# 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

### 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/m² applied to floor deck.

Plasterboard:

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

<table>
<thead>
<tr>
<th>Target Fire Resistance</th>
<th>Details of Fire Test</th>
<th>Construction of Test Floor</th>
<th>Other Relevant Factors</th>
<th>Results of Fire Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>REI30</td>
<td>BS476-21</td>
<td>16/11/16</td>
<td>Exova Warrington</td>
<td>400</td>
</tr>
<tr>
<td>REI30</td>
<td>EN1365-2</td>
<td>08/08/17</td>
<td>Cerib, France</td>
<td>600</td>
</tr>
<tr>
<td>REI30</td>
<td>EN1365-2</td>
<td>06/09/17</td>
<td>Exova Warrington</td>
<td>400</td>
</tr>
<tr>
<td>REI30</td>
<td>EN1365-2</td>
<td>15/09/17</td>
<td>Exova Warrington</td>
<td>400</td>
</tr>
<tr>
<td>REI30</td>
<td>Indicative</td>
<td>18/12/17</td>
<td>Exova Warrington</td>
<td>400</td>
</tr>
<tr>
<td>REI30</td>
<td>EN1365-2</td>
<td>17/03/18</td>
<td>Exova Warrington</td>
<td>600</td>
</tr>
<tr>
<td>REI30</td>
<td>EN1365-2</td>
<td>29/03/18</td>
<td>Peutz, Netherlands</td>
<td>400</td>
</tr>
<tr>
<td>REI30</td>
<td>EN1365-2</td>
<td>21/04/18</td>
<td>FIRES, Slovakia</td>
<td>600</td>
</tr>
<tr>
<td>REI60</td>
<td>EN1365-2</td>
<td>30/06/05</td>
<td>BRE</td>
<td>400</td>
</tr>
</tbody>
</table>

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

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

* - 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.

<table>
<thead>
<tr>
<th>Fire Resistance</th>
<th>Max Joist Centres</th>
<th>Joist Depths</th>
<th>Ceiling details</th>
<th>Floor deck details</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 minutes</td>
<td>600mm</td>
<td>All depths ≥253mm</td>
<td>2no layers of 15mm Type F plasterboard fixed to joists via resilient bar at 400mm centres [drywall screws at 230mm centres]</td>
<td>18mm OSB/3</td>
</tr>
<tr>
<td>60 minutes</td>
<td>600mm</td>
<td>All depths ≥253mm</td>
<td>2 layers of 15mm Type F plasterboard fixed direct to joist soffits [drywall screws at 230mm centres]</td>
<td>18mm OSB/3</td>
</tr>
<tr>
<td>90 minutes</td>
<td>400mm</td>
<td>All depths ≥253mm</td>
<td>2no layers of 15mm Type F plasterboard fixed to joists via resilient bar at 400mm centres [drywall screws at 230mm centres]</td>
<td>18mm OSB/3</td>
</tr>
</tbody>
</table>
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

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

Room perimeter
noggins

15mm Type A Plasterboard.
Drywall screws at 150mm
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

600mm Joist Centres, 15mm Type F plasterboard

600mm Joist Centres, 15mm Type A plasterboard

(not recommended for ceilings with service penetrations)