



TECHNICAL BRIEF | #2010-001

Hail Damage is Not Indicative of a “Manufacturer’s Defect”

A few insurance companies/claim managers have reported that corners broken at the lower right hand are due to product defect. Roof tile breakage at the overlock section is typically caused by numerous other factors as listed below and not attributable to a defect in the roof tiles.

Broken roof tiles are only deemed defective when broken prior to curing the concrete or clay during the manufacturing process. These type of cracks or breaks are easily distinguished from breaks or cracks made after the tile has cured (fired for clay). In what are often called “wet” breaks before the tiles are cured (fired for clay), the clay, aggregate or sand in the mix will not be fractured as it will in a broken cured tile. Once the product is cured (fired for clay), it is a finished product that is tested to meet all applicable codes. Any tiles that are broken during the manufacturing process are rejected at the manufacturing facility. Any tiles that break subsequent to curing are due to mishandling, improper installation, misuse, improper foot traffic or severe impact or force.

Severe impacts or forces, such as a tree branch or a heavy tool dropped onto a roof, can crack or break roof tiles. While roof tiles are designed to perform well in hail regions, they may be damaged in severe hail storms producing hail stones larger than 2” in diameter. Roof tiles are tested in the range of a 1” to 2” simulated impact testing in accordance with the FM 4473 Impact Testing Standard. Roof tile products of each manufacturer that are tested are then rated in classes ranging from 1 to 4 based on their performance per the FM 4473 Impact Testing Standard.

Upon field evaluation by our industry technical personnel, the damage in question in nearly all cases has been caused not by a defect of the roof tile, but by mishandling, improper installation, misuse, improper foot traffic or severe impact or force.

All tiles must pass code-required testing prior tile installation, insuring the tiles will perform in accordance with the code requirements in that particular jurisdiction. Identifying the specific cause of the tile breakage is often not accurately determined with the limited field data available when a claims manager does a quick visual site visit.

Concrete and clay roofing tiles have a long history (over centuries) of successful tile installations in all continents of the world. These installations are testimonials to the long-term performance of clay and concrete roof tiles and demonstrate that when installed properly, they will perform in any climate.

Many roofing tiles are designed with a longitudinal interlock to allow proper water shedding in order to match the current surface elevation. The high kinetic energy of the hail impact on the lower corner of the roof tile can cause a point load break or crack at the over lock corners.

This is not a manufacturing defect of the product, but a point-loading impact that has occurred in a concentrated area. In field evaluation, the trained professional should be able to identify if the break is a fresh break that has occurred during the recent event, or if it was an older crack. Some signs may be aggregate fracture, dirt accumulation, aging of the exposed aggregate material, or presence of moss, algae or other growth.

For those tiles with an interlock, if the overlapping corner is broken, the under lap portion of the interlock may still be fully functional and continue to properly shed water off the roof if the break is smaller than 3". The under lock portion of the adjacent tile will carry water even if the cover lock corner is chipped or broken. Since the head lap of the installed tile is usually 3", any broken corner exceeding 3" along the interlock should be replaced. It is also advisable to replace tiles that have broken under locks.

So how do we deal with a broken tile?

- If the tile is cracked or broken across the face of the tile in either direction, it should be replaced.
- A profiled tile is a contoured or rolled profile tile that has distinct water courses to control and direct water flow. Flat tiles allow water to flow evenly across the face of the tile. Since the longitudinal interlocks are normally positioned near the high point of profile tiles, they will usually see less water than the interlock of a flat tile. Therefore, broken corners may be less critical on profile tiles than on flat tiles.
- If the cover lock corner is broken less than 3", and the broken piece is available, it may be possible to repair the corner with adhesive. When using an adhesive specifically formulated for concrete or clay roof tile, follow the manufacturer's instructions to form a complete bond along the fracture.
- Take precautions not to allow excess adhesive to bond to the adjacent tile or create water blockage in the under lock.
- If the corner piece is not available, aesthetics must be considered. A small chip that may not be noticeable on a shallow sloped roof may be offensive to the owner of a steeper slope. In any case, good judgment should dictate whether the missing corner affects the water-shedding ability of the tile.
- On some tile designs, such as shake profiles, the bottom edge of the tile may be distressed to create a more jagged or random appearance. This process will sometimes create small chips that should not affect the integrity of the installation, provided they meet the criteria mentioned above.

If there are any concerns or questions, a qualified roofing professional can help you address the proper repair procedures.

For more information on tile roofing, please visit our website at tileroofing.org or email info@tileroofing.org for specific inquiries.