Where the chalky, white haze comes from

Efflorescence is a crystallization of minerals that can occasionally form on the surface of Portland-cement grouts, such as Keracolor™ S and Keracolor U.

The term “efflorescence” comes from the Latin word *efflorescere*, meaning “to blossom out,” because salt crystals are carried upward to the grout surface via evaporation. Efflorescence typically occurs when moisture carries a Portland cement’s soluble salts to the top of the grout joint. As the moisture evaporates, it can leave behind salt deposits, which give the appearance of a chalky, white haze. The darker the color of the grout, the more noticeable the efflorescence will be.

Three conditions must exist before efflorescence can occur. First, soluble salts must be present. Second, an installation area must contain enough moisture to render the salts soluble. Third, the soluble salts must have a path for the moisture to rise to the surface, where evaporation deposits the salts and allows them to crystallize.

10 possible causes of grout efflorescence

1. **Too much water was used when grout was mixed.** A common mistake is to add water to the grout until a preferred consistency is obtained. Instead, follow the mixing ratio of water to grout for *Keracolor U* or *Keracolor S*.

2. **Tile was grouted too soon after installation.** When construction schedules run behind, installers are pushed to install grout as soon as tile is firmly set, even if the setting material is still wet or moist.

3. **The concrete slab was not fully cured or had a moisture vapor issue.** During fast-track construction projects, installers are rarely given the directions regarding the drying time required before grouting. For fast-track grouting installations, use MAPEI’s Ultratex™ RS, Ultracontact™ RS, Ultratex LFT™ Rapid or Granirapid® mortar.

4. **Water used in mixing or cleaning the grout was high in chlorine or had high mineral content.** Well water, pond water, home water softeners and city water that is heavily chlorinated or has high mineral content can contribute to efflorescence.

5. **Temperatures were too cold while the grout was curing.** When the weather turns cold during exterior installations, the curing process is slowed and grout retains moisture for a longer period. New construction is typically at the mercy of the temperature outside, and even existing structures are sometimes left unheated during remodeling periods.

6. **The sponge was too wet when used to clean the grout from the surface of the tile.** Many times, sponges are not wrung out properly after they are rinsed.

7. **Grout joints were wiped excessively during initial cleanup.** When tile has a rough glaze, porous surface or deep depressions in the surface, grout cleanup can become difficult. The tendency is to overwash the tile in trying to remove as much grout residue as possible before it hardens.

8. **Standing water was left in empty grout joints before grouting.** A common industry recommendation is to moisten the tile surface with a wet sponge before grouting. Sometimes, an excessive amount of water is used during this process, and empty grout joints are filled up with water.

9. **Tile is especially dense and nonporous.** Unlike ceramic tile, which naturally absorbs moisture, porcelain tile will not absorb moisture from setting material or grout. This causes mortar and grout to retain moisture for a longer period of time, extending the curing times. This is especially true with installations of large-format porcelain tile.

10. **Grout was prematurely exposed to heavy amounts of water.** Because weather forecasts are not always perfect, unexpected rain can be a problem with exterior installations. During hot summer months, pools are often filled too soon after pool tile is repaired and grouted. And impatient homeowners often can’t resist wet-mopping their new floor before grout has a chance to cure.

Ways to help prevent grout efflorescence

- Mix entire bags of grout at once. Avoid mixing small amounts or partial bags. Use an accurate measuring container to ensure precise amount of water is used, as indicated on bag.

- Under normal conditions, tile set with a traditional Portland-cement-based thin-set or mastic requires about 24 hours of drying time before grouting, even if the tile is tightly bonded. Cooler temperatures will require longer drying times. Always follow the thin-set manufacturer’s directions regarding the drying time required before grouting. For fast-track grouting installations, use MAPEI’s Ultratex™ RS, Ultracontact™ RS, Ultratex LFT™ Rapid or Granirapid® mortar.

- Perform calcium chloride tests or relative-humidity moisture probe tests to ensure that concrete slabs are ready to receive tile installations. When needed, use moisture-reduction barriers such as MAPEI’s Planiseal™ EMB, Planiseal VS or Planiseal VS Fast over concrete slabs.

- When the water source has high mineral content or is high in chlorine, use bottled water for mixing and cleaning.

- Cement grout cures properly at 73°F (23°C) with 50% relative humidity. Do not install grout at temperatures below 50°F (10°C). Plan exterior installations during warm-weather seasons when temperatures will remain above 50°F (10°C) until grout is fully cured.

- Wring out sponges well before wiping grouted areas. A sponge that is too wet will cause the grout joints to become saturated during the initial cleanup. Be careful not to leave standing water behind.

- When a finger can touch the grout joints without the transfer of grout, the tile and grout are ready to be cleaned. Avoid cleaning too soon.

- When cleaning or moistening the tile surface before grouting, avoid...
drenching the joints and leaving water behind, which may not evaporate before grouting begins. Use damp sponges instead of wet mops to moisten or clean the tile surface before grouting. Ensure that all joint areas are free of water and are dry before grouting.

- When grouting heavily pitted tiles, use a grout bag and, as much as possible, avoid getting grout on the tile surface. When grouting unglazed, rough-finish or textured tiles, use a grout release agent or sealer to make cleanup easier and reduce the number of passes needed with a sponge.
- When installing large-format porcelain tile, allow extra drying time before grouting.
- Avoid washing the floor or running the shower for at least 48 hours after grouting. For steam showers, allow 14 days of curing time. Protect grout from rain for at least 72 hours. Do not submerge grout for 21 days. Use MAPEI’s Ultracolor® Plus grout when a fast-track installation is needed.

**How to clean/remove efflorescence from grout**

- Allow grout to cure for at least 72 hours.
- In mild cases of efflorescence, moisten the grout with clean water and try scrubbing the efflorescence using a clean stiff nylon brush and/or a clean white nylon scrub pad. After the surface dries, buff it with a clean towel. Avoid soaking the area with excessive amounts of water. This cleaning process will remove the powdery salt residue from the surface of the grout.
- In moderate cases of efflorescence, using a grout haze remover such as MAPEI’s UltraCare™ Cement Grout Haze Remover may aid in the removal of salt crystals. Follow the instructions for applying the grout haze remover, and then scrub the efflorescence using a clean stiff nylon brush and/or a clean white nylon scrub pad.
- Severe cases of efflorescence may require the use of a mineral-acid- or sulfamic-acid-based heavy-duty tile and grout cleaner such as MAPEI’s UltraCare Acidic Tile & Grout Cleaner or MAPEI’s sulfamic acid crystals. Follow the instructions for applying the heavy-duty cleaner and then scrub the efflorescence using a clean stiff nylon brush and/or a clean white nylon scrub pad. Neutralize the area well by rinsing and scrubbing with cool, clean water. Never use acid-based cleaners on natural stone. Note: If a sealer will be used with MAPEI’s Keracolor S or Keracolor U cementitious grout, do not apply the sealer until all efflorescence has been removed and the grout is completely dry.

For the most current installation instructions, Technical Data Sheets and Safety Data Sheets, always refer to MAPEI’s Website at www.mapei.com. For additional information, please contact MAPEI’s Technical Services Department.