

Render Troubleshooting

This Guide provides some remedies for the most common problems encountered with render finishing systems.

It should be remembered that most render systems are designed for use as a decorative finishes. Where special performance outcomes are required of the render, like high inter-laminar bond strength to cope with exceptional surface loadings or possible structural movement, it is critical that the potential use be discussed with the manufacturer prior to application.



Poor adhesion between initial render coat and substrate surface

Possible cause	Background	Remedy
1. Surface of substrate contaminated by dust, oils and or other bond breakers.	Can be a major issue with any worksite where there are high dust levels, but also with substrates that tend to exhibit laitance (dust forming on the surface) like new concrete.-	If small areas then remove loose render back to sound render, clean substrate surface to remove contamination, apply bonding agent base coat (polymer render, patch or render mixed with 1:4 bond ratio to substrate), allow base coat to dry then fill with render coat. Entire wall may require re skimming. If large areas then best to remove all render, clean substrate surface to remove all contamination, apply bonding agent base coat and then re render.
2. Highly porous substrate.	If the surfaces of such substrates (AAC, FC, some calcil bricks, etc.) have not been properly prepared then rapid dewatering of the render will result in very low bond strengths.	If small areas then remove loose render back to sound render, clean substrate surface to remove contamination, apply bonding agent base coat (polymer render, patch or render mixed with 1:4 bond ratio to substrate), allow base coat to dry then fill with render coat. Entire wall may require re skimming. If large areas then best to remove all render, clean substrate surface to remove all contamination, apply bonding agent base coat and then re render.
3. Excessive thickness of render.	Applying the base coat of render above recommended thickness can result in bond failure	Remove loose render, apply bonding agent base coat and re render at recommended thickness per coat.
4. Extremely low porosity of substrate.	If the surfaces of such substrates (glazed bricks, some clay fired bricks, painted substrates, etc.) have not been properly prepared then the render cannot form strong chemical and physical bonds to the surface.	If small areas then remove loose render back to sound render, clean substrate surface to remove remaining loose render, apply bonding agent base coat (polymer render, patch or render mixed with 1:4 bond ratio to substrate) or suitable spatterdash coat, allow base coat to dry then fill with render coat. Entire wall may require re skimming. If large area; remove all render, clean substrate surface to remove all contamination, apply bonding agent or suitable spatterdash base coat and then re render.
5. Final finish over render too heavy for render.	Can occur when very large tiles applied over normal render	Remove all final finish and repair damage as for 1. (above), then refinish with lighter material. Alternatively remove all finish / render and re render with 'engineered render' designed to accept the weight of the finish.

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6. Thermal and / or moisture movement of final finishing system above design limits of the render.	The movement characteristics of some tiles, membrane coatings and panels (adhesive fixed to render) can cause the render coat to be pulled from the substrate.	Remove all final finish and repair damaged areas as for 1. (above), then refinish with a surface finish with movement characteristics more compatible with the render. Alternatively remove all finish and render and then re render with 'engineered render' designed to move with the final finish.
7. Flexing substrate.	Can be an issue with thin section walling systems like FC, plasterboard, vinyl, etc. Any flexing of the substrate as the render is curing may result in failure of the render to develop the required bond strength.	Remove all render and eliminate the reasons for the flexing before re rendering. Alternatively, remove the render and replacing it with a flexible finish system.
7. Hydraulic pressure.	Ground water and or mains water seeping through the substrate (from the back face to the front face) can force the render off the substrate.	Remove loose render. Identify the reason for the seepage / saturation and correct the problem as necessary. Clean the substrate after it has completely dried and re render as appropriate.
8. Sulphate attack of render.	Salts contained in ground and or atmospheric moisture can penetrate the render and reduce the strength the cement in the render	Remove loose render. Identify the reason for the salt attack and correct the problem as necessary. Clean the substrate after it has completely dried and re render as appropriate. If the cause of the sulphate attack is atmospheric borne moisture then the finish should be coated with a water resistant membrane to reduce the ingress of moisture to the render.

Poor adhesion between subsequent render coats

Possible cause	Background	Remedy
1. Insufficient curing of base coat – too much moisture remaining in base coat.	If the base coat has not had sufficient time to fully cure before subsequent coats are applied then low bond strengths may occur at the junction between the two coats.	Remove render back to a sound surface and then re render.
2. Contamination of base coat surface.	If the base coat becomes covered in dust or other bond inhibiting material before the application of the next coat it can cause delamination.	Remove render back to a sound surface and then remove the cause of the contamination. Apply a bonding agent base coat (polymer render, patch or render mixed with 1:4 bond ratio) and re render.
3. Subsequent coats applied too thinly.	Thin coats may not have the mass to allow for the curing mechanisms to enable the development of full inter laminar and internal strengths.	Remove render back to a sound surface and then after eliminating any dust and or friable material apply a suitable finishing coat in accordance with manufacturers' recommendation.

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Crazing of render

Possible cause	Background	Remedy
1. Insufficient curing of render coats before application of finish.	The finish coat tends to inhibit even drying resulting and curing.	Remove finish and allow render to fully cure. If render is still adhered to substrate then apply a new base coat over the existing render and finish as normal.
2. Laitance due to overworking of final render coat	The fines in the final coat are removed from the body of the render causing surface crazing.	Remove final coat, ensure adequate key coat and re render.
3. Flexing of substrate	Can be an issue with thin section walling systems like FC, plasterboard, vinyl, etc. Any flexing of the substrate as the render is curing may result in failure of the render to develop the required internal bond strength.	Remove all render and eliminate the reasons for the flexing before re rendering. Alternatively, remove the render and replacing it with a flexible finish system.
4. Rapid drying or prolonged curing of render.	Extremes of weather may cause differential drying rates which can lead to craze cracking.	Remove render back to a sound surface and then after eliminating any dust and or friable material re render in accordance with manufacturers' recommendations.

Pronounced cracking of render

Possible cause	Background	Remedy
1. Shrinkage and or expansion of substrate.	Can be a problem in thin section substrates (eg: FC) and composite panel systems (eg: concrete filled systems) where movements are too great for the render.	Remove all render and install suitable control joints in the walling system before re rendering, ensuring that render is not applied over the control joints. See notes on render finishes and structural / building material cracking at end of the document.
2. Flexing of substrate	Can be an issue with thin section walling systems like FC, plasterboard, vinyl, etc. Any flexing of the substrate during and or after curing may result in cracking through the render thickness.	Remove all render and eliminate the reasons for the flexing before re rendering. Alternatively, remove the render and replacing it with a flexible finish system.
3. Structural movement	Any structural movement that is sufficient to cause cracking of the substrate and or cracking at control joints will also case the render to crack.	Seek advice of the building Designer / Engineer on rectification.

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Efflorescence on surface

Possible cause	Background	Remedy
4. Curing process of the render and deposits resulting from ground and or atmospheric borne water.	<p>Some lime staining can occur during curing as the free moisture migrates to the surface of the render.</p> <p>Staining on the surface can also occur as a result of water borne salts evaporating on the render face.</p>	<p>In the case of ground water borne staining prevent the ingress of moisture to the render. Allow the render to dry before removing the surface lime / salt deposits and re applying the finish coat if necessary.</p> <p>If the cause of the efflorescence is atmospheric borne moisture then the finish should be allowed to fully dry before the staining is removed and the render recoated if necessary with a water resistant membrane to improve the self cleansing ability of the system.</p>

Render Finishes and Structural / Building Material Cracking

Movement of construction elements in buildings is commonplace (causes include foundation settlement, seismic displacement and the behaviour of materials in relation to changes in temperature or moisture content). These movements usually result in visible cracking of the building claddings / linings (as well as other potentially more damaging modes of failure).

Sound building design and construction methods recognise the likelihood of structural and material movements and allow for them to be managed through the placement of control joints (often also called expansion joints) and the use of design features that hide or may even highlight these control joints or the areas where cracking is likely to occur.

Any building movement that results in visible cracking of the building claddings / linings will also be sufficient to cause cracking of the decorative finish – this is the case for both potential new and pre-existing building movement cracking.

Decorative render systems will not hide cracking caused by structural movement and / or shrinkage / expansion of substrates caused by temperature and moisture associated movement.

The information contained in this guide is typical and does not constitute a full specification, as conditions and specific requirements will vary from project to project. All purchasers and intending users of any of the products covered in this document must, prior to use, assess and control the risks arising from use of the products, as they relate to their project.

The causes of render failure can be complex and it is recommended that any reader of this guide should seek professional advice that is specific to the conditions applying to the project under review.