



# USG DUROCK™ BRAND PROFLOW™ SELF-LEVELING UNDERLAYMENT

## Highest-strength premium poured underlayment

- One of the industry's highest compressive strengths—minimum 6000 psi
- Ideal for commercial, institutional and renovation construction
- Can be used as a decorative wear surface
- Fast application and setting times facilitate return of light trade traffic within hours
- Self-leveling system speeds production and provides a smooth, crack-resistant surface
- Nonshrinking technology
- No shotblasting required

## DESCRIPTION

USG Durock™ Brand ProFlow™ self-leveling underlayment is a premium interior cementitious underlayment that provides one of the highest compressive strengths in the industry—more than 6000 psi. Designed by USG for interior use in commercial, institutional and rehab construction, it provides a smooth, hard underlayment surface over concrete slabs, prestressed concrete or concrete planks at thicknesses from featheredge to 3/4 in. Suitable for use with a variety of floor coverings, including commercial-grade resilient floor coverings, USG Durock™ ProFlow self-leveling underlayment can also be used as a decorative wear surface with an approved coating system.

USG Durock™ ProFlow self-leveling underlayment is an economical solution for commercial and institutional floors. Typical applications are less labor intensive than many other types of construction, while the product's high compressive strength minimizes floor damage from trades. Quick set times and high production rates allow light trade traffic within 24 hours of installation. In addition, the exceptional surface hardness of USG Durock™ ProFlow self-leveling underlayment resists indentation.

This poured underlayment is blended with sand at the factory and mixed with water at the jobsite to yield a lightweight, self-leveling slurry. A 1/2-in.-thick underlayment weighs approximately 5 lbs./sq. ft. and has an approximate dry density range of 113-123 lbs./cu. ft.

## INSTALLATION

### SUBFLOOR PREPARATION

All subfloors must be structurally sound, stable and solid. If there is any question about the structural soundness of the subfloor, consult with the engineer on the project or request the services of a professional structural engineer. Shotblasting is not required.

Subfloors must be clean and free of dirt, tar, wax, oil, grease, latex compounds, sealers, curing compounds, release agents, asphalt, adhesives, paint, chemicals, loose old cementitious products, joint compounds from drywall installation or any other contaminant that might prevent proper bonding of underlayment to concrete. Seal off floor drains before starting to pour underlayment to prevent drain pipes from clogging.

Concrete subfloors receiving cementitious underlayment systems must be cured properly (generally for a minimum of 28 days) prior to underlayment installation. Subfloor moisture vapor emission rate (MVER) exceeding 5 lbs./1000 sq. ft./24 hours per ASTM F1869 must be treated with an appropriate moisture mitigation system that either limits the flooring system's moisture vapor exposure to acceptable levels, or completely stops the vapor transmission through the top of the subfloor. USG Durock™ ProFlow self-leveling underlayment is not a vapor barrier. Transmission of excessive moisture vapors from the concrete subfloor through USG Durock™ ProFlow self-leveling underlayment can interfere with floor-covering adhesives and compromise their performance. Apply an industry-recognized moisture mitigation system per manufacturer recommendations to achieve an MVER value of 5 lbs./1000 sq. ft./24 hours or less.

Ensure compatibility of the moisture mitigation system with the USG Durock™ ProFlow self-leveling underlayment by a test application in small areas. Contact USG Technical Service (800 874-4968) for further information regarding suitable moisture mitigation products and systems for use with USG Durock™ ProFlow self-leveling underlayment.

Weak or degraded concrete surface layer must be removed mechanically to provide a solid base. To decide whether mechanical preparation of substrate is required or not, the concrete substrate must be thoroughly assessed for its quality over the entire pour area. Simple visual appearance of concrete substrate as strong and solid does not necessarily guarantee that the concrete substrate is free of impurities and has the right strength.

Concrete exhibiting signs of laitance (a layer of weak material on the concrete surface either visible or invisible), scaling, spalling, crumbling or delamination must be mechanically removed to achieve a solid and clean substrate. Prior to installation of the underlayment, remove weak or degraded concrete (as described above) with hammer, chisel or other simple means. It is not required to mechanically profile the concrete subfloor with methods such as shotblasting, scarifying or diamond grinding.

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 USG Durock™ ProFlow self-leveling underlayment. Repair all existing cracks in old and new concrete to minimize and control their ability to telegraph through the layer of USG Durock™ ProFlow self-leveling underlayment. Remove the weak concrete along the length of the cracks by chiseling or other suitable means. Remove accumulated dust and debris from the crack cavities using a vacuum or other suitable means. Various cracks present in the concrete subfloor, including shrinkage cracks, must be filled with a suitable commercially available crack-fill epoxy adhesive designed for concrete flooring applications. To ensure superior resistance to crack growth, use injection epoxy crack-repair techniques per industry guidelines to repair cracks that are active or deep. Note that repair of existing cracks in the concrete subfloor only subdues but does not completely prevent their ability to telegraph through USG Durock™ ProFlow self-leveling underlayment. Growth of existing cracks or formation of new cracks in the concrete subfloor can lead to cracks telegraphing through USG Durock™ ProFlow self-leveling underlayment. Respect existing expansion and control joints.

Fill deep areas and holes prior to final application. Contact USG for further information.

USG Durock™ ProFlow self-leveling underlayment can be applied with metal lath over engineer-approved, APA-Rated exterior glue plywood or oriented strand board (OSB) (i.e., APA-Rated Exterior or Exposure 1 panels) wood subfloors following the Tile Council of North America's F-185-11 specification at a minimum 1/2 in. depth. Subfloor must be properly prepared and primed with USG Durock™ Brand Primer-Sealer. See Notes/Limitations for subfloor deflections.

USG Durock™ ProFlow self-leveling underlayment can be installed over non-water-soluble adhesives on concrete only. The adhesive residue must first be tested to make certain it is non-water-soluble. Any water-soluble adhesive residues must be mechanically removed down to clean concrete. Non-water-soluble adhesive residues should be prepared to a thin, well-bonded residue using the "wet-scraping" technique as recommended by the Resilient Floor Covering Institute (rfci.com) to remove thick areas and adhesive buildup, as well as any areas that are weak or not well bonded to the concrete. Any existing patches below the adhesive must be completely removed.

USG Durock™ ProFlow self-leveling underlayment will set within two hours under normal conditions. Light foot traffic can occur after this time; normal trade traffic can resume the next day. After USG Durock™ ProFlow self-leveling underlayment is firmly set (typically two hours after the pour), provide adequate ventilation to ensure uniform drying of the installed underlayment, which typically occurs within two to five days at 1/4 in. thickness. High ambient humidity and higher thicknesses will delay the drying process. 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 coverings.

USG Durock™ ProFlow self-leveling underlayment can be used as a wear surface with a tested decorative coating system. Coating systems must be tested for adhesion to USG Durock™ ProFlow self-leveling underlayment. The bond test and performance of coatings is the responsibility of the coating manufacturer. Contact USG for further information regarding decorative coating options.

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## TOOLS

- Mixing drum (15 gallons)
  - Gage rake
  - Smoother/spreader
  - Studded shoes
  - Measuring bucket
  - Mixing drill type 2 through 7—as outlined in the Technical Guidelines, prepared by the International Concrete Repair Institute, *Pictorial Atlas of Concrete Repair Material Mixing Equipment* (Guideline No. 320.5-2012)
  - Mixing paddle type 2, 3, 4, 8 or 9—as outlined in the Technical Guidelines, prepared by the International Concrete Repair Institute, *Pictorial Atlas of Concrete Repair Material Mixing Equipment* (Guideline No. 320.5-2012)
  - 1 in. x 2 in. brass or plastic cylinder
  - 12 in. x 12 in. x 1/4 in. Plexiglas® sheet
  - Minimum 2 in. putty/drywall taping knife
  - Ruler or tape measure
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## PRIMING

USG Durock™ primer-sealer, a low-VOC, high-solids acrylic primer, for sealing the concrete, wood or gypsum subfloor prior to application of USG Durock™ ProFlow self-leveling underlayment. Proper use of USG Durock™ primer-sealer effectively seals the subfloor and prevents formation of pinholes, domes and craters in USG Durock™ ProFlow self-leveling underlayment due to the upward migration of air bubbles from the subfloor.

**Note:** Do not apply USG Durock™ ProFlow self-leveling underlayment over gypsum underlayment unless sealed with USG Durock™ primer-sealer.

Floors to be primed must be dry, structurally sound and clean. Remove any dirt, tar, wax, oil, grease, latex compounds, sealers, curing compounds, release agents, asphalt, adhesives, paint, chemicals, loose topping, joint compounds from drywall installation or any other contaminant that might interfere with development of good bond.

Apply USG Durock™ primer-sealer in a two-step application. For the first application, dilute one part USG Durock™ Durock primer-sealer to four parts water. Mix the diluted solution with a paddle mixer at slow speed for approximately one minute. Next, apply primer solution to the subfloor at a coverage rate of approximately 200-300 sq. ft./gal. using a soft push broom. Apply evenly and do not puddle. The actual coverage of the primer will depend upon the nature and porosity of the subfloor. High absorption concrete will require more primer. Allow the first coat to dry for a minimum of one hour prior to the application of the second coat.

For the second application, dilute one part USG Durock™ primer-sealer to one part water. Mix gently with a paddle mixer at slow speed for approximately one minute. Next, apply the primer solution to the subfloor using a soft push broom. Apply the primer evenly and do not puddle. The coverage rate of the diluted primer is approximately 300 sq. ft./gal. Again, the actual coverage of the primer will depend upon the nature and porosity of the subfloor. Allow the second coat to dry to a clear thin film for a minimum of three hours and a maximum of 16 hours before recoating will be necessary. High air relative humidity and/or low subfloor temperature may necessitate a longer drying time. Primer must be completely dry before application of USG Durock™ ProFlow self-leveling underlayment. Extremely porous concrete subfloors may require an additional application.

For primer application, the temperature of USG Durock™ primer-sealer, the subfloor and the room must be maintained between 50°F and 95°F for a period of 48 hours before and after application.

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## BARREL MIXING

When opening bags, use engineering controls, including local exhaust, to reduce exposure to dust. Wear NIOSH-recommended respirator if needed. It is important that the mixing water for the total number of bags to be mixed is in the barrel prior to adding the dry material.

Determine the number of bags needed. Add 3.6 to 4.8 quarts (3.4 to 4.5 liters) of cool, clean potable water for each bag (50 lbs.) of USG Durock™ ProFlow self-leveling underlayment powder to the dry mixing barrel. Next, slowly add one bag to the barrel while mixing. Mix for 30 seconds, making sure that all material is wetted out thoroughly. Slowly add the second and any additional bags to the mixing barrel while continuing to mix. Make sure the barrel sides are thoroughly scraped free of dry powder and that there is no unmixed material on the bottom of the barrel. Mix for an additional 90 seconds and ensure the material is uniform and lump free.

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**BARREL MIXING CONT.**

Perform a slump test on the material before application. See Test Procedures for instructions.

Do not add additional water until the two-minute mixing cycle has been completed. Do not overwater the material. If additional water is required, add no more than 0.4 liters per bag and mix for 30 seconds or until mix is uniform. Do not overmix (more than three minutes), as this may induce air into the material.

The presence of bleed water on the surface and/or material segregation (settling of sand) indicates overwatering. Adjust the amount of water added to the mix to prevent bleed water and material segregation.

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**CONTINUOUS MIXER AND PUMP**

Contact USG for information.

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**TEST PROCEDURES SLUMP TEST**

Set Plexiglas sheet on a level, stable surface, away from foot traffic. Ensure that the 1 in. x 2 in. cylinder is clean and dry. Place the cylinder in the middle of the Plexiglas sheet. Pour the USG Durock™ ProFlow slurry into the cylinder slightly overfilling it. Screed off the excess material from the top of the poured cylinder, away from the Plexiglas sheet. Lift the cylinder up smoothly to form the patty. Do not shake any excess slurry from the cylinder. Wait one minute and measure the patty in two directions 90° apart and calculate the average of the two measurements +/- 1/8 in. Ensure that the average patty diameter is within the 6 in. to 6-3/4 in. range.

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**APPLICATION**

During application and until the USG Durock™ ProFlow self-leveling underlayment is firmly set (typically the first two hours immediately following the pour), close all doors, windows and other openings in the building and turn off HVAC systems to prevent air drafts. Protect installation areas from direct sunlight exposure for at least 24 hours. Thereafter, the HVAC system can resume, as well as the use of doors, windows and other openings.

Subfloor, room temperature and the USG Durock™ ProFlow product—either mixed or in powdered form—must be between 50°F and 95°F at the time of application and for 72 hours after installation of USG Durock™ ProFlow self-leveling underlayment. For temperatures above 95°F, contact USG.

When uncertain or unknown construction conditions are present on the jobsite, it is recommended to pour a small test area before conducting full installation. The test area must also include finish flooring to establish suitability of the complete system for intended use.

USG Durock™ ProFlow self-leveling underlayment has a flow time of approximately 15 minutes at 70°F. At higher temperatures the flow time is shortened; at lower temperatures the flow time is extended. Work as a team to obtain a satisfactory installation. Ensure continuous flow of slurry and promptly spread the USG Durock™ ProFlow self-leveling underlayment to desired thickness and finish using a gage rake and a smoother. Perform these operations promptly to avoid trapping air bubbles, prevent formation of cold joints and achieve a satisfactory finish surface.

Apply the USG Durock™ ProFlow self-leveling underlayment in an even ribbon along the short dimension of the room or area to be poured. Maintain a continuous wet edge. If pouring the USG Durock™ ProFlow self-leveling underlayment against an edge that has been allowed to set, the edge of the previous pour should be treated with USG Durock™ primer-sealer.

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**FLOOR-COVERING INSTALLATION**

- USG Durock™ ProFlow self-leveling underlayment can be walked on two hours after installation.
- Floor coverings can be installed within two–five days when USG Durock™ ProFlow self-leveling underlayment is applied at 1/4 in. thickness. Drying time will vary depending on underlayment thickness and ambient climate conditions.
- Check with floor-covering and adhesive manufacturers for installation guidelines and suitability of their manufactured products over USG Durock™ ProFlow self-leveling underlayment.
- Protect the surface of USG Durock™ ProFlow self-leveling underlayment from contaminants and water until installation of floor covering is accomplished. Different types of sealers and coatings can be used for this purpose. USG Durock™ primer-sealer is a particularly suitable sealer for this purpose as its applications enhances wear-resistance and durability of USG Durock™ ProFlow self-leveling underlayment.
- Perform field bond test to determine adhesive/flooring performance over USG Durock™ ProFlow self-leveling underlayment. Install floor covering with adhesive and perform field bond test approximately 72 hours after installation.

**FLOOR-COVERING INSTALLATION  
CONT.**

- Follow floor-covering manufacturers' recommendations for surface-sealing requirements. If the floor-covering or adhesive manufacturer requirements are more stringent, their requirements take precedence.

For further details on installation requirements, specifications and the most up-to-date product information, please see [usg.com](http://usg.com).

**NOTES/LIMITATIONS**

1. Do not use in exterior applications.
2. USG Durock™ ProFlow self-leveling underlayment can be used as a wear surface with a tested decorative, protective coating system. Coating systems must be tested for adhesion to USG Durock™ ProFlow self-leveling underlayment. The bond test and performance of coatings is the responsibility of the coating manufacturer. Contact USG for further information regarding decorative coating options.
3. Do not install where continuous exposure to moisture is a possibility.
4. Do not install over dimensionally unstable, improperly prepared, weak subfloors.
5. Do not exceed 3/4-in. thickness.
6. Do not install over concrete subfloor less than 28 days old. For untreated (without an approved moisture mitigation system) concrete subfloors less than 28 days old, contact USG.
7. For below-grade applications, contact USG.
8. Do not use 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 services of a professional structural engineer to provide such joints as part of the system in accordance with engineering requirements and industry standards.
9. Existing cracks in the new and old concrete must be repaired with an appropriate crack-repair material in accordance with industry recommendations prior to installation of the underlayment. Note that repair of existing cracks in the concrete subfloor only subdues but does not completely prevent their ability to telegraph through USG Durock™ ProFlow self-leveling underlayment. Growth of existing cracks or formation of new cracks in the concrete subfloor can lead to cracks telegraphing through the poured underlayment.
10. When the MVER exceeds 5 lbs./1000 sq. ft./24 hours, then treat the concrete subfloor with an industry-recognized moisture mitigation system in all areas of use where potential for moisture problems may exist. USG Durock™ ProFlow self-leveling underlayment is not a vapor or moisture barrier. Transmission of excessive water vapors or moisture from the concrete subfloor through the USG Durock™ ProFlow self-leveling underlayment can interfere with floor-covering adhesives and compromise their performance.
11. For on-grade applications, use an industry-recognized moisture mitigation system over concrete. 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./1000 sq. ft./24 hours.
12. Do not use acid etching as a method of cleaning and preparing the concrete subfloor.
13. Do not use oil-based sweeping compounds to clean and prepare the concrete subfloor. Use of such sweeping compounds leaves an oil film on the surface of the concrete that will interfere with the underlayment's bond development. Use vacuum, compressed air or a dry broom to remove the dust and debris and prepare the subfloor for USG Durock™ ProFlow self-leveling underlayment application.
14. Do not use adhesive-removing chemicals or solvents to eliminate contaminants from the concrete subfloor. Use of such chemicals can transport oil, grease and other contaminants further into the concrete pores. These chemicals can be released back to the surface at a later time to interfere with the floor-covering adhesives, thus compromising the bond performance with USG Durock™ ProFlow self-leveling underlayment. Mechanically removing the organic adhesives, asphalt, coal-tar-based adhesives and other oil-based contaminants is the sole recommended method of preparing the subfloor for application of USG Durock™ ProFlow self-leveling underlayment.
15. Do not apply over subfloors containing asbestos. Do not mechanically remove organic adhesives, asphalt, coal-tar-based adhesives or other materials containing asbestos.
16. Do not overwater or overmix.
17. Do not add any chemical additives or polymers to USG Durock™ ProFlow self-leveling underlayment.
18. Do not use wet curing or curing compounds.
19. Do not mix with other cementitious products or self-leveling materials.

## NOTES/LIMITATIONS CONT.

20. Do not apply USG Durock™ ProFlow self-leveling underlayment over wood subfloor without metal lath. Differential or excessive movement of the wood subfloor may lead to development of cracks in USG Durock™ ProFlow self-leveling underlayment at the wood subfloor joints and adjacent areas.
21. Structure shall be designed so 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.
22. Existing gypsum underlayments must be solid with no cracks and dust-free. Gypsum underlayment must be sealed with USG Durock™ primer-sealer. First test surface hardness by scratching existing underlayment with a coin. If surface can be gouged, do not use USG Durock™ ProFlow self-leveling underlayment and consult USG for alternative repair methods.

## PRODUCT DATA

USG Durock™ ProFlow self-leveling underlayment is sanded at the factory. Jobsite addition of sand is not recommended and will void the warranty. USG Durock™ ProFlow self-leveling underlayment is mixed with water to yield a self-leveling slurry.

**Approximate Compressive Strength ASTM C109 (modified):** 6000–8000 psi<sup>2</sup>

**Approximate Dry Density:** 113 – 123 lbs./cu. ft.<sup>2</sup>

**Mixing Ratio:** 3.6–4.8 quarts (3.4 to 4.5 liters) of water per 50 lb. bag

**Approximate Coverage:** 21 square feet per bag at 1/4 in. thickness

**Approximate Flow Time:** 15 minutes

**Approximate Final Set ASTM C191:** 60–90 minutes<sup>2</sup>

**Approximate Walkable (light foot traffic):** 2 hours (after set)

**Surface pH Range ASTM F710:** 11

**Packaging:** 50 lb. multiwall paper bags

### Notes:

1. ASTM C109 modified refers to air-drying as opposed to damp curing.
2. Compressive strengths published herein were achieved under controlled laboratory conditions. Actual field results may differ due to environmental conditions, inconsistent proportioning of field applied water and USG Durock™ ProFlow self-leveling underlayment, as well as differences in mixing/pumping equipment.

### PRODUCT INFORMATION

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

### WARNING!

When mixed with water, this material hardens and becomes very hot—sometimes quickly. DO NOT attempt to make a cast enclosing any part of the body using this material. Failure to follow these instructions can cause severe burns that may require surgical removal of affected tissue or amputation of limb. Portland cement is strongly alkaline. Direct contact can be corrosive and cause severe damage or chemical burns to the eyes and wet or moist skin. Avoid contact with eyes and skin. Wear eye protection, alkali-resistant protective gloves, long-sleeved shirts and pants to prevent direct contact. If eye contact occurs, immediately flush thoroughly with water for 30 minutes and seek medical advice. Inhalation of dust may be corrosive or cause chemical burns or irritation to nose, throat and respiratory tract. Long-term breathing of respirable crystalline silica dust can cause permanent lung damage and/or cancer. Avoid breathing dust. Use in a well-ventilated area or provide sufficient local ventilation. If dusty, wear a NIOSH/MSHA-approved dust respirator. Wash thoroughly with soap and water after use. Do not ingest. If ingested, call a physician. Product safety information: 800 507-8899 or usg.com.  
**KEEP OUT OF REACH OF CHILDREN.**

### TRADEMARKS

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### 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.

## STORAGE

USG Durock™ ProFlow self-leveling underlayment should be stored in an enclosed shelter providing protection from damage and exposure from the elements. During winter, dry mix material should be stored in a heated room before application, as deeply cooled material may increase the risk that some additives may not dissolve during mixing. If temperature is too high, premature setting may occur. Remove damaged or deteriorated materials from the jobsite. USG Durock™ ProFlow self-leveling underlayment has a shelf life of six months from the manufactured date.

## SUBMITTAL APPROVALS

Job Name	
Contractor	Date

800 USG.4YOU  
800 (874-4968)  
usg.com

Manufactured by  
United States Gypsum Company  
550 West Adams Street  
Chicago, IL 60661

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