

TECHNICAL INFORMATION SHEET

The importance of creating a good depth of render - permeability

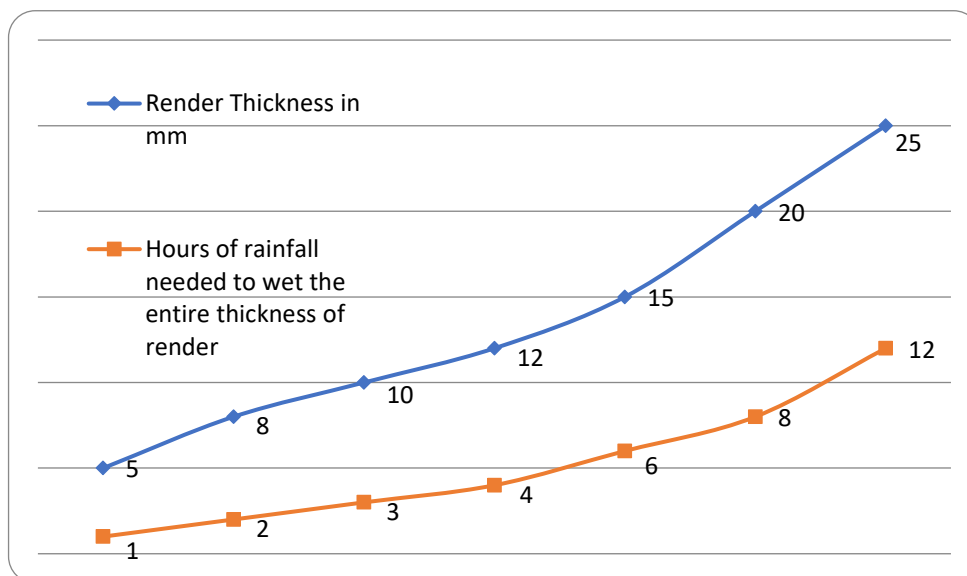
The roles of the facade render

- **Protection:**
In technical terms the render must 'weatherproof' and not 'waterproof' the walls. Weatherproofing the walls allows them to breathe by letting water vapour move from the inside to the outside of the structure, but stops the outside weather, namely rain, from forcing its way into the structure. A 'waterproof' render is required for swimming pools as the water is required to be retained.
- **Decoration:**
With its finish and colour, the render should add a pleasing aspect to the building, whilst correcting faults in line and level in the masonry.

Decorative finishes are created and enhanced by the applicators skill and ability and is a good reason to choose a specialist accredited applicator.

The importance of the render's thickness

- When it rains, the facade darkens because rainwater wets the render's surface. When there is heavy rainfall together with a driving a wind, the water may reach the masonry substrate if;
 - A poor-quality render is used – Specific waterproofing polymers enhance the performance of renders.
 - There is insufficient thickness applied.
- The thicker the render, the longer the water will take to reach the substrate.
- Render thickness, quality of render and good polymer content, slows down the rain's penetration into the wall. This also depends on the time that the render is exposed to the wind driven rain.



The chart above indicates that the thicker a good quality render the longer it will take for the render to reach the surface of the masonry. The worst-case scenario shown is related to wind driven rain which is rain hitting the wall surface, which is also being forced against the surface by the wind.

E.g. for a wind driven rain against the render, it will take approximately:

- **Twice as long** to cross 8mm of render than 6mm - e.g. from 1 hour to 2 hours
- **3 times as long** to cross 10mm of render than 6mm - e.g. from 1 hour to 3 hours
- **4 times as long** to cross 12mm of render than 6mm - e.g. from 1 hour to 4 hours
- **5 times as long** to cross 14mm of render than 6mm - e.g. from 1 hour to 5 hours
- **6 times as long** to cross 16mm of render than 6mm - e.g. from 1 hour to 6 hours
- **7 times as long** to cross 18mm of render than 6mm - e.g. from 1 hour to 7 hours

However, this fact will also be slanted when using highly modified renders such as those used with insulated render systems. The Parex base coat render used with our insulated systems is heavily polymerised providing high ductility and allowing a much thinner application but again the same principle applies that this should be thicker for highly exposed applications.

Based upon these facts, it is clear that a standard 15mm render thickness applied directly to masonry, using a modern factory produced polymer modified render such as Parex **Monorex GM***, **Monorex GF***, **Blanc du Littoral***, **Monodecor***, **Monoblanco***, **Parmurex***, **Monogris E*** etc. will withstand a prolonged 'continuous' rainfall of 5 hours before it is likely to penetrate through to the surface of the masonry. On a good masonry substrate, it then has a further 100mm to penetrate before even reaching the cavity or on a solid wall the masonry substrate is generally a minimum of 250mm thick which provides even higher resistance to penetration. However, the weak point will generally be the detailing around openings or poor workmanship. Good detailing can be provided and Parex is able to assist and good site monitoring will ensure a good application is achieved.

What thickness?

- Renders prepared on the worksite using standard sand and cement is applied in several layers and must be at least 20 to 25mm thick. This is 'physical waterproofing'. The capability of the render is very dependent upon the quality of the sands used, the design mix and is heavily reliant on good mixing techniques by the applicator – Poor mixing ratios is often the reason traditional renders fail.
- One-coat render mortar-based systems e.g. **Monorex GM**, **Monorex GF***, **Blanc du Littoral***, **Monodecor***, **Monoblanco*** etc, that are ready to use factory produced renders, contain high quality raw materials and a range of admixtures (notably water repellents) which reinforce the waterproofing properties of the renders. This is called 'physio-chemical' waterproofing and is using both physics and chemistry technology to enhance the property of the renders.
- One coat render must be **at least 12mm thick at all points**, the average thickness Parex specifies is 15mm and it is recommended this is the minimum adhered to. When additional thickness is required, the maximum application thickness that should be applied in one layer is 20mm. For conditions where it may be necessary to exceed this depth, will depend on the condition and type of substrate and the site location; in this case, the application should be carried out in more than 1 layer with at least 48 hours between each application. The total thickness should not exceed 40mm, without additional measures being followed – Contact Parex for guidance.
- Parex one coat renders can achieve the highest rating when applied to a finished thickness of 15mm but the maximum being allowed by the BBA under their certification system will achieve the

British Standard Wind Driven Rain Index rating up to and including 'Severe'. For Further information relating to this please refer to our Technical Information Sheet – Wind Driven Rain Index.

- Parex insulated render systems have achieved full ETA certifications with a range of render finishes but using one standard highly polymerised base coat called Maite. The standard thickness application of the base coat is 3-4mm but for highly exposed applications we recommend this is applied thicker at 5-6mm.
- There are four ratings under the British Standard Wind Driven Rain Index and these are;
Sheltered, Moderate, Severe and Very Severe.
- Because there is no test criteria available to test to, when a 'Very Severe' rating (normally found in the South West England, West Wales, West Scotland and certain other west coast and southern locations) is required, Parex recommend increasing the render thickness to 20mm for direct one coat render applications and 5-6mm for EWI base coat applications and if within 1 mile of the South West coast we also advise applying an additional water repellent protection of Paraguard.

Note: adding water repellent into the mix on the worksite serves no purpose, should not be done and may even be harmful to one-coat render systems as it can lead to faults in the finish.

What coverage is achieved?

- This depends on the density of the render used (and thickness applied) and is measured after drying of the product. The higher the density of the product, the higher the consumption. For example, for 10mm of render you will need 12kg/m² of product with a density of 1200kg/m³ and 17kg/m² of product with a density of 1700kg/m³. Density has no bearing on weatherproofing, but a higher density render has different shrinkage capabilities than a less dense render and if a high-density render is applied to a low-density surface, the render could crack the substrate.
- Consumptions indicated in the table below should be considered as minimal amounts which depend on the chosen finish.

For application purposes, 16 - 18mm is applied for a spray textured finish and 18mm finished to 15mm for a scraped finished.

Density of hardened render	Minimum consumption of powder in kg/m ²	
	Spray textured finish (Protection coat)	Scrape finish
Kg/m ³		
1200	17kg/m ²	19kg/m ²
1300	18kg/m ²	21kg/m ²
1400	19kg/m ²	22kg/m ²
1500	21kg/m ²	24kg/m ²
1600	22kg/m ²	25kg/m ²
1700	23kg/m ²	27kg/m ²
1800	24kg/m ²	28kg/m ²

These amounts also depend on the flatness of the masonry, the material used for the application (manually or mechanically) and observation of the recommended amounts and mixing.

Conclusion

A good render is first and foremost a good quality render and correct depth of cover for the application involved.

A good depth of cover is safer. It is the best way to prevent façade faults (infiltrations, masonry visible through render e.g. block ghosting effect, and ensures excellent weather-proofing is maintained.

A thinner highly polymerised render provides equal performance to a thicker applied one coat render

Additional support information

To assist designers and specifiers we also recommend that you refer to our other Technical Information Sheets for additional guidance and support

- Wind driven rain index
- Parex Facade Renders
- Mineral render advice – Finishes, water content

*Subject to the product used, always refer to the product data sheet for full guidance on temperature and application guidance.

For additional information, project specific specifications or other Technical Information Sheets, please visit our web site link http://www.parex.co.uk/Render_Systems/Technical_Information_Sheets_and_FAQs

Or contact;

Parex Ltd

Holly Lane Industrial Estate

Atherstone

CV9 2QZ

Tel: 01827 711755

www.parex.co.uk