mm) from the corner on both sides. For more information on perimeter isolation strip installation, see *USG Levelrock® Brand Perimeter Isolation Strip Submittal* (IG1874).

When used as a wear surface, use a suitable protective coating intended to prevent dirt, grime or other contaminants from staining the surface.

USG Levelrock floor underlayments are not structural and will not resist movement in buildings. Structural movement resulting in stress to the USG Levelrock floor underlayment will cause cracking to occur.

For wear surface applications, USG recommends saw cutting 1/4 of the thickness of the recently poured USG Levelrock at known stress points such as over beams, from column to column and where framing members change direction. Although saw cuts are intended to direct the movement from the stress points to occur at the saw cut, additional cracking may occur as a result of structural movement. Cracking is common and should be expected when installing non-structural toppings.

PRODUCT DATA

	USG Levelrock 4500 Floor Underlayment
Approximate Compressive Strength (aggregated) ASTM C472 (modified)	4500-5500 psi (31.0-37.9 MPa)
Approximate Dry Density (aggregated)	125 lbs./cu. ft. (2,002 kg/m³)
Set Time Range	60 - 90 minutes
Surface-Burning Characteristics ASTM E84	Flame Spread – 0 Smoke Developed – 0

NOTE Results for the properties published above were achieved under controlled laboratory conditions. Actual field results may differ due to environmental conditions, regional sand variations, inconsistent proportioning of field applied water, sand and USG Levelrock floor underlayment, as well as differences in mixing/pumping equipment.

TEST DATA

SOUND

USG Levelrock floor underlayments and systems have been tested in accordance with ASTM E90 and E492. See *USG Levelrock® & USG Durock™ Sound Systems Fire & Sound Rating Guide* (IG1685) for STC and IIC results or visit usgperformanceflooring.com for further information on sound test results.

DURABILITY

Tested per ASTM C627 *Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester*. Contact USG for further information.

UL DESIGNATION TYPE HSLRK

G524, G230, G516, G535, G551*, G553*, G556, G561, G562, G564*, G566, G587, G588, G591, J917, J919, J920, J924, J927, J931, J957, J958, J991, J994, L006, L201, L206, L208, L209, L210, L211, L212, L501, L502, L503, L504, L505, L506, L507, L508, L509, L510, L511, L512, L513, L514, L515, L516, L517, L518, L519, L520, L521, L522, L523, L524, L525, L526, L527, L528, L529, L530, L532, L533, L534, L535, L536, L537, L538, L539, L540, L541, L542, L543, L545, L546, L547, L549, L550, L551, L552, L556, L557, L558, L559, L562, L563, L564, L565, L568, L569, L570, L571, L573, L574, L577, L579, L581, L583, L585, L587, L588, L589, L590, L592, L593, M500, M501, M502, M503, M504, M505, M506, M508, M510, M511, M513, M515, M517*, M521*, M522*.

For the most up-to-date UL Designation Type HSLRK, contact your USG representative.

NOTE *UL Design requires greater minimum pour depths and compressive strengths and/or additional requirements. See individual UL Designs for specifics.

Type HSLRK is UL/ULC Classified as a non-combustible material in accordance with ASTM E136 and CAN/ULC-S114.

EXTENDED WARRANTY

An extended warranty may apply when using USG Levelrock floor underlayments in a system application. Please contact USG for further details.

SUBMITTAL APPROVALS

Job Name	
Contractor	Date



PRODUCT INFORMATION

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

CUSTOMER SERVICE

800 621-9523

WEB SITES

usg.com

usg.com/masstimber

GREENGUARD INFORMATION

GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg.

NOTE

The information in this document is subject to change without notice. USG Corp. and/or its affiliates assume no responsibility for any errors that may inadvertently appear in this document. Consult your USG sales office or representative for information.

NOTICE

We shall not be liable for consequential, incidental or special damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to the replacement of defective goods or a refund of the purchase price, at USG's option, and does not include costs of labor, floor-covering materials, or any other costs associated with material replacement. 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. For all applicable warranty information, please refer to *USG Levelrock® Brand & USG Durock™ Brand Performance Flooring Products Two-Year Limited Warranty for USG Levelrock Applicators* (IG1727) located at usg.com.

For all terms and conditions see usg.com/terms-and-conditions.

SAFETY FIRST!

Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read applicable SDSs and literature before specification and installation.

IG359372-USA-ENG/3-24

© 2024 USG Corporation and/or its affiliates. All rights reserved. Printed in U.S.A. The trademarks USG, LEVELROCK, SAM-N25, IT'S YOUR WORLD. BUILD IT., the USG logo, the design elements and colors and related marks are trademarks of USG Corporation or its affiliates.

USG products manufactured by or for
United States Gypsum Company
550 West Adams Street
Chicago, IL 60661

USG
IT'S YOUR WORLD. BUILD IT.®