

Crazing is defined as fine and random cracking extending only through the surface. It can appear along or perpendicular to the length, in polygonal shapes or as random “map cracking.” Crazing is due to differential contraction between the surface and interior sections and many different views have been made as to the cause and elimination of crazing. Crazing has no structural or durability significance and does not by itself constitute a cause for rejection, according to ASTM C 1364 Standard Specification for Architectural Cast Stone.

All concrete products and many natural stones, under varying conditions of moisture and temperature, are frequently subject to crazing. A manufacturer careful in proportioning of designs and watchful of compaction techniques and curing methods will minimize the likelihood of crazing as a result of manufacturing causes.

Crazing has been a subject of concern for producers of concrete products for as many years as concrete has been in existence. The appearance of small cracks on the surface, especially when filled with dirt, can be alarming since most people will assume that the product has failed, thinking that the fissures are running through the entire cross section.

Crazing can be caused by any factor, which causes surface tension in excess of interior tension. Manufacturing causes include inadequate or improper curing, a surface film richer in cement and fines than the body of the concrete and plastic shrinkage cracking. Crazing can also be caused by design and installation factors which cause unusually high amounts of vapor transmission, excessive wetting and drying or inadequate ventilation behind the Cast Stone. There is some evidence that atmospheric carbonization can cause crazing.

Common installation problems which can cause or enhance crazing include the use of through-wall flashing without adequate drainage or masonry bond, lack of sufficient weep holes, use of Cast Stone without ventilated wythe, use of Cast Stone below grade or at planter type areas without proper moisture barrier, failure of joint materials which allow water entry, the use of hard mortar joints where sealant joints should be used and lack of sufficient allowance for movement via control joints.

Since crazing is only on the surface, the visual attributes can usually be removed by washing the affected areas with a mild acid solution. Severe cases of crazing may require application of a siloxane sealer, following etching, to penetrate the cracks and to keep dirt from settling into the surface.

Manufacturers of Cast Stone who experience crazing should review their mix designs, as well as compaction and curing techniques with the Institute and pay particular attention to the design and installation details, which can cause crazing, during the shop drawing submission process.

Design professionals should ensure that the wall section details provide adequate ventilation and drainage behind Cast Stone and above flashing. Sealant joints should be used in accordance with CSI specifications and wherever thermal movement is likely. ♦