

# MiTek<sup>®</sup>

The background of the entire page is a repeating pattern of MiTek Posi-Joist trusses, which are structural steel components used in roof and floor construction. The pattern is rendered in a lighter shade of blue against the darker blue background.

## **Fire Resistance of Posi-Joist floors in line with EN Standards**

**Guidance Document - UK and Ireland**

**Issue 2 - October 2019**

## Introduction

This document provides a summary of the fire test evidence obtained by MiTek through a programme of fire tests predominantly to EN Standards, and details compliant floor build ups to the relevant standards.

## Summary of MiTek Fire Resistance Tests on Posi-Joist Floors

Target Fire Resistance	Details of Fire Test			Construction of Test Floor				Other Relevant Factors	Results of Fire Test		
	Test standard	Test Date	Test Lab.	Joist Centres	Joist Depth	Deck	Ceiling Makeup		Asses. Standard	Report No.	Fire resistance Achieved
REI30	BS476-21	16/11/16	Exova Warrington	400	225	18 OSB	12.5 Type A + 5mm Skim (Screws at 150)	No Strongback Strong pass enabled IFC assessment to EN1363-1	BS476-21	376186	<b>55 minutes</b> Test stopped without failure
REI30	EN1365-2	08/08/17	Cerib, France	600	253	18 Ply	15 Type F (screws at 230)		EN1363-1	009195	<b>36 minutes</b>
REI30	EN1365-2	06/09/17	Exova Warrington	400	225	18 OSB	15 Type A (screws at 150/230)		EN1363-1	384902	<b>42 minutes</b>
REI30	EN1365-2	15/09/17	Exova Warrington	400	225	18 OSB	15 Type A (screws at 150/230)	47x60 flanges. Bottom Chord Splice. Staggered webs. Ceiling light fixture	EN1363-1	387307	<b>36 minutes</b>
REI30	Indicative	18/12/17	Exova Warrington	400	304	18 OSB	15 Type A (screws at 150)	NLB test in small furnace. Two ceiling penetrations*	EN1363-1	391714-B	<b>36 minutes</b>
REI30	EN1365-2	17/03/18	Exova Warrington	600	253	22 P5	15 Type F (screws at 150)	Ceiling incorporated 7 intumescent-protected services**	EN1363-1	394530	<b>40 minutes</b> Test stopped without failure
REI30	EN1365-2	29/03/18	Peutz, Netherlands	400	225	18 P5	15 Type A (screws at 150)	Joist hangers, inset room perimeter noggins, 75mm unsupported plasterboard at ends	EN1363-1		<b>&gt;50 minutes</b>
REI30	EN1365-2	21/06/18	FIRES, Slovakia	600	225	22 P5	15 Type A (screws at 150)	Floor deck glued and screwed to joists. No room perimeter plasterboard noggins	EN13501-2	FR-103-18-AUNE	<b>33 minutes</b>
REI30	EN1365-2	01/09/19	FIRES, Slovakia	400	225	22 P5	15 Type A (screws at 230)	<b>Top-hung joists.</b> Deck glued to joists and nailed at one nail per 600 board width per joist	EN1363-1	FR-166-19-AUNE	<b>44 minutes</b> Test stopped without failure
REI60	EN1365-2	30/06/05	BRE	400	253	18 OSB	2no 15 Type F on RBar at 400. (screws at 230)		EN1363-1	222207	<b>92 minutes</b> Test stopped without failure
REI60	EN1365-2	30/08/19	FIRES, Slovakia	600	253	18 OSB	2 no. 15 Type F (fixed direct to soffit, screws at 230 both layers)		EN1363-1	FR-165-19-AUNE	<b>91 minutes</b> Test stopped without failure

\* - 2 no. air extraction units

\*\* - 2 no. Downlighters, 2no. supply air valves, 2 no. extract air valves and an extraction unit

### Common features of Posi-Joist test floors

Unless otherwise noted in the table above:

1. Posi-Joists utilised 47x72mm TR26 Flanges.
2. A Strongback was included in the test floor.
3. The floor deck was screwed but not glued to the joists. D4 adhesive used in the T&G joints of the deck.
4. The ceiling utilised room perimeter noggins but there were no board edge noggins.
5. Imposed load of 1.5kN/m<sup>2</sup> applied to floor deck.

Plasterboard:

'Type A' is wallboard, 'Type F' is fireline. RBar indicates plasterboard fixed to joists via resilient bar.

## Summary of Results

The following table describes Posi-Joist floors providing 30 minutes fire resistance when tested in accordance with EN1365-2:2014 and classified in accordance with EN13501-2:2016.

Fire Resistance	Max Joist Centres	Joist Depths	Ceiling details	Floor deck details
30 minutes	400mm	All depths ≥225mm	15mm Type A plasterboard (e.g. wallboard) [drywall screws at 150mm (perimeter)/230mm (internal) centres]. No room perimeter plasterboard noggins.	22mm P5 particleboard (chipboard), 18mm OSB/3 or 18mm flooring grade softwood plywood deck, either screwed or glued and screwed to joists
30 minutes	400mm	All depths ≥225mm	12.5mm Type A plasterboard (e.g. wallboard) [drywall screws at 150mm centres] with 5mm plaster skim	18mm or 22mm P5 particleboard (chipboard), 18mm OSB/3 or 18mm flooring grade softwood plywood deck, either screwed or glued and screwed to joists
30 minutes	600mm	All depths ≥225mm	15mm Type F plasterboard (e.g. fireline) [drywall screws at 230mm centres]	22mm P5 particleboard (chipboard), 18mm OSB/3 or 18mm flooring grade softwood plywood deck, either screwed or glued and screwed to joists
30 minutes	600mm*	All depths ≥225mm	15mm Type A plasterboard (e.g. wallboard) [drywall screws at 150mm centres]	22mm P5 particleboard (chipboard) glued and screwed to joists

\* - Minimum 47x97mm Strongback

Fire resistance tests undertaken on Posi-Joist floors, in which the ceiling has been penetrated by downlighters and ventilation services, has shown that 30 minutes fire resistance can be maintained with appropriate intumescent protection at ceiling penetrations.

**For ceilings with service penetrations, MiTek recommends that for joists at 600mm centres 15mm Type F plasterboard is used whilst for joists at 400mm centres 15mm Type A plasterboard may be used. Any service penetration should have the appropriate fire rating.**

## Fire resistance in separating floors

The following table describes Posi-Joist floors providing 60 minutes or 90 minutes fire resistance to EN1365-2:2014

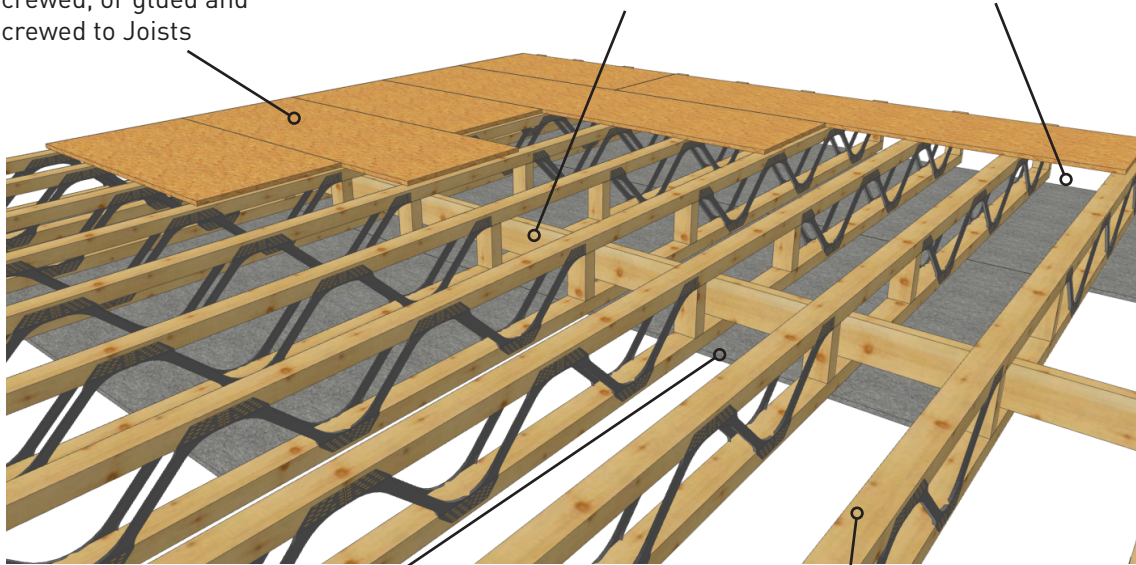
Fire Resistance	Max Joist Centres	Joist Depths	Ceiling details	Floor deck details
60 minutes	600mm	All depths ≥253mm	2no layers of 15mm Type F plasterboard fixed to joists via resilient bar at 400mm centres (drywall screws at 230mm centres)	18mm OSB/3
60 minutes	600mm	All depths ≥253mm	2 layers of 15mm Type F plasterboard fixed direct to joist soffits (drywall screws at 230mm centres)	18mm OSB/3
90 minutes	400mm	All depths ≥253mm	2no layers of 15mm Type F plasterboard fixed to joists via resilient bar at 400mm centres (drywall screws at 230mm centres)	18mm OSB/3

### 400mm Joist Centres, 15mm Type A plasterboard

22mm P5 Chipboard or 18mm OSB Deck, screwed, or glued and screwed to Joists

Min. 35x97mm Strongback

No room perimeter noggins



15mm **Type A** Plasterboard. Drywall screws at 150mm (perimeter)/230mm (internal) centres

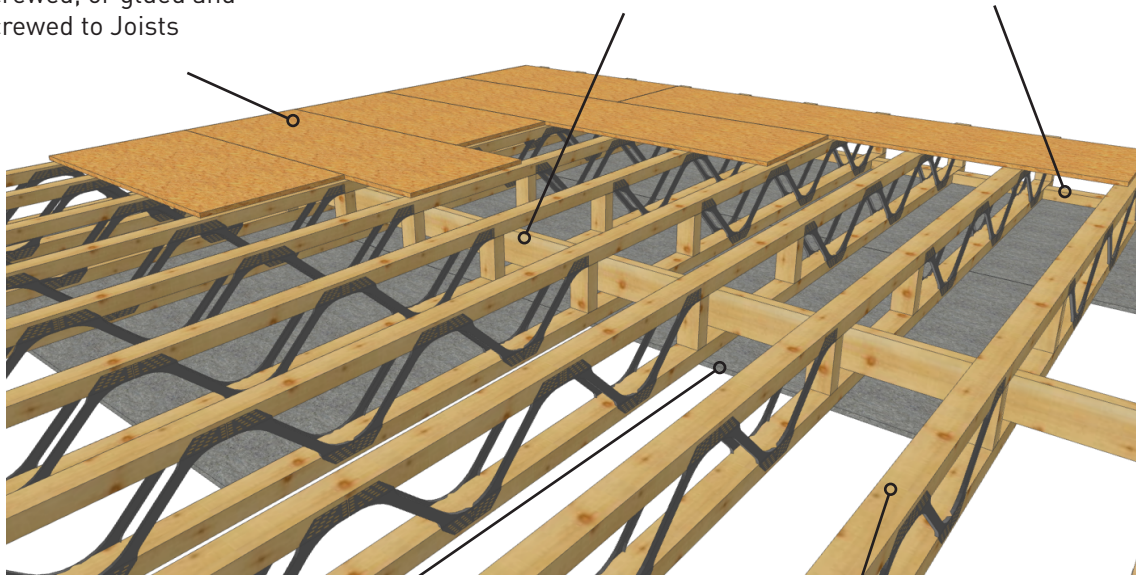
Posi-Joists at max **400mm** centres

### 400mm Joist Centres, 12.5mm Type A plasterboard + 5mm plaster skim

22mm P5 Chipboard or 18mm OSB Deck, screwed, or glued and screwed to Joists

Min. 35x97mm Strongback

Room perimeter noggins



12.5mm **Type A** Plasterboard with 5mm skim. Drywall screws at 150mm centres

Posi-Joists at max **400mm** centres

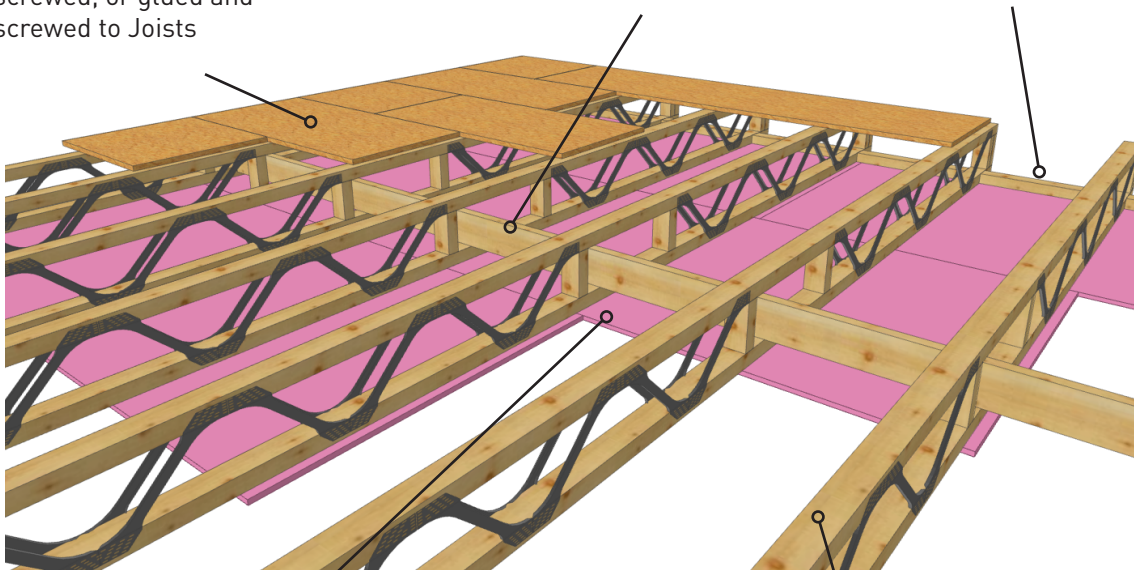


## 600mm Joist Centres, 15mm Type F plasterboard

22mm P5 Chipboard or 18mm OSB Deck, screwed, or glued and screwed to Joists

Min. 35x97mm Strongback

Room perimeter noggins



15mm **Type F** Plasterboard. Drywall screws at 230mm centres

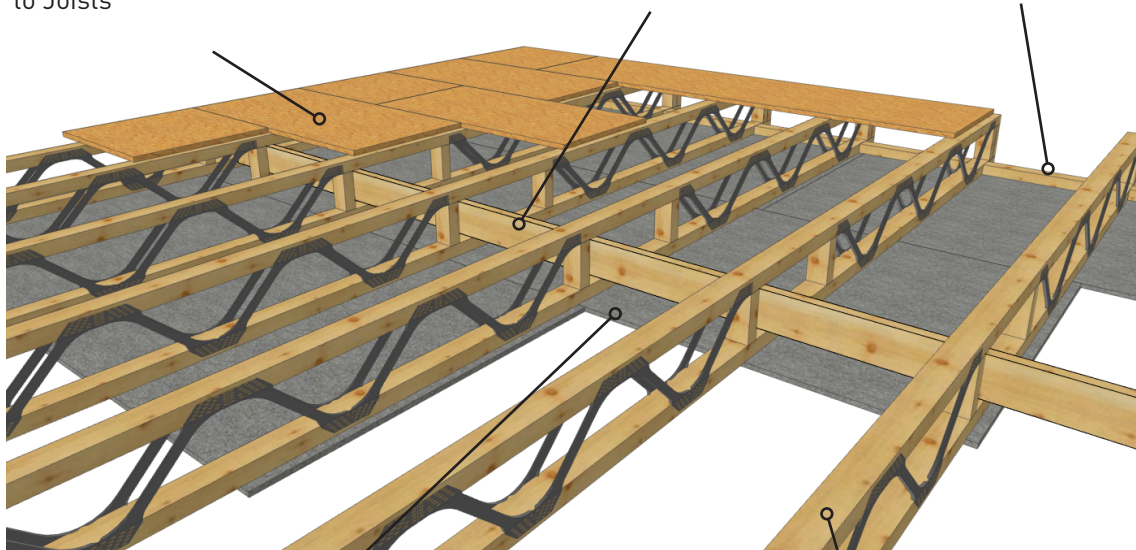
Posi-Joists at max **600mm** centres

## 600mm Joist Centres, 15mm Type A plasterboard (not recommended for ceilings with service penetrations)

22mm P5 Chipboard Deck, glued and screwed to Joists

Min. 47x97mm Strongback

Room perimeter noggins



15mm **Type A** Plasterboard. Drywall screws at 150mm centres

Posi-Joists at max **600mm** centres

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