



USG DUROCK™ BRAND RH-100™ MOISTURE VAPOR REDUCER

Epoxy moisture mitigation system

- For use over concrete subfloors with up to 100% RH and pH up to 14
- Perm rating (ASTM E96): ≤ 0.05
- Exceeds the performance requirements in ASTM F3010
- Low viscosity promotes superior penetration and adhesion
- 100% solids epoxy mitigation system with zero VOCs
- Fast cure in as little as 4 hours, depending on conditions
- Empty packaging can be recycled

DESCRIPTION

USG Durock™ Brand RH-100™ Moisture Vapor Reducer is a 100% solids epoxy coating specially formulated for interior use over concrete with high moisture and/or pH levels. USG Durock™ RH-100 Moisture Vapor Reducer manages moisture levels up to 100% RH and prevents alkalinity up to 14 pH in concrete subfloors from negatively affecting underlayments, floor-covering adhesives and floor coverings.

Low in viscosity, USG Durock™ RH-100 Moisture Vapor Reducer has excellent substrate wetting capabilities to promote penetration and adhesion. Moisture-tolerant, USG Durock™ RH-100 Moisture Vapor Reducer may be installed over a damp concrete subfloor (no standing or glistening water allowed) 5 days after subfloor installation. USG Durock™ RH-100 Moisture Vapor Reducer exceeds the performance requirements in ASTM F3010, *Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings*.

VOC EMISSIONS

USG Durock™ RH-100 Moisture Vapor Reducer is defined as a “Low Emitting” material per California Department of Public Health CDPH/EHLB/Standard Method Version 1.2, 2017 (CA Section 01350) for school classroom, single-family residence, and private-office modeling scenarios, and meets USGBC’s LEED® v4 emission requirements.

SUBFLOOR PREPARATION

All subfloors must be structurally sound, solid and secure. 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.

Certain contaminants such as aggregates causing alkali-silica reaction (ASR), deleterious salts, expansive material constituents or reaction products, bond breakers such as curing compounds, silicate-based surface hardeners, etc., may inhibit USG Durock™ RH-100’s bonding capabilities. Concrete subfloors with unknown histories (i.e. old concrete, floor-covering failures, etc.) must be cored and analyzed to decipher failure mode(s) and underlying deleterious material constituents and reactions. The responsibility for conducting this testing lies with the building owner or its authorized representatives.

Concrete 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 USG Durock™ RH-100 Moisture Vapor Reducer to the concrete subfloor. Seal off floor drains to prevent drain pipes from clogging.

SUBFLOOR PREPARATION CONT.

Shot blast concrete surface to a CSP 3-4 in accordance with the industry standards as outlined in International Concrete Repair Institute (ICRI) Technical Guideline No. 310.2, *Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair*. The concrete subfloor must have a minimum tensile strength of 175 psi (1.2 MPa) when tested per the ASTM C1583 standard. Vacuum substrate with a HEPA filtration industrial vacuum to remove the dust and debris and prepare the subfloor for USG Durock™ RH-100 Moisture Vapor Reducer application.

Cracks in the existing concrete subfloor must be inspected by a professional structural engineer to determine if the crack is static or dynamic. In the case of the latter, remediation of the crack must be addressed. Repair all existing cracks in old and new concrete to minimize and control their ability to telegraph through the layer of USG Durock™ RH-100 Moisture Vapor Reducer and the floor 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 HEPA filtration industrial 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™ RH-100 Moisture Vapor Reducer and the floor underlayment. Growth of existing cracks or formation of new cracks in the concrete subfloor can lead to cracks telegraphing through USG Durock™ RH-100 Moisture Vapor Reducer and the floor underlayment.

During the USG Durock™ RH-100 Moisture Vapor Reducer installation process, the work area must be protected and the temperature maintained at a 45 °F (7 °C) minimum for 24 hours before, during and after installation. Adequate ventilation must be provided to ensure proper drying of USG Durock™ RH-100 Moisture Vapor Reducer. Substrate temperature at the time of installation must not be less than 45 °F (7 °C). Ambient temperature must be maintained at a range of 45-95 °F (7-35 °C). Cure times will be extended at lower temperatures and shortened at higher temperatures.

**MIXING
EQUIPMENT**

- Chemical safety glasses or splash-proof goggles
- Protective gloves
- NIOSH/OSHA-approved organic vapor respirator
- Electric drill (300–400 rpm)
- Jiffy®-type mixer
- Notched/smooth squeegee
- Nonshedding 1/4 in. (6 mm) or 3/4 in. (19 mm) nap phenolic core roller cover
- Wet mil. gauge
- Non-metallic cleated shoes
- Long sleeved shirts and trousers
- Emergency showers and eye wash stations should be readily accessible

INSTRUCTIONS

Read USG Durock™ RH-100 Moisture Vapor Reducer SDSs for both part A and part B prior to mixing and application.

USG Durock™ RH-100 Moisture Vapor Reducer is packaged in a two-part, premeasured kit. Both parts must be mixed in full—**do not mix partial amounts of the materials**. Pour the entire contents of part B into the part A container.

Using an electric drill (300–400 rpm) with a Jiffy-type mixer, mix the combined materials in container A for three full minutes. **Do not mix by hand**. Mix all material by moving drill around container's sides and bottom. **Note that the entire contents of USG Durock™ RH-100 Moisture Vapor Reducer must be poured out of the pail immediately after mixing or the material may reach extreme temperatures and possibly combust.**

USG Durock™ RH-100 Moisture Vapor Reducer has a working time of approximately 20 minutes at 77 °F (25 °C). At higher temperatures the working time is shortened; at lower temperatures the working time is extended.

APPLICATION

The work area must be protected from the elements. Use USG Durock™ RH-100 Moisture Vapor Reducer in adequately ventilated areas (i.e., slightly opened windows and doors in dry weather only) to ensure worker safety and promote proper curing. Applicators should wear appropriate personal protective equipment and spiked shoes; in enclosed areas, an appropriate cartridge-type respirator must be used. Substrate temperature must be at least 5 °F (2.8 °C) above measured dew point temperatures prior to application. Minimum ambient and substrate temperature during application and curing of material is 45 °F (8 °C); maximum is 95 °F (35 °C). Frequent monitoring of ambient and substrate temperature should always be done when applying epoxy primers.

Note: Concrete porosity and concrete surface profile will affect the actual coverage rate.

The entire contents of USG Durock™ RH-100 Moisture Vapor Reducer must be poured out of the pail immediately after mixing or the material may reach extreme temperatures and possibly combust. Spread material with a notched squeegee. Concrete subfloors having MVER levels up to 25 lb. (11.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours (tested per ASTM F 1869) or subfloors having RH levels up to 100% (tested per ASTM F 2170) require a 13 mil. coverage rate of 375 sq. ft. (34.8 m²)/3 gal. (11.3 L) kit.

While still wet, back roll USG Durock™ RH-100 Moisture Vapor Reducer with a nonshedding 1/4 in. (6 mm) or 3/4 in. (19 mm) nap phenolic core roller cover for even distribution. To properly treat control joints, coat the control joint sidewalls and bottom with USG Durock™ RH-100 Moisture Vapor Reducer and allow to fully cure. After control joint cure, fill cavity with joint sealant or filler as specified by the Architect/Engineer. To properly treat expansion joints, coat the expansion joint sidewalls and bottom with USG Durock™ RH-100 Moisture Vapor Reducer and allow to fully cure. After expansion joint cure, install backer rod in the cavity as specified by the Architect/Engineer, then fill cavity with joint sealant or filler as specified by the Architect/Engineer.

With the penetration of USG Durock™ RH-100 Moisture Vapor Reducer into the pores and capillaries of concrete slab, displacement of air occurs and may cause formation of air channels and bubbles in the coating layer. The air channels and bubbles formed are self-sealing upon curing and will not reduce USG Durock™ RH-100 Moisture Vapor Reducer's effectiveness. The elevated formations resulting due to outgassing air channels and bubbles can be scraped off or gently sanded to achieve a smooth surface in preparation to receive subsequent surface treatments (i.e. USG Durock™ primers). The extent of outgassing air channels and bubbles formed will depend upon several factors including concrete mix design, concrete porosity and concrete surface profile. If any abnormal application performance is observed during the initial installation of USG Durock™ RH-100 Moisture Vapor Reducer, consult USG.

Note: High air relative humidity and/or low subfloor temperature may necessitate a longer curing time.

USG Durock™ RH-100 Moisture Vapor Reducer cures (tack free) in approximately four hours at 77 °F (25 °C), depending on conditions. Multiple coats of USG Durock™ RH-100 Moisture Vapor Reducer must be completed within 24 hours of each other. If the material has cured for more than 24 hours, the surface must be lightly abraded before subsequent applications of USG Durock™ RH-100 Moisture Vapor Reducer or before other specialty coating applications such as epoxies or urethanes.

Allow USG Durock™ RH-100 Moisture Vapor Reducer to cure at least four hours before applying USG Durock™ Primer-Sealer. Coated floor must be protected from dust, dirt, debris or any other type of contamination or damage until the USG primer and floor patch or self-leveling underlayment can be applied. If the surface of floor coated with USG Durock™ RH-100 Moisture Vapor Reducer will remain uncovered for an extended duration, contact USG.

USG Durock™ RH-100 Moisture Vapor Reducer, the concrete subfloor and room temperature must be between 45 °F (8 °C) and 95 °F (35 °C) for 24 hours before, during and after application of USG Durock™ RH-100 Moisture Vapor Reducer. The surface of USG Durock™ RH-100 Moisture Vapor Reducer must be primed with USG Durock™ Primer-Sealer undiluted at an application rate of 450 sq. ft./gal. (41.8 m²) prior to installation of USG Durock™ or Levelrock® Brand underlayments. Allow primer to dry at least three hours, but not more than 18 hours before installation of USG Durock™ or Levelrock® Brand underlayments. Primer recoat will be necessary if underlayment or floor patch blotter layer is not installed within 18 hours of primer application.

SAND BROADCASTING

Spread first coat of mixed material with a smooth squeegee at a rate of no more than 600 sq. ft. (55.7 m²) per 3 gal. (11.3 L) kit. While wet, back roll material with a nonshedding 1/4 in. (6 mm) or 3/4 in. (19 mm) nap phenolic core roller cover to achieve a dry film thickness of approximately 8 mil. Let product cure for 2–3 hours or until "slightly tacky" prior to application of the second coat. Spread second coat with a notched squeegee at a rate of 360 sq. ft. (33.4 m²) per 3 gal. (11.3 L) kit. While wet, back roll material to achieve a dry film thickness of approximately 13mil. Immediately broadcast approved sand over the second coat to full rejection. Allow product to fully cure for approximately 4–6 hours. Remove loose sand and treat bare spots by re-applying the epoxy and sand to full rejection. Allow patched areas to fully cure and remove excess sand prior to application of the underlayment.

NOTES/LIMITATIONS

1. Do not use in exterior applications.
2. Do not use in buildings without permanent windows, doors and roofs.
3. Do not use as a wear surface.
4. Do not use over concrete that has been treated with reactive silicate curing compounds, densifiers, or slabs that may have silicate contamination.
5. Do not apply USG Durock™ RH-100 Moisture Vapor Reducer over a concrete subfloor that has standing or glistening water.
6. Do not install over dimensionally unstable, improperly prepared, weak subfloors. Tensile strength of concrete over which USG Durock™ RH-100 Moisture Vapor Reducer is installed must be a minimum of 175 psi (1.2 MPa) as tested per the ASTM C1583 standard.
7. Do not install over concrete subfloor less than 5 days old.
8. For below-grade applications, contact USG.
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 USG Durock™ RH-100 Moisture Vapor Reducer. Note that repair of existing cracks in the concrete subfloor only subdues but does not completely prevent their ability to telegraph through USG Durock™ RH-100 Moisture Vapor Reducer and the floor underlayment. Growth of existing cracks or formation of new cracks in the concrete subfloor can lead to cracks telegraphing through USG Durock™ RH-100 Moisture Vapor Reducer and the floor underlayment.
10. Do not use acid etching as a method of cleaning and preparing the concrete subfloor.
11. 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 USG Durock™ RH-100 Moisture Vapor Reducer's bond development. Use a HEPA filtration industrial vacuum to remove the dust and debris and prepare the subfloor for USG Durock™ RH-100 Moisture Vapor Reducer application.
12. 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. 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™ RH-100 Moisture Vapor Reducer. Shot blasting is the preferred method of mechanically profiling and preparing the concrete subfloor for the application of USG Durock™ RH-100 Moisture Vapor Reducer.
13. Do not apply over subfloors containing asbestos. Do not mechanically remove organic adhesives, asphalt, coal-tar-based adhesives or other materials containing asbestos—contact an asbestos abatement professional.
14. Do not pour USG Durock™ Brand self-leveling underlayment directly over USG Durock™ RH-100 Moisture Vapor Reducer. The surface of USG Durock™ RH-100 Moisture Vapor Reducer must be primed with USG Durock™ Primer-Sealer prior to installation of USG Durock™ Brand floor patch or self-leveling underlayment.

PRODUCT DATA

MVER (ASTM F1869): 25 lb. (11.3 kg)/1,000 sq. ft. (92.9 m²)/24 hours
(for MVERs greater than 25 lbs./1000 sq. ft./24 hrs., contact USG)

Permeance (ASTM E96): 13 mil.: .050 (grains/h/ft²/in. Hg)
16 mil.: .042 (grains/h/ft²/in. Hg)

RH (ASTM F2170): Withstands up to 100% (no standing or glistening water)

Alkalinity: Resists up to 14 pH

Solids Content: 100%

Tensile Strength (ASTM D638): 5500 psi (37.9 MPa)

VOC Content: Part A: 0 g/L; Part B: 0 g/L; mixed: 0 g/L, ASTM D3960

VOC Emissions (CDPH/EHLB/Standard Method V1.2 (Sect. 01350)): Low

Approximate Coverage:

375 sq. ft. (34.8 m²)/3 gal. (11.3 L) kit (minimum thickness)

Approximate Coverage (Sand Broadcast):

Apply first coat at a rate of 600 sq. ft. (55.7 m²)/3-gallon (11.3 L) kit at 8 mil.

Apply second coat at a rate of 360 sq. ft. (33.4 m²)/3-gallon (11.3 L) kit at 13 mil.

Approximate Working Time: 20 minutes at 77 °F (25 °C)

Approximate Curing Time: 4 hours at 77 °F (25 °C)

Kit Packaging: 3.5 gal. (US) (13.2 L) pail containing 2 gal. (US) (7.5 L) Part A and 1 gal. (US) (3.7 L) Part B

Note

1. Cure times will be extended at lower temperatures and shortened at higher temperatures.

STORAGE

USG Durock™ RH-100 Moisture Vapor Reducer should be stored in an enclosed shelter providing protection from damage and exposure from the elements. Keep USG Durock™ RH-100 Moisture Vapor Reducer from freezing and extreme heat. Dispose of any waste material according to federal/state/local regulations¹. USG Durock™ RH-100 Moisture Vapor Reducer has a shelf life of 12 months from the date of manufacture.

Note

1. Metal shipping containers and the high-density polyethylene (HDPE) cradle can be recycled or disposed of as solid waste as long as they are empty per section 261.7 (Residues of hazardous waste in empty containers) of The Resource Conservation and Recovery Act (RCRA). If the material is catalyzed and solid it can be disposed of as solid waste. If it is liquid it would need to be disposed of as RCRA waste.

CLEANUP

Clean tools with mineral spirits before USG Durock™ RH-100 Moisture Vapor Reducer dries. Carefully read USG Durock™ RH-100 Moisture Vapor Reducer SDS for both part A and part B before using mineral spirits.

SUBMITTAL APPROVALS

Job Name	
Contractor	Date

PRODUCT INFORMATION

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

WARNING!

This product is a severe irritant. Avoid contact with eyes or skin, ingestion and inhalation of mist or vapor. May cause an allergic reaction. Wear splash-proof goggles, nitrile rubber gloves, long sleeved shirts, and work pants. Use a NIOSH/OSHA-approved organic vapor respirator if vapor concentration is expected to exceed 20 ppm for more than 15 minutes. If eye or skin contact occurs, flush affected areas with water for 15 minutes. If irritation occurs or persists, seek medical attention. Wash hands after handling.

For more information call Product Safety: CHEMTREC 800 424-9300 or find MSDSs at usg.com. FOR INDUSTRIAL USE ONLY.

KEEP OUT OF REACH OF CHILDREN.

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SAFETY FIRST!

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

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