



# STEEL ATTACHMENT GUIDE

Attaching timber, plasterboard, Korok and steel framing to Fireshield intumescent products

## INTRODUCTION

Fireshield® is frequently asked by Architects and Contractors alike if they can attach timber, steel framing, Korok wall panels and plasterboard linings to Fireshield® intumescent coated structural steel members.

Now you can, when using Fireshield intumescent coatings with our fire test evidence.

Fireshield® has conducted fire test programmes with various systems to provide technical justification for reducing the expansion zone when using Fireshield® intumescent coatings.

The following attachments are approved for open and closed steel sections of any size:

## APPROVED ATTACHMENTS

**Fireshield fire tested and approved attachments.**

### Timber framing $\geq$ 45mm thick

$\leq$  60 mins FRR protection use:

- Fireshield® Steel 1001
- Fireshield® Steel 1002
- Fireshield® SQ476
- Fireshield® 920KS

**60 to 120 mins FRR protection use:**

- Fireshield® Steel 1002

### Plasterboard $\leq$ 13mm

$\leq$  60 mins FRR protection use:

- Fireshield® Steel 1001
- Fireshield® Steel 1002
- Fireshield® SQ476
- Fireshield® 920KS

**60 to 120 mins FRR protection use:**

- Fireshield® Steel 1002.

### Steel framing light gauge

$\leq$  60 mins FRR protection use:

- Fireshield® Steel 1001

### Korok wall junction

$\leq$  60 mins FRR protection use:

- Fireshield® Steel 1001

**60 to 120 mins FRR protection use:**

- Fireshield® Steel 1002

**Before specifying these systems please contact Fireshield® to use this study in your next project and we will design a project specific set of documents to ensure your details comply with our testing parameters.**

## FIRESHIELD DOCUMENTATION

The following documentation is available from Fireshield:

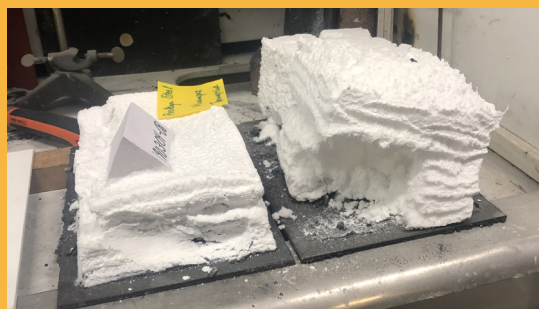
- Full project documentation review of all construction details.
- Project specific Consultant Advice Notice detailing the use of the Fireshield Steel Attachment Guide.
- PS1/PS4, PN22 and SFA if required.
- Full consent package including loading schedule, specification and structural mark up.

### The FPANZ COP-03 Version 2 states:

Where cladding systems or timber framing are to be used in conjunction with an intumescent coating for protecting steel members from fire, a gap of 50 times the DFT of the intumescent coating will generally need to be provided (for thin film intumescent coatings) to allow for full expansion of the intumescent coating during a fire.

Gap sizes may be reduced only where the intumescent coating manufacturer has specific test evidence to justify a reduction for the specified period of fire resistance. This guidance also applies to the gap between the cladding/ framing and the flat surfaces of the protected steel section, as well as to flange tips.

Where the cladding is mounted onto continuous linear fixings/spacers, made of timber or metal, the spacers should be considered as a part of the main steel section and duly protected from fire, unless other supporting fire test evidence can be provided to justify alternative action.



Photograph 1: Intumescent char expansion unrestricted during testing.



# TIMBER FRAMING+PLASTERBOARD

Attaching timber framing > 45mm and/or Plasterboard to Fireshield intumescent products

## SYSTEM INFORMATION

### 30 and 60 mins FRR (30/-/- & 60/-/-)

FIRESHIELD PRODUCT	PRODUCT TYPE	TDS REFERENCE	FIRE TEST CODE
Fireshield® Steel 1001	Waterborne single pack - Interior C1-C2	TD-FS1001AUNZ-03	ST-2019-01-01 + ST-2021-01-04/03
Fireshield® Steel 1002	Waterborne single pack- Interior C1-C2	TD-FS1002NZ-01	ST-2021-01-04/01 + ST-2021-01-04/05
Fireshield® SQ476	Solvent single pack -Interior C1-C2	TD-FSSQAUNZ-04	KCC-A22-01
Fireshield® 920KS	Solventless 2- pack epoxy - Interior + Exterior C1-C5	TD-FS920KS-NZ-02	H-22.02.2023 / Issue 1

### 120 mins FRR (120/-/-)

FIRESHIELD PRODUCT	PRODUCT TYPE	TDS REFERENCE	FIRE TEST CODE
Fireshield® Steel 1002	Waterborne single pack- Interior C1-C2	TD-FS1002NZ-01	ST-2021-01-04/01 + ST-2021-01-04/05

## SYSTEM REQUIREMENTS

Steel Sections	Hollow and open columns and beams.
Timber depth	≥ 45mm, see Fireshield for <45mm
Timber width	Any
Fixings	Mechanical
Plasterboard Type	Any

## COMPLIANCE INFORMATION

- Fireshield undertook fire tests as per the FPANZ COP-03 v2. Temperature/time curve readings were taken at the timber to steel interface and compared to reference test data.
- Fire tests to provide recommendations on the expansion zones required when using Fireshield intumescent coatings and to show the effects of timber strapping and plasterboard attached directly to the coated steel member.
- The fire test results concluded that the intumescent coating operated as per the compliance testing and continued to provide compliance with the NZBC B1/VM1 and C2/AS1-C6/AS1 Section C5.1.1 and the NCC Volume 2, Schedule 5

## ACCEPTABLE CLADDING EXAMPLES

Below are examples of acceptable attachments to the coated steel member. For any other please contact Fireshield.

## INSTALLATION

1. Coat the structural steel member with the Fireshield intumescent system at the required wet film thickness from the Fireshield loading schedule.
2. Attach and mechanically fix the timber stud to the coated steel member.
3. Attach plasterboard as required using manufacturers instructions, do not use adhesive on the coated steel surface. Plasterboard can be hard against the coated surface.

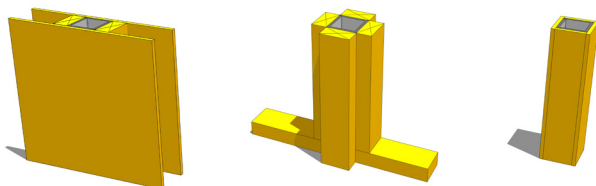


Fig. 1 Closed columns/beams examples

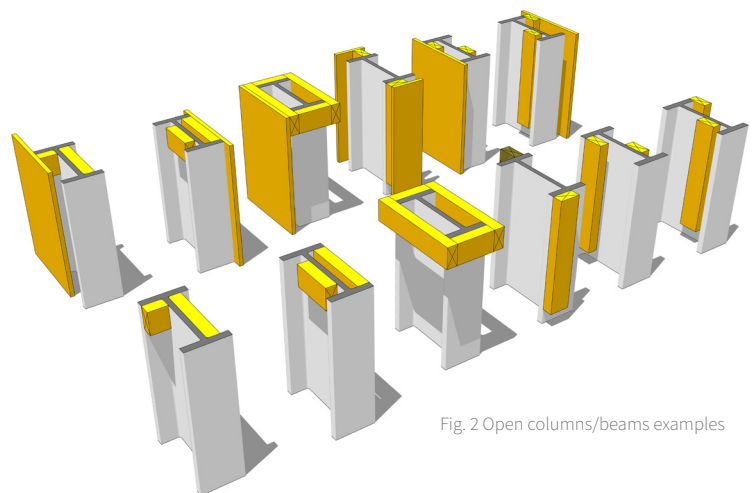


Fig. 2 Open columns/beams examples

## RECOMMENDATIONS

This fire test evidence can be used to engineer a solution that allows a structural steel section to be coated with the listed Fireshield intumescent and timber stud with or without plasterboard linings attached. This is a summarised version of the fire test report, for a copy of the original detailed report, email [technical@fireshieldcoatings.com](mailto:technical@fireshieldcoatings.com).



# STEEL FRAMING

Attaching light gauge steel channel framing to Fireshield intumescent products

## SYSTEM INFORMATION

**30 and 60 mins FRR (30/-/- & 60/-/-)**

FIRESHIELD PRODUCT	PRODUCT TYPE	TDS REFERENCE	FIRE TEST CODE
Fireshield® Steel 1001	Waterborne single pack - Interior C1-C2	TD-FS1001AUNZ-03	TK-220701-01

## SYSTEM REQUIREMENTS

Steel Sections	Hollow and open columns and beams.
Steel stud	≥ 0.95 galvanised steel stud
Fixings	Mechanical
Steel stud channel	Coat with intumescent.

## INSTALLATION

1. Coat the structural steel member with Steel 1001 at the required wet film thickness from the Fireshield loading schedule.
2. Attach and mechanically fix the steel stud channel.
3. Coat the attached steel channel with the same wet film thickness as the main structural member it is attached to, shown in yellow below.

## ACCEPTABLE EXAMPLES

Below are examples of coated steel stud channel attached to a structural steel member, cladding the steel stud with plasterboard is also acceptable.

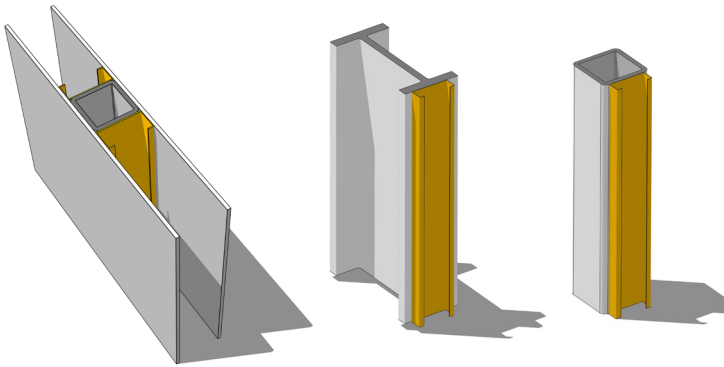


Fig. 3 Closed columns/beams examples with coating applied to steel stud channel.

## COMPLIANCE INFORMATION

- Fireshield undertook fire tests as per the FPNZ COP-03 v2. Temperature/time curve readings were taken at the steel interface and compared to reference test data.
- Fire tests to provide recommendations on the expansion zones required when using Fireshield intumescent coatings and to show the effects of steel studs attached directly to the coated steel member.
- The fire test results concluded that the intumescent coating continued to provide compliance with the NZBC B1/VM1 and C2/AS1-C6/AS1 Section C5.1.1 and the NCC Volume 2, Schedule 5

## ALTERNATIVE SOLUTION:

Below is the solution to attach a steel stud channel to a coated structural steel member without having to coat the steel stud with the Fireshield intumescent.

1. Attach 90X45 timber plate to the coated steel column/beam to comply with the systems on page 2 of this document.
2. Attach steel stud to the 90X45 timber plate.

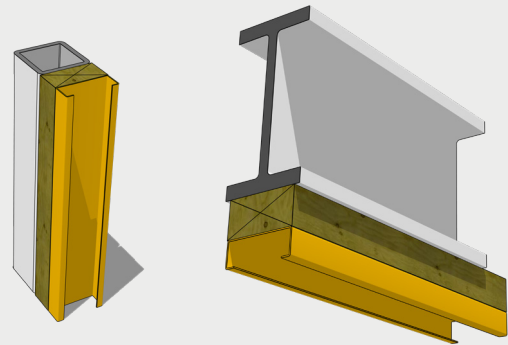


Fig. 4 Closed columns/beams examples using alternative fixing option.

## RECOMMENDATIONS

This fire test evidence can be used to engineer a solution that allows a structural steel section to be coated with the listed Fireshield intumescent and steel stud channel with or without plasterboard linings attached. This is a summarised version of the fire test report, for a copy of the original detailed report, email [technical@fireshieldcoatings.com](mailto:technical@fireshieldcoatings.com).



# KOROK WALL JUNCTION

Attaching Korok 78mm wall panels to Fireshield coated structural steel.

## SYSTEM INFORMATION

**30 and 60 mins FRR (30/-/- & 60/-/-) + 2 way fire walls ≤ 60/60/60**

FIRESHIELD PRODUCT	PRODUCT TYPE	TDS REFERENCE	FIRE TEST CODE
Fireshield® Steel 1001	Waterborne single pack - Interior C1-C2	TD-FS1001AUNZ-03	FR16707

**120 mins FRR (120/-/-) + 2 way fire walls > 120/120/120**

FIRESHIELD PRODUCT	PRODUCT TYPE	TDS REFERENCE	FIRE TEST CODE
Fireshield® Steel 1002	Waterborne single pack- Interior C1-C2	TD-FS1002NZ-01	FR16707

## SYSTEM REQUIREMENTS

Steel Sections	Hollow and open columns and beams.
Korok Wall Panel	78mm
Fixings	Mechanical
Deflection Head	Korok C Track 60X80X60X1.15 BMT galv.
Mastic Sealant	Hilti CP606 fire rated sealant
PS1/PS4	Required for 2-way fire wall design

## COMPLIANCE INFORMATION

- Fireshield undertook fire tests in conjunction with Korok at BRANZ to evaluate the effects of the Korok wall + deflection head attached directly to a Fireshield coated beam and column up to 120 mins FRR.
- The fire test was to also evaluate if the entire wall system could be used as a 2 way fire wall providing both insulation and integrity values.
- The fire test results concluded that the Korok wall system had no detrimental effect on the intumescent protecting the steel member and can provide a 2 way fire wall up to 120mins FRR in sprinklered buildings and in non sprinklered with a 50mm stand-off distance and continued to provide compliance with the NZBC B1/VM1 and C2/AS1-C6/AS1 Section C5.1.1 and the NCC Volume 2, Schedule 5

## ACCEPTABLE EXAMPLES

Below are examples of 78mm Korok wall panels to open and closed beam and column sections.

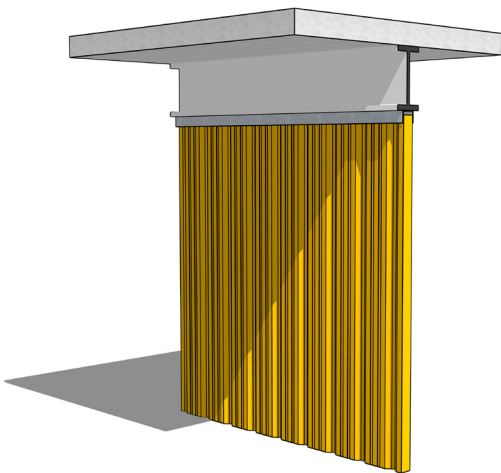


Fig. 5 Closed/open steel beam sections to Korok wall with deflection head.

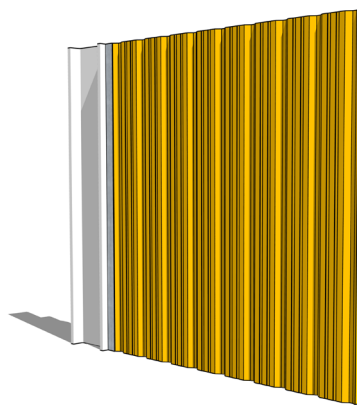


Fig. 6 Open steel column section to Korok wall with deflection head.

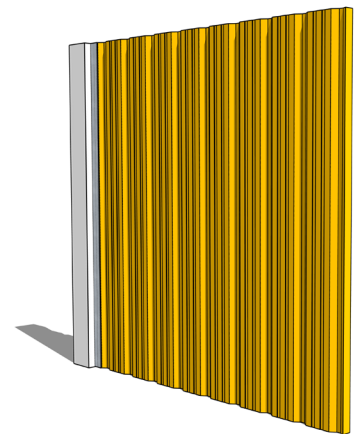


Fig. 7 Closed steel column section to Korok wall with deflection head.

## RECOMMENDATIONS

This fire test evidence can be used to engineer a solution that allows a structural steel section to be coated with the listed Fireshield intumescent and connected to the Korok wall system. This is a summarised version of the fire test report, for a copy of the original detailed report, email [technical@fireshieldcoatings.com](mailto:technical@fireshieldcoatings.com).