

Sto Specification New Zealand

SS900 StoProtect Clear Coating on Concrete Block

StoProtect Transparent Coating System
 over exterior Architectural Concrete Block Construction
 In accordance with **CCANZ CP 01:2014 (E2/AS3)**



Sto Registration: The completed specification must be registered with Stoanz Ltd.
 email: info@sto.co.nz

1. PROJECT DETAILS

Specifier:

Project and Address:

Project Owner:

Sto Warranty: Sto 7½ year Warranty with StoService Assurance

StoProtect Transparent Coating System on concrete block construction

This specification details the application of **StoProtect Transparent Coating System** over exterior architectural concrete block construction incorporating: **StoFlexyl waterproofing, S-Protect WS405 Silane sealer** finished in three coats of **StoProtect transparent** to leave an even, clear, durable finish.

The **StoProtect Coating System** can be used on other masonry surfaces, but a specific specification is required.

Note: Additional coats of **Sto Protect** are required on some types of blocks and in certain circumstances. Refer to the service section.

The **StoProtect Clear Coating System** has been tested to meet the requirements of **CCANZ CP 01:2014** and **StoFlexyl waterproofing** has been tested to meet **AS/NZS 4858** waterproof membrane requirements as required by **NZBC E2/AS1**.

Specification Number:
 (Note: Send Specification to Sto for numbering)

Project Notes:

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2. CONSTRUCTION AND DETAILING

2.1 Responsibility

All work in this section shall be the responsibility of the Main Contractor, unless otherwise expressly agreed. Stoanz Limited accepts no responsibility for defective workmanship in relationship 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 the project specifications and details, block manufacturer's documents and the current Sto specification, Sto CAD details (www.sto.co.nz) and the Main Contractor's responsibilities before works commence. The Main Contractor is responsible for the various sub-contractors to ensure that all items relating to weathertightness of penetrations and dissimilar material junctions affecting the coating system are strictly in accordance with project specific details, manufacturer's or Sto CAD details, e.g. items such as roofs, soffits, openings, lights and security fittings, electrical wiring, flashings, deck membranes dissimilar junctions etc. that abut, flash or penetrate the coating system. The Main Contractor shall also ensure that all exterior licensed work is carried out by an LBP registered contractor and the window and door joinery is installed in accordance with the project drawings, manufacturer's details and Sto CAD details.

A StoService Quality Assurance Document is to be filled out as a record of the work undertaken by the Sto Application Company.

2.2 Concrete Block Construction

The concrete block installation, including reinforcement and concrete infill shall be made in strict accordance with the project specifications and drawings and the **block manufacturer's design and installation manual**.

The blocks shall be laid true in both vertical and horizontal planes in a minimum 45 mm ground floor foundation rebate using 12.5 MPa mortar in a nominal 10 mm width compressed by tooling with all window, door and services cutouts correctly made using rebated blocks for all joinery openings. At least 28 drying days shall be allowed after concrete placement as per AS/NZS 2311, for curing and stabilisation to take place before application of the Sto coating system. Any minor surface damage or defective pointing shall be repaired before commencing. All maximum tolerances shall be in strict accordance with NZS 4210 with no more than 3 mm surface alignment deviation over a 1200 mm radius. The main contractor shall ensure concrete blocks are laid by a LBP contractor and are clean, dry and free of all surface contaminants before the coating applicator commences, and that any areas, details or flashings above or adjacent to the Sto Coating System have been adequately waterproofed to prevent water migration behind the Sto Coating System.

All mortar joints are to be tight tooled and neatly pointed. Rebated joinery blocks must be waterproofed as necessary, especially sill blocks, and joinery must be installed as per Sto CAD details for concrete block using StoFlexyl waterproofing as required. All construction contaminants must be removed.

Note: Some concrete blocks or block profiles may be unsuitable for clear coating. Check with the block manufacturer prior to construction

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2.3 Concrete Block Construction - Clear Coating Systems

- CCANZ CP 01:2014 requires a minimum 45 mm rebate in foundations.
- Joinery openings are to be waterproofed and formed with rebated jamb and head blocks and sill blocks.
- Clear coated block faces must be of an even consistency with chipped corners etc. avoided.
- Blocks must be covered on site and laid dry. Where factory honed Architectural blocks are used, ensure any on site honing matches the manufacturer's honing to achieve continuity.
- Before starting note that certain soils, vegetation, timber, and mortar droppings etc. can cause staining, especially on light coloured blocks. As required, the main contractor is to provide adequate protection.
- Control joints are placed at maximum 6.0 m centres. Refer to the project documentation and NZS 4229 for placement and detailing.
- Mortar to be minimum 12.5 MPa, with an expansion agent with the joint is to be tooled smooth and compressed as per NZS 4210.
- Where specified, use the manufacturer's bagged mortar that is designed for the system.
- Mortar to full depth of webbing up to 20 mm thick in first course and then 10 mm +/- 3 mm.
- Washout ports to have the block face removed, mortared back after and braced for grout.
- Ensure there is no impediment to grout flow. Remove ends or biscuits to prevent air pockets
- Blocks, especially stack bonded and insulated blocks, must have full mortar joints both horizontally and vertically, and any voids created by leaving ends in etc. need to be mortared by the block layer during the laying process to achieve a continuous solid fill.
- Blocks are always laid open end to depressed web end.
- Inverted blocks are to be fully mortared across the web, and any block end such as insulated blocks that have a vertical void at the join are to mortar filled.
- Column blocks must only be used on the ends of walls and must be cut to allow the grout to flow through every course
- Block layer to ensure a solid fill is achieved throughout the entire wall. Blocks should be filled in 1.2 m lifts and mechanically vibrated to eliminate air pockets that can cause structural weak points or efflorescence.
- Sill blocks should be filled by leaving one sill block out to avoid air entrapment.
- Remove any mortar, grout slurry or bleed water from block and mortar faces before it sets.
- Drying times vary according to block thickness, grout and weather. A minimum 28 days is required for settlement and curing. The blocks must be completely dry before coating.
- Where walls are back filled, a certified tanking membrane fit for the purpose is required.
- Always waterproof blocks behind or adjacent to any overlays or abutments such as staircases, especially concrete stairs, or independent wall abutments.
- Exposed tops of walls must be filled flush and finished with mortared on block caps installed with a minimum 5 degrees slope before being waterproofed with StoFlexyl mesh and coated.
- Check honed blocks for minor aesthetic defects such core bar cracks and fill prior to coating.
- Beware of efflorescence and protect walls from inclement weather during construction to avoid water ingress. As necessary, scrub off with detergent while in powdered form and if necessary, engage a specialist to acid wash blocks with a 1/10 solution and neutralise/remove with detergent wash and copious amounts of clean water.
- **Note** black coloured blocks can change colour if subjected to aggressive acid washing.

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2.4 Wall Insulation

NZBC Acceptable Solution H1/AS1 or NZBC Verification Method H1/VM1 can be used for housing, communal residential, communal non-residential and commercial buildings. The thermal design of the building must be calculated in accordance with NZS 4218.

Internally insulated masonry walls must meet the requirements of NZS 4218 Table 2. Minimum wall R-values for Climate Zone 1 and 2 shall be R1.9 and Climate Zone 3 shall be R 2.0.

2.5 Soffits

Soffits are normally fixed before the coating commences, with the finishing trim placed after the work is completed. The main contractor is to ensure that blocks are coated (weatherproofed) above soffits, behind flashings and fascia's and any adjacent surfaces overlaying the blocks before these items are installed. **Note:** uncoated blocks behind soffits, flashing, etc. must be coated to stop water ingress.

2.6 Cleaning (Visual Presentation)

The finished concrete blocks must be clean and visually acceptable. It is the responsibility of the main contractor and their appointed block layer to ensure a clean unified surface is achieved with an acceptable continuity of block faces. If the blocks batches vary in colour are stained or discoloured the block manufacturer must be notified before any blocks are laid.

The coating system is transparent therefore it is essential to ensure that the block layer has **left the concrete block walls clean with no marks, stains, slurry, uneven pointing, or defects and that the continuity of colour in the laid blocks is acceptable to the client or specifier.** Any repairs to the blocks or mortar joints, or specialist cleaning required **must** be undertaken before the Sto Coating Applicator commences.

2.7 Control of External Fire

In this instance the exterior surface finish requirements of NZBC Acceptable Solution C/AS1 Table 5.1 and C/AS2 Paragraph 5.8.1 do not apply. The StoProtect coating applied directly to the concrete block is less than 1 mm thick.

3. SURFACE PREPARATION

3.1 Responsibility

All work in this section shall be under the responsibility of the **Main Contractor** or his sub-contractors with the **Sto Applicator** responsible for the StoProtect detailing unless it is otherwise expressly agreed. Adequate masking must have been undertaken before commencing any work that could affect the finished surfaces.

3.2 Joinery Rebates, Parapet and Balustrade Caps - horizontal surfaces

Joinery shall be fixed over rebated concrete blocks that have been **StoFlexyl waterproofed** and finished in **StoProtect System** prior to the joinery installation. The main contractor shall ensure all joinery openings are formed

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using rebated concrete blocks and sill blocks that have been solid filled.

The main contractor must ensure **air seals** are incorporated around all interior joinery openings and the nominated joinery contractor installs a compatible **MS Polymer Sealant** in accordance with the manufacturer's Technical Data Sheets to the exterior head and jamb block junction after the rebates have been coated.

Note: Sills shall remain unsealed with a 5 mm drainage gap.

Note: StoFlexyl waterproofed surfaces require a sealant primer before installing the sealant.

Note: Parapet block caps, balustrade block caps and horizontal surfaces shall have a minimum fall of 5 degrees and must also be waterproofed using **StoFlexyl meshed waterproofing** which can be installed under concrete block finishing caps where required.

3.3 Clear Finished Rebates

Where a clear finish is required on the head, jamb and sill rebates, the **StoFlexyl waterproofing** is applied approximately 12 mm out from the rebate step onto the exterior rebate to sit in line with the installed joinery flange. The StoFlexyl is then covered by the sealant joint (window flange 6 mm + 5 mm air gap). The block rebates are to be patched as necessary and three (3) coats of **StoFlexyl waterproofing** is to be applied with the first coat thinned as a primer and subsequent coats thinned to achieve a thick brushing paste. The **StoProtect** coating is lapped over the dry **StoFlexyl waterproofing** to the top of the rebate step. Sill blocks require a minimum 4 coats of **StoProtect** to achieve a minimum DFT of 180 microns.

Note: Ensure there are no voids in the pointing and all **StoFlexyl** surfaces are well coated to provide a solid membrane.

Note: Not suitable for unfilled sill blocks. Unfilled sill blocks require **StoFlexyl** meshed waterproofing finished in **Stolit** coloured finishing render.

3.4 Exposed StoFlexyl Waterproofing

To clean dry **StoFlexyl** waterproofed surfaces apply one coat of **Sto Putzgrund** primer tinted to the selected colour then finish in the selected **Stolit coloured finishing render** ensuring adequate masking is undertaken to keep the blocks clean before coating in the **StoProtect Transparent System**.

3.5 Foundation Splash Zone

The blocks should be laid in a minimum 45 mm rebated floor slab to ensure this transition remains watertight. The **StoProtect Transparent System** must be applied to any block edges that overhang the slab and should extend down over the foundation a minimum 100 mm past the interior floor level. Foundations can alternatively be coated in a **Sto Render System** or **StoTherm Insulation System**.

StoFlexyl Meshed waterproofing has been evaluated by BRANZ to meet **AS/NZS 4858** as a waterproof membrane for use with render and clear coat systems as required by **E2/AS1** and **CCANZ CP 01:2014**.

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3.6 Penetrations

Penetrations such as waste pipes and fixtures shall be adequately flashed and waterproofed prior to the render installation.

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

Any electrical wiring that penetrates the render shall be encased in an appropriately sized uPVC conduit sheathing acting as an insulator installed at a minimum 5° downwards rake. Conduits and any plumbing piping etc. must be sealed using compatible MS Polymer Sealant as detailed.

4. STOPROTECT CLEAR COATING SYSTEM

4.1 Responsibility

All work in this section, including provision of external sealant beads (excluding joinery) and the finishing system shall be the responsibility of the **Sto Coating Applicator** who must assure themselves that the surfaces to be coated are dry, free of contamination and satisfactory before work commences. Adequate protection of all adjacent surfaces shall be undertaken prior to commencing.

4.2 Selection

The **StoProtect System** shall be carried out in stages incorporating: **S-Protect WS405** Silane sealer, **StoFlexlyl** waterproofing as required, **Stolit** coloured finishing renders as required finished in a minimum three (3) coats of **StoProtect transparent** clear coating.

4.3 Surface

Before commencing, **check the block wall surfaces are clean, visually acceptable, pointing is tight and any flashings, dissimilar material overlays, parapets or joinery rebates are waterproofed.** Though the coatings are clear, appropriate masking must be undertaken to protect joinery and adjacent surfaces.

Note: Application rates will vary depending on the blocks being treated. The standard spreading rates are based on manufacturer's honed blocks. Standard blocks, coloured, pumice blocks etc. all have different matrixes and porosities that are likely to require additional coats.

4.3 S-Protect WS 405 Silane Sealer

To cured, dry, clean exterior surfaces apply a flood coat of **S-Protect WS 405 Silane** applied with a low-pressure backpack sprayer using a block brush to control the wet edge and remove lingering drops. Apply a second coat of **S-Protect WS 405** while still damp to achieve a coverage rate of 4 m² per litre. Then **leave a minimum 2 days** for catalysis reaction in accordance with the Technical Data Sheets before applying the **StoProtect System**.

Note: **S-Protect WS 405** Silane will not etch glass but leaves a film that can be difficult to remove once it dries. Ensure adjacent surfaces and dissimilar materials are masked off with plastic.

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Note: where the blocks haven't been honed, the matrix is particularly porous or hot blocks are used, allow the first flood coat to dry before applying the second flood coat of **S-Protect WS 405 Silane**.

4.4 StoProtect Clear Coating

To clean, dry, concrete blocks sealed with **S-Protect WS405** that has catalysed, apply three (3) coats of **StoProtect Transparent** thinning the first sealer coat by adding approximately 1 litre of clean fresh water and applying by brush and roller at approximately 5-6 m² per litre for honed blocks. Allow the first coat to dry completely before applying the second and third coat un-thinned at approximately 6-7 m² per litre. Always maintain wet edges when applying to prevent shadow lines, especially between cutting in and roller applications. Ensure the surface is well coated and the mortar joints are fully coated, and any block pit holes, voids and joints are well filled before applying the final coat. The spreading rate will vary depending on the block surface, porosity and configuration.

StoProtect is **not** to be spray applied as the surface must be well coated with the coating worked into the block profile to fill block pit holes and the pointing to achieve a minimum dry film thickness of 150 microns.

Note: The spreading rates are based on **dense honed blocks**. Allowances must be made for other blocks depending on their porosity and profile. Where the blocks haven't been honed, the matrix is porous/pitted, the blocks are stack bonded, Onyx blocks, Hotbloc's, the site is situated in an exposed environment (e.g. sea spray zone), negative (raked) pointing, clear coated sills or horizontal caps, additional coats are required to achieve a minimum dry film thickness of 180 microns.

5. GENERAL NOTES

5.1 Assessment

Before removing the masking, check all of the block faces are evenly coated and that any blemishes have been rectified.

6. STOSERVICE ASSURANCE

6.1 StoService Assurance - Refer to StoService Assurance Schedule for a comprehensive guide

The StoProtect Coating System shall 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).

An annual visual inspection is to be undertaken by the owner or their agent to check for any physical damage or defects in the exterior building elements. Ensure any damage or defects that are identified are repaired. Every 2½ years, the building occupier will be notified to engage the Sto Contractor to carry out a StoService inspection. On completion, the Sto Contractor will issue a StoService Certificate that will be recorded in the Sto Warranty information, so a long-term record of the service history is maintained.

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Recoating of the StoProtect finish is required at the 7½ year period to maintain long-term integrity. This is carried out using the **StoProtect** coating over a cleaned surface. Where a change of coating is required, Stoanz Limited should be consulted for a specific specification.

Note: Given the different NZ climatic zones, the actual recoating cycle depends on the environmental conditions.

7. WARRANTY

7.1 StoProtect Coating System 7½ year Warranty with StoService Assurance

When the **StoProtect Coating 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 seven and a half (7½) years from the date of practical completion. This is to comply with the relevant clauses in the New Zealand Building Code for an exterior coating element, provided maintenance and service requirements as set out in the StoService Assurance documents are followed.

The seven and a half (7½) year warranty is supplied by the Sto Applicator on completion of the project and remains valid when serviced and signed off by the Sto Applicator in accordance with the StoService Assurance documents.

The warranty is 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 Applicator who must complete and sign off the Sto Quality Assurance Schedule and the PS3 Workmanship Guarantee that is renewed on completion of the 30-month StoService checks for a period of up to 7½ years.
- (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, structural movement or interference.
- (d) Exposed sites subjected to sand abrasion or other severe conditions may require additional coats more frequently to maintain the integrity of the StoProtect coating system.

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 and site conditions that are outside of Stoanz Limited's control. Where a Sto registered contractor applies Stoanz purchased products in accordance with the specifications, Technical Data Sheets and details a Sto Warranty document is available but must be serviced in accordance with the StoService documentation. Stoanz reserve the right to alter or update information and formulations at any time without prior notice.