

# Powerhold™ 650

## NE Patch Plus



**Versatile, trowel-able cementitious patching compound**

- For interior use over concrete and approved wood subfloors
- Polymer-modified – promotes early strength and workability
- No priming necessary
- Fast-setting – floor coverings may be installed in as little as 1 hour after set
- Easy to mix and apply
- Featheredge to ½-in. thick

<b>Description</b>	Powerhold™ 650 NE Patch Plus is a polymer-modified, cement-based patching compound for interior use over concrete and approved wood subfloors. Ideal for renovation projects, this economical floor patch provides a smooth skim coat for accepting floor-coverings. Easy to mix and apply, Powerhold 650 NE Patch Plus is fast drying; floor coverings can be installed in as little as 1 hour after set (depending on floor patch thickness and drying conditions).
<b>Installation</b>	<p><b>Subfloor Preparation</b></p> <p>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.</p> <p>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 which might prevent proper bonding of Powerhold 650 NE Patch Plus to the host substrate.</p> <p>Read submittal and MSDS before Powerhold 650 NE Patch Plus application.</p>
<b>Tools</b>	<ul style="list-style-type: none"> <li>- Mixing bucket</li> <li>- Trowels</li> <li>- Mixing drill type 2 through 7 – as outlined in the <i>Technical Guidelines</i>, prepared by the International Concrete Repair Institute, <i>Pictorial Atlas of Concrete Repair Material Mixing Equipment</i> (Guideline No. 320.5-2014)</li> <li>- Mixing paddle type 2, 3, 4, 8, or 9 – as outlined in the <i>Technical Guidelines</i>, prepared by the International Concrete Repair Institute, <i>Pictorial Atlas of Concrete Repair Material Mixing Equipment</i> (Guideline No. 320.5-2014)</li> </ul>
<b>Mixing</b>	<p><b>Ratio</b></p> <p>3 parts Powerhold 650 NE Patch Plus to 1 part water by weight, or 3.5 – 4.0 quarts (3.3 – 3.8 liters) of water per one (1) 25-lb. bag of Powerhold 650 NE Patch Plus.</p> <p><b>Instructions</b></p> <p>To mix a 25-lb. bag of Powerhold 650 NE Patch Plus, first add 3.5 – 4.0 quarts (3.3 – 3.8 liters) of clean water to a mixing bucket, then add the floor patch. Mix with a paddle and drill. To mix smaller quantities by hand, use 3 parts Powerhold 650 NE Patch Plus to 1 part water by weight. Mix vigorously for a maximum of 2 minutes with a trowel to achieve a smooth, lump-free consistency. Do not overwater.</p> <p>Use Powerhold 650 NE Patch Plus within 10 – 20 minutes after mixing. Remix (without adding water) as needed within this time frame. Dispose of any Powerhold 650 NE Patch Plus once setting has occurred.</p>
<b>Application</b>	<p>During application and until Powerhold 650 NE Patch Plus is set (typically within 60 – 90 minutes, depending on floor patch thickness), 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 during setting time. Thereafter, the HVAC system can resume, as well as the use of doors, windows and other openings.</p> <p>The Powerhold 650 NE Patch Plus—either mixed or in powdered form, subfloor and room temperature must be between 50 °F and 95 °F at the time of application and for 72 hours after installation of Powerhold 650 NE Patch Plus. For temperatures above 95 °F, consult Powerhold Technical Services at 844 USG.FCDA (844 874.3232).</p>

It is recommended to patch several small test areas before conducting full installation of Powerhold 650 NE Patch Plus. The test areas must also include finish flooring to establish suitability of the complete system for intended use.

Powerhold 650 NE Patch Plus has a working time of approximately 10 – 20 minutes at 70 °F/50% RH (at higher temperatures the working time is shortened; at lower temperatures the working time is extended). Powerhold 650 NE Patch Plus will set in approximately 60 – 90 minutes under normal conditions, depending on floor patch thickness. Light foot traffic can occur approximately 60 min. after set, higher thicknesses require additional drying time. After Powerhold 650 NE Patch Plus is firmly set, provide adequate ventilation to ensure uniform drying of the installed floor patch. 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.

#### **Concrete Subfloors**

Concrete subfloors receiving cementitious floor patch must be cured properly (generally for a minimum of 28 days) prior to floor patch 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. Powerhold 650 NE Patch Plus is not a vapor barrier. Transmission of excessive moisture vapors from the concrete subfloor through Powerhold 650 NE Patch Plus can interfere with floor-covering adhesives and compromise their performance. Apply an industry recognized moisture mitigation system, such as USG Durock™ Brand RH-100™ Moisture Vapor Reducer, 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 Powerhold 650 NE Patch Plus by a test application in small areas. Contact Powerhold Technical Services (1 844 USG.FCDA) for further information regarding suitable moisture mitigation products and systems for use with Powerhold 650 NE Patch Plus.

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 and tensile strength over the entire application area. The assessment of concrete tensile strength must be made in its existing state without the removal of any foreign material that may be present on the concrete surface. 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 tensile 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 floor patch, mechanically profile concrete subfloor to between CSP 3 and CSP 5, 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, and Polymer Overlays*. Use mechanical removal methods such as shot blasting, scarifying or diamond grinding to clean and prepare the concrete subfloor contaminated with adhesives, asphalt or oil. Shot blasting is the preferred method of mechanically profiling and preparing the concrete subfloor for the application of Powerhold 650 NE Patch Plus.

If cracks are found in the existing concrete subfloor, they must be inspected by the engineer on the project or a professional structural engineer 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 Powerhold 650 NE Patch Plus. Repair all existing cracks in old and new concrete to minimize and control their ability to telegraph through the layer of Powerhold 650 NE Patch Plus. 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 manufacturer 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 Powerhold 650 NE Patch Plus. Growth of existing cracks or formation of new cracks in the concrete subfloor can lead to cracks telegraphing through Powerhold 650 NE Patch Plus. Respect existing expansion and control joints (see *Notes/Limitations* #9, pg. 3).

Priming is not required over concrete. Powerhold 650 NE Patch Plus may be applied from featheredge to ½ in. thick over concrete subfloors.

**Wood Subfloors**

Powerhold 650 NE Patch Plus can be applied over engineer-approved, APA-Rated exterior glue plywood or oriented strand board (OSB) (i.e., APA-Rated Exterior or Exposure 1 panels) wood subfloors.

Before application, subfloor must be properly prepared (see *Notes/Limitations* #21 for subfloor deflections) and loose boards secured with deck screws. Priming is not required over wood subfloors. Powerhold 650 NE Patch Plus may be applied from featheredge to ½-in. thick over approved wood subfloors.

**Floor-Covering Installation**

- Powerhold 650 NE Patch Plus can be walked on approximately 60 minutes after set (70°F/50%RH). Thicker applications, cooler temperatures, high humidity and inadequate ventilation can extend drying times.
- Floor coverings can be installed after Powerhold 650 NE Patch Plus has fully set (60 – 90 minutes, depending on floor patch thickness and drying conditions), so as not to damage the surface.
- Check with floor-covering and adhesive manufacturers for installation guidelines and suitability of their manufactured products over Powerhold 650 NE Patch Plus.
- Protect the surface of Powerhold 650 NE Patch Plus from contaminants and water until installation of floor covering is accomplished.
- Perform field bond test to determine adhesive/flooring performance over Powerhold 650 NE Patch Plus.
- Follow floor-covering manufacturers' recommendations for surface sealing requirements. If the floor-covering or adhesive manufacturer requirements are more stringent, their requirements take precedence.

**Notes/Limitations**

1. Do not use in exterior applications.
2. Do not use as a wearing surface.
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 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 Powerhold Technical Services.
6. For below-grade applications, contact Powerhold Technical Services.
7. Do not use over gypsum floor underlayments such as Powerhold™ LP-4K Self-Leveling Underlayment.
8. Do not use over sound mat.
9. 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 the services of a professional structural engineer to provide such joints as part of the system in accordance with engineering requirements and industry standards.
10. 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 Powerhold 650 NE Patch Plus. Note that repair of existing cracks in the concrete subfloor only subdues, but does not completely prevent their ability to telegraph through Powerhold 650 NE Patch Plus. Growth of existing cracks or formation of new cracks in the concrete subfloor can lead to cracks telegraphing through the floor patch.
11. When the MVER exceeds 5 lbs./1000 sq. ft./24 hours, then treat the concrete subfloor with an industry recognized moisture mitigation system such as USG Durock RH-100 Moisture Vapor Reducer, in all areas of use where potential for moisture problems may exist. Powerhold 650 NE Patch Plus is not a vapor or moisture barrier. Transmission of excessive water vapors or moisture from the concrete subfloor through the Powerhold 650 NE Patch Plus can interfere with floor-covering adhesives and compromise their performance.
12. For on-grade applications, use an industry recognized moisture mitigation system such as USG Durock RH-100 Moisture Vapor Reducer, 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.
13. Do not use acid etching as a method of cleaning and preparing the concrete subfloor.
14. 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 Powerhold 650 NE Patch Plus' bond development. Use vacuum or a dry broom to remove the dust and debris and prepare the subfloor for Powerhold 650 NE Patch Plus application.
15. 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 Powerhold 650 NE Patch Plus. 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 Powerhold 650 NE Patch Plus. Use mechanical removal methods such as shot blasting, scarifying or diamond grinding to clean and prepare the concrete subfloor contaminated with adhesives, asphalt or oil. Shot-blasting is the preferred method of mechanically profiling and preparing the concrete subfloor for the application of Powerhold 650 NE Patch Plus.
16. 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.
  17. Do not overwater or over mix.
  18. Do not add any chemical additives or polymers to Powerhold 650 NE Patch Plus.
  19. Do not use wet curing or curing compounds. Existing curing compounds on concrete surfaces must be removed. Shot-blasting is the only recommended method of removal.
  20. Do not mix with other cementitious products or self-leveling materials.
  21. 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.

**Product Data**

**Mixing Ratio:** 25 lb. bag Powerhold 650 NE Patch Plus to 3.5 – 4.0 quarts (3.3 – 3.8 liters) of water (3 parts Powerhold 650 NE Patch Plus to 1 part water by weight)

**Approximate Coverage:** 56 – 78 sq. ft./bag at 1/16 in. thickness  
 28 – 39 sq. ft./bag at 1/8 in. thickness  
 14 – 19.5 sq. ft./bag at 1/4 in. thickness

**Approximate Working Time:** 10 – 20 minutes (70°F/50%RH)

**Approximate Final Set:** 60 – 90 minutes (depending on floor patch thickness and drying conditions)

**Approximate Walkable (light foot traffic):** 60 minutes (after set)

**Thickness Range:** Featheredge to ½ in. thick

**Packaging:** 25 lb. multiwall paper bags

**Storage**

Powerhold 650 NE Patch Plus 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. Protect unused material by removing air from bag and sealing tightly. Remove damaged or deteriorated materials from the job site. Powerhold 650 NE Patch Plus has a shelf life of 6 months from the manufactured date.

**Cleanup**

Clean tools with water immediately after use and before Powerhold 650 NE Patch Plus dries.

**Submittal Approvals**

Job Name	
Contractor	Date

**Product Information**  
 See powerhold.com for the most up-to-date product information.  
**DANGER**  
 Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause cancer by inhalation of respirable crystalline silica. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Use only in a well-ventilated area, wear a NIOSH/MSHA-approved respirator. Wear protective gloves/protective

clothing/eye protection. If swallowed, inhaled, or skin irritation occurs, get medical attention. If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses and continue rinsing. Wash contaminated clothing before reuse. Dispose of in accordance with local, state, and federal regulations. Product safety information: 800 507.8899 or usg.com.  
**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 MSDS and literature before specification and installation.



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