

CRACKS IN PLASTER – AND WHAT CAUSES IT

A large percentage of queries received by the Cement & Concrete Institute deals with defects in plastering. Here C&CI describes the types of cracks often encountered in plaster – and their causes.

Non-structural cracks:

Crazing is a network of fine cracks, usually in a hexagonal pattern, which measure between 5 and 75mm across each hexagon. The cracks are usually very shallow and do not extend through the whole depth of the plaster.

These cracks usually result from over-trowelling a rich mix (one with a high cement content) or using a sand containing an excessive amount of dust. Crazing often occurs within a few hours of the plaster being applied to the wall and cracks may hardly be visible until dust or moisture makes them noticeable.

Craze cracks are of little important, do not open and close with time, and can be covered using a reasonable quality paint. If necessary, glass fibre tissue can be applied during the painting operation.

Map cracking is similar to crazing except that it is usually deeper (sometimes going through the plaster) and the hexagons of the pattern may measure up to 200mm across. These cracks normally occur when a plaster mix with a high cement content is used or the plaster is allowed to dry too quickly.

Causes of excessive early moisture loss are:

- Evaporation if the wall is not protected from sun and wind;
- Suction into the walls if the bricks are absorbent and have not been dampened;
- Use of a sand that is badly graded and lacks fine material (less than 5% by mass passing the 0,075mm sieve); and
- Not using building lime or a masonry cement when the sand lacks fine material.

When the cracks are noticed while the plaster is still plastic, they are often floated closed, only to reappear some time later. These cracks can be filled with a proprietary filler and painted over. Glass fibre tissue can also be applied during painting.

Cracking that results when an excessive amount of water is lost from the plaster in the first hours after application is known as **plastic shrinkage cracking**. Map cracking can be due to plastic shrinkage as can the horizontal cracks that form at corners and between windows.

Drying shrinkage cracks are the result of moisture loss after the plaster has hardened. Plaster will always shrink and crack so it is desirable that it should develop a large number of fine, unnoticeable cracks at close spacings. Plaster with very high cement contents and those that are made with poor quality sands, having a high water requirement, will tend to develop a few, widely spaced cracks. Plaster applied in layers that are too thick will also crack in this way. These cracks are normally stable and can be filled with a filler and painted over.

Structural cracks:

Some cracks visible in the plaster may result from cracking of the wall. This can be caused by differential movement of the foundations, moisture expansion or drying shrinkage of masonry units, or thermal movement of the roof. This type of crack often forms in straight vertical or horizontal lines, or in stepped diagonal lines, and may be quite unsightly. The crack width will often vary with the seasons.

Because these cracks originate in the wall and not the plaster, repairing the plaster is ineffective. A specialist should be called in to establish the cause of the cracking and to recommend remedial measures.

Such measures may include structural alterations that change cracks into movement joints. Visible joints can be hidden by cover strips fixed on one side of the joint or sealed with elastomeric sealants.

Note: For more information and details of C&CI publications available on plastering, visit www.cnci.org.za or telephone 011-315-0300

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Caption: Structural cracking – more than just plaster repair is called for in such in such a case .

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