

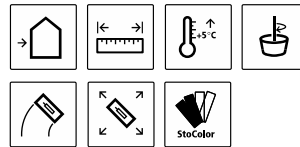
# Sto Specification New Zealand

## SS276M StoArmat Miral Render System over Rediwall Construction

### StoArmat Miral Render System

Over Rediwall PVC formwork for concrete construction  
Based on BRANZ Appraisal No. 515 and CCANZ CP 01:2022

**Sto Registration:** To register your project with Stoanz Ltd please email the completed specification to [info@sto.co.nz](mailto:info@sto.co.nz)



### 1. PROJECT DETAILS

**Specifier:**

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**Project & Address:**

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**Project Owner:**

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**Sto Warranty:** **StoArmat Render System 20-year Warranty with StoService Assurance**

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**StoArmat Miral Render System over Rediwall PVC permanent formwork for concrete construction**

This specification details the application of the **StoArmat Miral Render System** over Rediwall PVC permanent formwork incorporating: Preparation, **StoArmat Classic** notched trowel tie coat and **StoLevell Novo** basecoat with **Stoplex W** sealer as **required** to straighten the Rediwall formwork, **StoFlexyl waterproofing** on rebated openings, wall caps and foundations, **StoArmat Classic** meshed reinforcement render finished in the selected **Stolit coloured finishing render** and selected **StoColor facade paint** or **S-Protect SC clear sealer** on selected **Stolit MP or Milano finishes**.

The **StoArmat Miral Render System** is designed to cover off all aspects of the exterior weathertightness envelope including joinery openings, foundations, penetrations, parapets, and exterior construction elements.

**Select Finishing Render:**

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**Select Facade Coating:**

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**Sto Registration Number:**  
**(Sto Use Only)**

i.e 23.01\_StoReg tec\_sales\_SS256I\_project address

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**Project Notes:**

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### 2. CONSTRUCTION & DETAILING

#### 2.1 Responsibility

All work in this section shall be the responsibility of the Main Contractor, unless previously agreed in writing. Stoanz Limited accepts no responsibility for defective workmanship in relation to the application of the Sto system, or for defects in the design, construction, or condition of the building, either as built or in relation to the works.

The Main Contractor is to ensure that they are fully conversant with exterior legislation requirements, the project specifications and details, Rediwall formwork installation requirements, current Sto Specification and CAD details ([www.sto.co.nz](http://www.sto.co.nz)) and any work relating to the Main Contractor's responsibilities before any works commence. The Main Contractor is also responsible for the various subcontractors to ensure that all items relating to weathertightness, penetrations and dissimilar material junctions affecting the construction system are strictly in accordance with project specific details, manufacturer's instructions and any applicable Sto details i.e. items such as roofs, soffits, openings, lights and security fittings, electrical wiring, flashings, deck membranes, dissimilar junctions etc. that abut, flash or penetrate the system. The Main Contractor shall also ensure that all exterior licensed work is undertaken by LBP registered contractors and the joinery is installed in accordance with the project drawings, manufacturer's details and Sto CAD details.

A **Sto Quality Assurance Document** is to be filled out as a record of the work undertaken by the Sto Contractor and should be read in conjunction with the Rediwall installers QA.

#### 2.2 Rediwall Formwork

The Rediwall formwork installation including reinforcement and concrete infill shall be made in strict accordance with the project drawings, specifications and the Rediwall technical manual. The formwork shall be installed true in both vertical and horizontal planes with all joinery and service openings correctly formed and waterproofed in accordance with Sto details. Control joints must be installed as per the project's structural drawings or Rediwall formwork manufacturer's details to manage shrinkage and structural stress. It is recommended the ground floor slab to wall junction should be rebated to provide a water stop and interstorey floors should be poured inside the structure leaving the outer shell to continue to avoid cracking. The slump requirements for the concrete fill shall be observed to minimise the potential 'fluttering' of the Rediwall face. At least 28 days shall be allowed after concrete placement as per CCANZ CP 01:2014, for curing and stabilisation to take place before commencing the StoArmat Miral Render System. The exterior surface shall be clean, dry and free of all surface contaminants before commencing and the Main Contractor is to ensure that any areas or details adjacent to the Sto Render System have been adequately waterproofed or flashed to avoid any water migration behind the render system. Building tolerances should be within MBIE Guide to tolerances.

#### 2.3 Rediwall Formwork Construction

- A rebate is recommended in the concrete ground floor slab junction to form a weatherproof stop. Where a rebate is not provided, the exterior face of the wall shall be waterproofed across this junction.
- Joinery openings shall include rebates and a sloping sill.
- Vertical control joints are placed in accordance with the project structural drawings or manufacturer's documentation.
- Avoid adding water to batched concrete and ensure there is no impediment to concrete flow.
- Cells should be filled in accordance with manufacturer's recommendations and mechanically vibrated to avoid air voids and subsequent efflorescence.
- Remove any concrete slurry from the formwork faces before it sets.

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- Drying times vary according to thickness and weather. A minimum 28 days is required for settlement and curing.
- Formwork must be completely dry before commencing rendering.
- Where retaining walls occur around inhabited spaces, a 50-year certified waterproofing or tanking membrane is required. Garden retaining walls must be waterproofed against any back fill to avoid water migration damaging the finished render.
- Always waterproof formwork before installing any adjacent overlays or items such as concrete / timber staircases, abutting garden walls, attached structures, etc.
- Wall tops must be waterproofed with StoFlexyl meshed waterproofing.

### 2.4 Insulation

Thermal resistance requirements of the building envelope shall be determined using the Schedule or Calculation methods of NZBC Acceptable Solution H1/AS1 for all housing and buildings up to 300 m<sup>2</sup> and NZBC Acceptable Solution H1/AS2 for buildings greater than 300 m<sup>2</sup>, or the Modelling method in H1/VM1. The minimum construction R-value for walls that do not contain embedded heating elements is R2.0, and for heated walls is R2.9.

**Foundations:** Vertical edge insulation (where required) shall have an R -value of 1.0 m<sup>2</sup> K/W and shall be installed on all exterior vertical faces of the concrete slab / wall footings, extending from the outermost top edge of the slab down to bottom of wall footing.

**Rasped StoTherm XPS** sheets can be used for vertical edge insulation with 30 mm providing the required R1.0. Refer to the StoTherm Masonry Foundation Specification for insulated foundation options.

### 2.5 Soffits

Soffits are normally fixed before the rendering commences with a 6-8 mm finishing bead of compatible MS Sealant applied after the mesh coat. The main contractor is to ensure any weatherproofing required on the wall behind the soffits or adjacent surfaces is carried out before the soffits are installed.

### 2.6 Control of External Fire

The specified Sto renders have been tested to EN 13501-1 and have achieved an A2-s1, d0 rating.

## 3. SURFACE PREPARATION

### 3.1 Responsibility

All work in this section shall be the responsibility of the **Main Contractor** or his sub-contractors with the **Sto Contractor** responsible for the Sto detailing unless otherwise expressly agreed.

### 3.2 Aluminium joinery

All joinery shall be fixed over **StoFlexyl waterproofing** allowing for a 5 mm offset from the face of concrete rebates leaving a 5 mm gap at the sill prior to render application.

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Before fixing joinery, fill any holes in the rebates and use correctly mixed **StoFlexyl** (drill mix 1:1 with fresh cement) to waterproof the rebates. Brushed on in two coats to the head, jamb and **internal rebate** of the blocks, including the rebate step, while the **exterior sills** are to be **StoFlexyl meshed** with the mesh taken 40 mm up the jambs.

Sealing the joinery perimeter with MS sealant at the head and jambs after the mesh coat then forms the primary seal while the **sill** is left open with a 5 mm drainage gap. To complete the waterproofing process, **air seals** are required to be installed around all interior joinery to rebate openings.

(Note: Timber joinery is also fixed over StoFlexyl. Refer to Sto CAD details for flashing requirements.)

To create a rebate on square / flat concrete reveals, install fibre cement sheet packers (e.g. James Hardie Axent Trim supplied 2.6 m long x 84 mm wide x 19 mm thick) adhered with 8 mm of Adhesive Mortar. Allow to set and mechanically fix with masonry fixings around the reveal before applying the **StoFlexyl meshed waterproofing**.

**Note:** StoFlexyl meshed waterproofing has been tested by BRANZ to AS/NZS 4858. **Air seals and sealant work (primer is required where the sealant contacts StoFlexyl) is the responsibility of the window installer.**

### 3.3 Sealant

All sealant junctions between the render and adjacent surfaces or dissimilar materials shall be jointed with compatible **MS Sealant** applied in accordance with the manufacturer's Technical Data Sheets.

**Note:** **StoFlexyl waterproofing** requires a **sealant primer** for adhesion and some manufacturers require primers for PVC or porous substrates.

### 3.4 Detailing

All details must be in accordance with the project drawings or Sto rendering details available from [www.sto.co.nz](http://www.sto.co.nz).

### 3.5 Penetrations

Penetrations such as waste pipes and fixtures shall be adequately flashed and waterproofed prior to the render installation. Any electrical wiring that penetrates the render shall be encased in an appropriately sized uPVC conduit installed at a minimum 5° downwards rake.

**Note:** All penetrations through the render must be adequately sealed with MS Sealant applied as a minimum 6 mm sealant bead using PEF backing rod or Sto joint seal tape.

### 3.6 Architectural Profiles and Shapes

Architectural shapes used to create decorative detailing shall be correctly cut to size and fitted using **StoFlexyl adhesive** notch towelled to the back of the shape prior to placing. As required, construction fixings are used to mechanically fix large or heavy shapes, but care is required to avoid distortion. Joints are butted together using **StoFlexyl** and any control joints must be mirrored through the profile. Profiles shall be pre-meshed or receive a **Sto Render** mesh coat and are placed after the wall reinforcement mesh coat with the perimeter edge meshed onto the wall.

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### 4. STOARMAT MIRAL RENDER SYSTEM

#### 4.1 Responsibility

All work in this section shall be the responsibility of the **Sto Contractor** who shall ensure that the surfaces are acceptable before commencing and that adequate protection of all dissimilar materials and adjacent surfaces has been undertaken.

#### 4.2 Selection

The **StoArmat Miral Render System** shall be carried out in stages incorporating preparation, **StoArmat Classic** notched trowel tie coat and **StoLevell Novo** basecoat with **Stoplex W** sealer as required to straighten the formwork, **StoFlexyl** waterproofing, **StoArmat Classic** meshed reinforcement render finished in the **selected Stolit K, MP or Milano** coloured finishing render coated in the **selected StoColor** façade paint or sealed with **S-Protect SC stay clean** for **Stolit MP**, or **Milano** render.

#### 4.3 Materials

Stoanz supplies the following materials:

<b>StoLevell Novo basecoat render</b>	<b>Stoplex W sealer</b>
<b>StoArmat Classic meshed reinforcement render and adhesion coat</b>	<b>Selected Stolit coloured finishing render</b>
<b>Selected StoColor facade paint or S-Protect SC stay clean on MP or Milano finishes</b>	<b>StoFlexyl meshed waterproofing</b>
<b>Accessories: Sto fibreglass reinforcing mesh, MS Sealant and Sto Joint Seal Tape</b>	<b>Sto uPVC pre-meshed corner angles, finishing edges and drip edges.</b>

#### 4.4 Control Joints

All control joints in the Rediwall walls, as designated by the project drawings, must be expressed through the render system.

Control joints must be installed in the **mesh** coat using the **Sto uPVC Control Joints** ensuring the mesh coat does not overlay the V joint. Once set, remove the cleaning tab and sealant fill the V joint with a compatible exterior MS sealant and primer as required by the sealant manufacturer. Alternatively, sealant joint junctions before applying two coats of the façade paint to V joint for a negative detail.

#### 4.5 Basecoat Render (as required to straighten formwork)

Deviations between 3-4 mm can be straightened with a StoArmat basecoat. Where the required amount of levelling is outside of these limits, the process outlined below shall be followed.

To clean, dry, Rediwall formwork containing cured concrete, apply a notched trowel coat of **StoArmat Classic** as an adhesion tie coat and leave to dry. Once completely dry apply one straightening coat of **StoLevell Novo** render by hawk and trowel or pump at an approximate thickness of 6-8 mm to straighten the formwork (minimum 5 mm, maximum 15 mm in one application) before screeding the surface with an h rule to achieve an even straight surface free of hollows

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and deviations. Allow to set and remove any ridges or bumps in the basecoat with a Sto feathered straight edge or Grid Plane. All application procedures for the **StoLevell Novo** must be in accordance with the Sto Technical Data Sheets.

The main contractor is to be advised of any walls that require a written variation for building out with additional coats to achieve a level surface. For thicknesses of 8-20 mm use LevelLite basecoat.

### 4.6 Stoplex W Sealer

To clean, dry, **StoLevell Novo** basecoat render that has dried and been rasped flat, apply one full coat of **Stoplex W sealer** by brush and roller at approximately 8 m<sup>2</sup> per litre.

### 4.7 StoFlexyl Waterproofing - Parapets, Balustrades, Wall Caps and Foundations (adjoining concrete walkways, terraces splash zones)

All rendered horizontal wall surfaces should have a minimum 10° fall and have **StoFlexyl waterproofing** installed over the basecoat render. On **parapets, balustrades, and wall caps**, **StoFlexyl** must be correctly mixed (drill mix 1:1 with fresh cement) and applied with a layer of Sto mesh embedded into the **StoFlexyl** coat giving a film thickness of 1.5 mm. The meshed **StoFlexyl** should extend 75 mm up or down adjacent vertical surfaces as per Sto CAD details and be left to dry overnight.

All **StoFlexyl waterproofing** is to be over coated in **StoArmat Classic meshed** reinforcement render.

Any exposed floor slabs and non-rebated ground floor slabs / wall junctions must have **StoFlexyl meshed waterproofing** applied from 100 mm above and below the transition before the render system commences, foundation splash zones should have a brush coat of **StoFlexyl** waterproofing brush applied over the basecoat render from 150 mm above ground level to 50 mm below the render termination point.

**Note: StoFlexyl meshed waterproofing** has been tested by BRANZ to **AS/NZS 4858** as required by **CCANZ CP 01:2014 and E2/AS1**.

### 4.8 StoArmat Classic Reinforcement Render

**Note: StoArmat Classic HD with hardener for accelerated drying in cold damp weather are also available.**

To clean, dry, sealed surfaces apply an even coat of **StoArmat Classic** render by hawk and trowel at approximately 2 mm thick and while the **StoArmat Classic** is still wet, lightly apply **Sto mesh** ensuring adjacent drops of mesh are overlapped by a minimum 75 mm and float the surface to ensure the mesh has been embedded in and allow to dry. Once dry, apply a further coat of **StoArmat Classic** at approximately 1.5 mm (min DFT 2.5 mm) by hawk and trowel to cover the mesh and leave an even surface plane free of voids or deviations. Once dry, remove any slight ridges etc. with a Sto rasp ready for subsequent render. **StoArmat Classic** must be installed in accordance with the Sto Technical Data Sheets. Always install **Sto pre-meshed uPVC drip edges** on block lintels, **Sto pre-meshed** corner angles on external corners and **Sto pre-meshed finishing edges** as detailed.

### 4.9 Sealant Installation

All junctions or detailing between the render mesh coat and dissimilar materials shall be sealed with compatible exterior MS Sealant in accordance with the manufacturer's Technical Data Sheets. Some manufacturers require primers for PVC or dissimilar substrates.

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**Note:** Where sealant is being applied directly over **StoFlexyl waterproofing**, the **StoFlexyl** must be primed to promote adhesion in accordance with the sealant manufacturer's instructions. The joinery sills must remain unsealed and open to permit ventilation of the window trim cavity.

### 4.10 Stolit Float Finish Renders (refer to the front page for selected finish)

**Stolit K** texture is available in a flat 1, 1.5, 2.0, 3.0 mm aggregate as selected.

- **Stolit K** coloured finishing render

Apply the selected **Stolit K** coloured finishing render to prepared rendered surfaces with a stainless-steel trowel, gauging to the thickness of the aggregate size. Finish with a plastic float to the requisite pattern and allow to dry (normally overnight). The spreading rate shall be approximately 12 m<sup>2</sup> per pail (1.0 mm), 9 m<sup>2</sup> per pail (1.5 mm), 7 m<sup>2</sup> per pail (2.0 mm) and 4 m<sup>2</sup> per pail (3.0 mm).

- **StoColor Façade Paint**

It is recommended that all **Stolit K** surfaces receive two (2) coats of **StoColor Maxicryl**, or **StoColor Dryonic** façade paint tinted to the selected colour and applied by brush and roller at approximately 6-7 m<sup>2</sup> per litre. One (1) coat is acceptable though it will need recoating more frequently. Refer to **Section 6** for recoating requirements.

**Note:** Maintain wet edges between cutting in and roll in tight to achieve an even film build

### 4.11 Selected Stolit MP Finished Renders (refer to front page for selected finish)

**Stolit MP** fine coloured finish, **MP Natural** salt & pepper sand, **RMP Sponge** coarser salt & pepper sand

- **Selected Stolit MP, MP Natural, and RMP Sponge** coloured finishing render

**Stolit MP, MP Natural** and **RMP Sponge** are coloured finishing renders applied in two (2) coats. A basecoat of the selected **Stolit MP** or alternatively, depending on the finish, **Stolit K 1.0 mm** tinted to the selected colour, is applied, and allowed to dry. The finishing coat of **Stolit MP, MP Natural, or RMP Sponge** is then applied, float finished and randomly lightly sponged. Alternatively, the finish can be float finished, sponged, or smooth finished with a stainless steel Marmorino trowel to the selected pattern. The spreading rate of the **Stolit MP, MP Natural or RMP Sponge** is approximately 12-14 m<sup>2</sup> per pail.

- **S-Protect SC Stay Clean Invisible Silane Sealer (clear sealer)**

To **Stolit MP** or **MP Natural**, apply an even coat of **S-Protect SC stay clean** hydrophobic sealer (clear invisible silane sealer) in a flood coat using a low-pressure sprayer and Sto block brush to work the product into the Stolit render, avoiding runs and brushing in any lingering drips etc. so they do not show up. Surfaces must be well coated, and it's recommended to work in a pattern preferably out of the sun to ensure that there are no misses as the sealer is invisible once dry.

**Note:** All joinery, glazing and adjacent surfaces must be masked off to prevent the **S-Protect SC Stay Clean** contaminating the surfaces. Any excess product must be removed after 15 minutes to avoid a surface film forming that can be difficult to remove. Refer to **Section 6** for recoating requirements.

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- **StoColor façade paint (paint finish if selected)**

If selected it is recommended that all **Stolit MP** surfaces receive two (2) coats of **StoColor Maxicryl, or StoColor Dryonic** façade paint tinted to the selected colour and applied by brush and roller at approximately 6-7 m<sup>2</sup> per litre. One (1) coat is acceptable though it will need recoating more frequently. Refer **Section 6. StoService** for recoating requirements.

**Note:** Maintain wet edges between cutting in and roll in tight to achieve an even film build.

### 4.12 Stolit Smooth Finish Render

- **Stolit Milano coloured finishing render**

**Stolit Milano** is a smooth pre-coloured finish applied in two (2) or three (3) coats. A basecoat of **Stolit Milano** tinted to the selected colour is applied and allowed to dry before the finishing coats of **Stolit Milano** are applied and steel troweled, floated or lightly randomly sponged to the selected pattern.

The spreading rate of the Stolit Milano is approximately 16-18 m<sup>2</sup> per pail.

- **S-Protect SC Stay Clean Invisible Silane Sealer (clear sealer)**

To **Stolit Milano**, apply an even coat of **S-Protect SC stay clean** hydrophobic sealer (clear invisible Silane sealer) in a flood coat using a low-pressure sprayer and Sto block brush to work the product into the Stolit render, avoiding runs and brushing in any lingering drips etc. so they do not show up. Surfaces must be well coated and its recommended to work in a pattern preferably out of the sun to ensure that there are no misses as the sealer is invisible once dry.

**Note:** All joinery, glazing and adjacent surfaces must be masked off to prevent the **S-Protect SC Stay Clean** contaminating the surfaces. Any excess product must be removed after 15 minutes to avoid a surface film forming that can be difficult to remove. Refer **Section 6. StoService Assurance** for recoating requirements.

## 5. GENERAL NOTES

### 5.1 Colour

As selected by the client or specifier, Stoanz Limited recommends that the selected colour should have a minimum Light Reflectance Value (LRV) of 35%. For colours under 35%, but above 25% the render system is finished with two coats of **StoColor Dryonic a Sto iQ coating with X-Black technology additive** to avoid thermal stress.

**StoColor Dryonic façade paint with Sun blocker and fast dry film biomimetics.** is available in the StoColor range, with other colours available depending on formulation.

**Note:** Where Stolit MP, MP Natural or Milano render colours are selected with an LRV of less than 35%, the Stolit MP, MP Natural or Milano render shall be applied over a basecoat of **Stolit K 1.0 mm** render.



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### 6. STOSERVICE ASSURANCE

#### 6.1 StoService - Refer to StoService Documents for a Comprehensive Guide

The Sto Render System should be cleaned annually by low pressure washing or hosing down to remove surface contaminants with special attention to sheltered areas (as required, use a proprietary house wash sprayed on first with a low-pressure garden spray in accordance with the manufacturer's instructions). Refer to StoService Maintenance Documents online [www.sto.co.nz](http://www.sto.co.nz).

After cleaning a visual inspection is to be undertaken by the owner or the person undertaking the maintenance to check for any physical damage or faults in the exterior building elements, to ensure any damage or defects are identified and repaired.

To assist the property owner in establishing a regular maintenance cycle, the property owners email address can be registered with [service@sto.co.nz](mailto:service@sto.co.nz). Stoanz Limited will then provide 2½ yearly reminder notices that the property is due to be serviced within the following six months.

Depending on the prevailing environmental conditions and the service record, recoating of the paint finish is normally required at 10 – 12½ years where two coats were applied, or 7½ – 9 years where one coat of paint or S-Protect Silane was applied, to maintain long-term integrity. This is carried out using a **Sto Coating System** applied in accordance with a Sto specification. Where a colour change is required, Stoanz Limited should be consulted.

### 7. WARRANTY

#### 7.1 StoArmat Miral Render System 20-year Warranty with StoService Assurance

When the **StoArmat Miral Render System** is applied in accordance with the Sto specification, Sto details and Sto PS3 Quality Assurance schedule, a warranty is available for the Sto System for twenty (20) years from the date of practical completion, provided the maintenance requirements as set out in the StoService documents are followed.

This is to comply with the relevant clauses in the New Zealand Building Code for this type of building element being B2 Durability, E2 External Moisture and F2 Hazardous Building Materials.

The warranty is supplied by the Sto Contractor on completion of the project with the warranty issued and backed by Stoanz Limited as to the suitability of the material supplied provided that:

- a) All specified work is carried out by a registered Sto Contractor who must complete and sign off the Sto Quality Assurance Schedule and the five-year PS3 Workmanship Warranty.
- b) All work is carried out in accordance with this Specification, or any written amendments issued by Stoanz Limited.
- c) The warranty does not cover situations where the Render system is subjected to physical disturbance, chemical contamination, or interference.
- d) The Rediwall wall under the render must be structurally sound. Movement of the wall that results in cracks through the render are not covered by the StoWarranty.

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### 8. DISCLAIMER

#### 8.1 Disclaimer

The information contained in this specification is based on our findings, experience, testing and certification at the revision date. End users are still responsible for establishing the suitability of the specified products regarding their intended use. No liability is undertaken for use of this information outside of Stoanz Limited parameters or for the substrates, design, construction, and project site conditions that are outside of Stoanz Limited's control. Where a Sto registered contractor applies Stoanz purchased products in accordance with the Sto Specifications, Material Technical Data Sheets and Sto Details, a Sto Material Warranty document is available, but the installation of the materials remains the responsibility of the Sto Contractor who provides the PS3 Warranty. Any warranty is conditional on the system being maintained and serviced in accordance with the StoService documentation. Stoanz reserves the right to alter or update information and formulations at any time without prior notice.