



COMPLEMENTARY PRODUCTS

APPLICATIONS

ROOFS

TECHNICAL BULLETIN

TECHNICAL DATA SHEET 180212SCANE

(supersedes -)

SUBJECT: MECHANICAL FASTENERS IN ROOF ASSEMBLIES

In roof systems that include mechanically fastened components, the screws and plates have an important role in wind uplift resistance.

As stated in FM Standard 4470: *"The performance of a roof assembly depends on all components that make up the assembly, beginning with the deck and its securement to the structure to the uppermost layer exposed to the weather. It is therefore necessary to evaluate the entire roof assembly as a single entity."*

For CSA A123.21 publications, refer to the report releases published by approved laboratories. For example, the EXP's laboratory indicates in their bulletin: *"Only the products listed in this report under eligible products are deemed acceptable as substitute to the tested products. Any other modifications must be requested in written, on exp application form, to be studied for approval."*

It is important to note that membrane screws and plates are different from screws and plates used with insulation or cover boards and thermal barriers. The size and shape of the plates are specially designed for specific materials. Membranes typically require special 2" (50 mm) plates, while panels require 2.75" to 3" (70 mm to 75 mm) plates.

Therefore, the selection of screws and plates as well as the distribution pattern must be made according to the applicable standard publications. Whether released in compliance with CSA A123.21 or RoofNav assemblies according to FM 4470 are involved, substituting screws and plates with untested products can compromise the expected performance of the roof assembly.

The RoofNav publications and reports from EXP's laboratory list all the products that are accepted as equivalent components. The screws – including their size (#s. 12, 14, 15, etc.) – and plates with a brand name and a manufacturer listed in reports, are the only acceptable options that meet the wind uplift resistance results from test reports without requiring additional testing or the main project manager's approval. It is important to note that no SOPREMA agent can approve replacement screws and plates. The approval of substitute products is given exclusively by the project manager responsible for the project.

In addition, when a project must comply with FM 4470 and the building is **INSURED** by Factory Mutual Global (FMG), substitutions with products that are not listed in the report releases are forbidden, including screws and plates. The substitution of screws not approved by FMG may result in them refusing the assembly and the roofing contractor having to completely rebuild the roof.



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TB_Mechanical_Fasteners_in_Roof_Assemblies.indd



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Plate Substitutes

There is no quick method for substitution of plates that would adequately maintain the wind uplift resistance of the roof assembly. A complete wind uplift resistance test project for the entire roof assembly must be completed by an authorized testing laboratory.

Screw Substitutes Authorized by the Main Project Manager

Since the CSA A123.21 Standard is specified for reference to comply with the National Building Code requirements, or when the FM 4470 Standard is specified by the main project manager for performance only (in projects not insured by FMG), the main project manager may accept the substitution of screws at their discretion according to the following criteria:

- By comparing the fasteners pull out resistance on the support with the indications available on the manufacturer's data sheets (FM and/or CSA).
- By comparing the fasteners pull out resistance on the support as shown on the manufacturer's data sheet with the anchor tearing resistance found in the release of the laboratory having performed the test (CSA only).
- By having a substitute fasteners pull out resistance test carried out in situ to compare the results obtained with the indications available on the manufacturer's data sheets (FM only).
- By having a substitute fasteners pull out resistance test carried out in situ to compare the anchor tearing resistance results obtained with the indications in the publication of the laboratory having performed the test (CSA only).



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Summary:

- Substituting screws and plates with untested products can compromise the expected performance of the roof assembly.
- The substitution of a single component in an FMG insured roof project may result in the roofing contractor having to completely rebuild the roof.
- Plate substitution does not reasonably allow compliance with the expected wind uplift resistance of a roof assembly.
- Screw substitution must be approved by the project manager responsible for the project according to reasonable criteria in his/her opinion.
- No SOPREMA agent can approve substitute screws and plates.

- END OF TECHNICAL BULLETIN -



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