

### 3.10 KF57® Fire Resistance Tables

- Table 3.10.A** KF57 Fire Resistance - Floor Live Load 1.5kPa - Single Span
- Table 3.10.B** KF57 Fire Resistance - Floor Live Load 3.0kPa - Single Span
- Table 3.10.C** KF57 Fire Resistance - Floor Live Load 5.0kPa - Single Span
- Table 3.10.D** KF57 Fire Resistance - Floor Live Load 1.5kPa - Double Span
- Table 3.10.E** KF57 Fire Resistance - Floor Live Load 3.0kPa - Double Span
- Table 3.10.F** KF57 Fire Resistance - Floor Live Load 5.0kPa - Double Span
- Table 3.10.G** KF57 Fire Resistance - Floor Live Load 1.5kPa - Continuous Spans
- Table 3.10.H** KF57 Fire Resistance - Floor Live Load 3.0kPa - Continuous Spans
- Table 3.10.I** KF57 Fire Resistance - Floor Live Load 5.0kPa - Continuous Spans

#### Fire Resistance Tables Notes

The fire resistance tables are to be used to design fire rated KingFlor composite slabs that meet the assumptions below. For designs outside the parameters below and specified on the tables refer to the KingFlor Designer Suite or your local Fielders representative. For propping requirements refer to the temporary propping tables.

All fire resistance tables assume a BMT of 0.6mm. For design with other BMT's use KingFlor Designer Suite or contact your local Fielders representative.

#### Notation

- Dcs = depth of composite slab.
- L = Span between permanent supports.
- Bars - N12@200 indicates N12 bars at 200mm centres.
- Fire Reo - 1xN16/300 indicates 1 N16 bar at 300mm centres (in multiples of pan spacings)

#### Loads

- Construction Live Load 1.0kPa
- Ceiling & Services Load 0.35kPa
- Partitions Load 0.5kPa

#### Short & Long-Term Factors

- Short-term factor  $\psi = 0.7$
- Long-term factor  $\psi = 0.4$
- Combination-term factor  $\psi = 0.4$

#### Concrete Properties

- Normal wet density of concrete 2400kg/m<sup>3</sup>
- Normal dry density of concrete 2350 kg/m<sup>3</sup>
- Concrete strength  $f_c = 25\text{MPa}$
- Exposure Classification A1 with moderate crack control
- Cover to top reinforcement is 30mm

#### Reinforcing

- Steel Yield Strength  $f_{sy} = 500\text{MPa}$

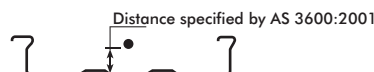
#### Mesh

Mesh is to be located in the top of the slab. Where the mesh code ends with a 'T' (eg. RL918T), the larger bars are to be located perpendicular to the decking ribs with the smaller perpendicular bars on top. Laps in mesh are to occur midspan.

#### Bars

Bars where required, are to be placed over internal permanent supports, on top of mesh. Length of bars are to be 0.6 x larger span + width of support. The bars are to be located 0.3 x span from edge of support for internal supports.

Fire reinforcement (Fire Reo) is to be located in the bottom of the slab in accordance with AS 3600:2001, Table 5.5.3 (A) "Fire Resistance Periods for Slabs". Bars are to be continuous & lapped at supports.



**Figure 3.10.A Fire Reinforcement Detail**

#### Spans

Spans L1, L2, L3 etc. cannot differ by more than 5% from both L1 and Ln.

Span is considered to be the larger of L1, L2...Ln.

Support width 50mm

The fire resistance tables have been prepared with the assumptions stated above. More refined designs can be obtained from Fielders or by using the KingFlor Designer Suite. Contact your local Fielders representative for design assistance.

**KF57® Fire Resistance**  
Single Span - Floor Live Load 1.5kPa





**1.5kPa**

Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	-	-	105	SL72	-	-	140	SL92	-	-
1,500	105	SL72	-	-	105	SL72	-	-	140	SL92	-	-
2,000	105	SL72	-	-	105	SL72	-	-	140	SL92	-	-
2,500	105	SL72	-	-	105	SL72	-	-	140	SL92	-	1xN10/300+
3,000	105	SL72	-	1xN10/600+	105	SL72	-	1xN10/600+	140	SL92	-	1xN12/300+
3,500	105	SL72	-	1xN10/300+	105	SL72	-	1xN10/300+	140	SL92	-	1xN16/300+
4,000	120	SL82	-	1xN10/300+	120	SL82	-	1xN12/300+	140	SL92	-	1xN16/300+
4,500	145	SL102	-	1xN10/300+	145	SL102	-	1xN12/300+	145	SL102	-	1xN20/300+
5,000	160	SL81	-	1xN10/300+	160	SL81	-	1xN12/300+	165	SL81	-	1xN20/300+
5,500	185	SL81	-	1xN12/300+	185	SL81	-	1xN16/300+	185	SL81	-	1xN20/300+
6,000	220	RL918T	-	1xN12/300+	220	RL918T	-	1xN16/300+	220	RL918T	-	1xN20/300+
6,500	250	RL1018T	-	1xN12/300+	250	RL1018T	-	1xN16/300+	250	RL1018T	-	1xN20/300+
7,000	275	RL1118T	-	1xN16/300+	275	RL1118T	-	1xN16/300+	280	RL1118T	-	2xN20/300+

Table 3.10.A KF57® Fire Resistance - Single Span - Floor Live Load 1.5kPa

**KF57® Fire Resistance**  
Single Span - Floor Live Load 3.0kPa





**3.0kPa**

Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	-	-	105	SL72	-	-	140	SL92	-	-
1,500	105	SL72	-	-	105	SL72	-	-	140	SL92	-	-
2,000	105	SL72	-	-	105	SL72	-	-	140	SL92	-	1xN10/600+
2,500	105	SL72	-	-	105	SL72	-	1xN10/600+	140	SL92	-	1xN10/300+
3,000	105	SL72	-	1xN10/600+	105	SL72	-	1xN10/300+	140	SL92	-	1xN12/300+
3,500	115	SL82	-	1xN10/300+	115	SL82	-	1xN10/300+	140	SL92	-	1xN16/300+
4,000	135	SL92	-	1xN10/300+	135	SL92	-	1xN10/300+	140	SL92	-	1xN20/300+
4,500	155	SL102	-	1xN10/300+	155	SL102	-	1xN12/300+	160	SL81	-	1xN20/300+
5,000	180	SL81	-	1xN10/300+	180	SL81	-	1xN12/300+	180	SL81	-	1xN20/300+
5,500	210	RL918T	-	1xN12/300+	215	RL918T	-	1xN12/300*	215	RL918T	-	1xN20/300+
6,000	240	RL1018T	-	1xN12/300+	240	RL1018T	-	1xN16/300+	240	RL1018T	-	1xN20/300+
6,500	270	RL1118T	-	1xN12/300*	270	RL1118T	-	1xN16/300+	270	RL1118T	-	2xN20/300+
7,000	300	RL1118T	-	1xN16/300+	300	RL1118T	-	1xN16/300+	300	RL1118T	-	2xN20/300+

Table 3.10.B KF57® Fire Resistance - Single Span - Floor Live Load 3.0kPa


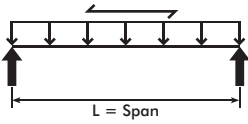
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- ‡ 20mm
- \* 40mm
- † 60mm

Shaded cells denote that internal span fire reinforcement is required.

These tables have been prepared considering KF57 0.6mm. For other gauges refer to KingFlor Designer.

Refer to the start of this section for additional parameters used to calculate the above table.

KF57® Fire Resistance Single Span - Floor Live Load 5.0kPa												
 <b>KF57®</b>									<b>5.0kPa</b>			
Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	-	-	105	SL72	-	-	140	SL92	-	-
1,500	105	SL72	-	-	105	SL72	-	-	140	SL92	-	-
2,000	105	SL72	-	-	105	SL72	-	-	140	SL92	-	1xN10/600†
2,500	105	SL72	-	1xN10/600†	105	SL72	-	1xN10/600†	140	SL92	-	1xN12/300†
3,000	105	SL72	-	1xN10/300†	110	SL82	-	1xN10/300†	140	SL92	-	1xN16/300†
3,500	130	SL92	-	1xN10/300†	130	SL92	-	1xN10/300†	140	SL92	-	1xN16/300†
4,000	150	SL102	-	1xN10/300†	155	SL102	-	1xN10/300†	155	SL102	-	1xN20/300†
4,500	175	SL81	-	1xN10/300†	175	SL81	-	1xN12/300†	175	SL81	-	1xN20/300†
5,000	205	RL918T	-	1xN10/300†	205	RL918T	-	1xN12/300†	205	RL918T	-	1xN20/300†
5,500	235	RL1018T	-	1xN12/300†	235	RL1018T	-	1xN12/300*	235	RL1018T	-	1xN20/300†
6,000	260	RL1018T	-	1xN16/300†	260	RL1018T	-	1xN16/300†	265	RL1118T	-	1xN20/300†
6,500	295	RL1118T	-	1xN16/300†	295	RL1118T	-	1xN16/300†	295	RL1118T	-	2xN20/300†
7,000	325	RL1218T	-	1xN16/300†	325	RL1218T	-	1xN16/300†	325	RL1218T	-	2xN20/300†

**Table 3.10.C KF57® Fire Resistance - Single Span - Floor Live Load 5.0kPa**

The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- \* 40mm
- ‡ 60mm

Shaded cells denote that internal span fire reinforcement is required.

These tables have been prepared considering KF57 0.6mm. For other gauges refer to KingFlor Designer.

Refer to the start of this section for additional parameters used to calculate the above table.



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	1xN10/300+
4,000	105	SL82	N10@275	-	105	SL72	N10@250	1xN10/600+	140	SL92	N10@400	1xN12/300*
4,500	105	SL82	N12@250	1xN10/600+	105	SL72	N12@225	1xN10/300+	140	SL92	N10@300	1xN16/300+
5,000	120	SL82	N12@200	1xN10/600+	115	SL82	N12@225	1xN10/300+	150	SL102	N10@300	1xN16/300*
5,500	130	SL92	N12@200	1xN10/300+	130	SL92	N12@200	1xN10/300+	150	SL102	N12@300	1xN20/300*
6,000	150	SL102	N12@200	1xN10/300+	150	SL102	N12@200	1xN10/300*	150	SL102	N16@300	1xN20/300*
6,500	165	SL81	N12@200	1xN10/300+	165	SL81	N12@200	1xN12/300+	165	SL81	N16@300	1xN20/300*
7,000	180	SL81	N12@200	1xN10/300+	180	SL81	N12@200	1xN12/300+	180	SL81	N16@300	2xN20/300+

Table 3.10.D KF57® Fire Resistance - Double Span - Floor Live Load 1.5kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,500	105	SL72	N10@225	-	105	SL72	N10@225	-	140	SL92	N10@400	1xN12/300+
4,000	115	SL82	N10@200	-	115	SL82	N10@200	1xN10/600+	140	SL92	N10@400	1xN12/300*
4,500	115	SL92	N12@200	-	120	SL92	N12@225	1xN10/300+	145	SL102	N10@300	1xN16/300+
5,000	130	SL102	N12@200	-	135	SL92	N12@200	1xN10/300+	150	SL81	N10@275	1xN16/300*
5,500	150	SL102	N12@200	1xN12/300+	150	SL102	N12@200	1xN10/300+	150	SL81	N12@250	1xN20/300+
6,000	165	SL81	N12@200	1xN12/300+	165	SL81	N12@200	1xN10/300*	165	SL81	N12@200	1xN20/300*
6,500	180	SL81	N16@300	1xN12/300+	180	SL81	N16@300	1xN12/300+	180	SL81	N16@300	1xN20/300*
7,000	205	RL918T	N16@200	1xN12/300+	205	RL918T	N16@200	1xN12/300+	205	RL918T	N16@200	1xN20/300*

Table 3.10.E KF57® Fire Resistance - Double Span - Floor Live Load 3.0kPa


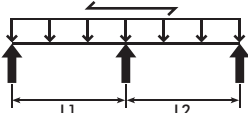
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- \* 40mm
- ‡ 60mm

Shaded cells denote that internal span fire reinforcement is required.

These tables have been prepared considering KF57 0.6mm. For other gauges refer to KingFlor Designer.

Refer to the start of this section for additional parameters used to calculate the above table.

KF57® Fire Resistance Double Span - Floor Live Load 5.0kPa												
 <b>KF57®</b>									5.0kPa			
Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,000	105	SL72	N10@250	-	105	SL72	N10@200	-	140	SL92	N10@400	-
3,500	110	SL82	N12@250	-	110	SL82	N12@250	-	140	SL92	N10@400	1xN12/300*
4,000	130	SL92	N12@250	-	130	SL92	N12@250	-	140	SL102	N10@200	1xN16/300*
4,500	140	SL92	N12@200	-	140	SL92	N12@200	-	150	SL102	N12@250	1xN16/300*
5,000	150	SL102	N16@325	-	150	SL102	N16@325	1xN10/300†	150	SL102	N16@325	1xN16/300*
5,500	165	SL81	N16@300	-	165	SL81	N16@300	1xN10/300†	165	SL81	N16@300	1xN20/300*
6,000	180	SL81	N16@200	-	180	SL81	N16@275	1xN12/300†	185	SL81	N16@275	1xN20/300*
6,500	210	RL918T	N16@200	-	210	RL918T	N16@200	1xN12/300†	210	RL918T	N16@200	1xN20/300*
7,000	240	RL1018T	N16@200	1xN10/300†	240	RL1018T	N16@200	1xN12/300†	240	RL1018T	N16@200	1xN20/300*

**Table 3.10.F KF57® Fire Resistance - Double Span - Floor Live Load 5.0kPa**

The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- \* 40mm
- † 60mm

Shaded cells denote that internal span fire reinforcement is required.

These tables have been prepared considering KF57 0.6mm. For other gauges refer to KingFlor Designer.

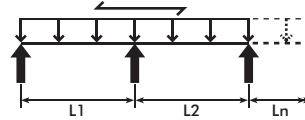
Refer to the start of this section for additional parameters used to calculate the above table.

# SPECIFYING FIELDERS

## KF57® Fire Resistance Continuous Span - Floor Live Load 1.5kPa



**KF57®**



**1.5kPa**

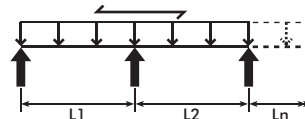
Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	1xN12/300+
4,000	110	SL82	N10@400	-	110	SL82	N10@400	1xN10/600+	140	SL92	N10@400	1xN12/300*
4,500	115	SL82	N10@300	1xN10/600+	115	SL82	N10@300	1xN10/300+	140	SL92	N12@400	1xN16/300*
5,000	130	SL92	N10@300	1xN10/300+	130	SL92	N10@300	1xN10/300+	145	SL102	N12@400	1xN16/300*
5,500	145	SL102	N10@300	1xN10/300+	145	SL102	N10@300	1xN10/300+	145	SL102	N12@400	1xN20/300*
6,000	165	SL81	N10@300	1xN10/300+	165	SL81	N10@300	1xN10/300*	165	SL81	N12@400	1xN20/300*
6,500	180	SL81	N10@300	1xN10/300+	185	SL81	N10@300	1xN12/300+	185	RL918T	N12@225	1xN20/300*
7,000	205	RL918T	N12@200	1xN10/300*	205	RL918T	N12@200	1xN12/300*	205	RL918T	N12@200	1xN20/300*

Table 3.10.G KF57® Fire Resistance - Continuous Span - Floor Live Load 1.5kPa

## KF57® Fire Resistance Continuous Span - Floor Live Load 3.0kPa



**KF57®**



**3.0kPa**

Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	
3,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	
3,500	105	SL72	N10@325	-	105	SL72	N10@325	1xN10/600+	140	SL92	N10@400	1xN12/300*
4,000	110	SL82	N10@250	-	110	SL82	N10@250	1xN10/300+	140	SL92	N10@400	1xN16/300*
4,500	125	SL92	N10@250	1xN10/600+	125	SL92	N10@250	1xN10/300+	160	SL81	N10@400	1xN16/300*
5,000	145	SL102	N10@275	1xN10/600*	145	SL102	N10@275	1xN10/300+	160	SL81	N10@400	1xN16/300*
5,500	160	SL81	N10@275	1xN10/300+	165	SL81	N10@275	1xN10/300+	165	SL81	N10@325	1xN20/300*
6,000	180	SL81	N10@250	1xN10/300+	180	SL81	N10@250	1xN12/300+	180	SL81	N10@250	1xN20/300*
6,500	205	RL918T	N16@300	1xN10/300+	205	RL918T	N16@300	1xN12/300+	205	RL918T	N16@300	1xN20/300*
7,000	225	RL1018T	N16@275	1xN10/300*	225	RL1018T	N16@275	1xN12/300*	225	RL1018T	N16@275	1xN20/300*

Table 3.10.H KF57® Fire Resistance - Continuous Span - Floor Live Load 3.0kPa

The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

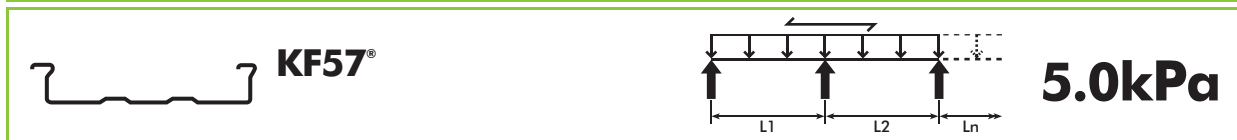
- † 20mm
- \* 40mm
- ‡ 60mm

Shaded cells denote that internal span fire reinforcement is required.

These tables have been prepared considering KF57 0.6mm. For other gauges refer to KingFlor Designer.

Refer to the start of this section for additional parameters used to calculate the above table.

## KF57® Fire Resistance Continuous Span - Floor Live Load 5.0kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL92	N10@400	-
3,000	110	SL82	N10@400	-	110	SL82	N10@400	-	140	SL92	N10@400	-
3,500	110	SL82	N10@225	-	110	SL82	N10@225	1xN10/300†	140	SL92	N10@400	1xN12/300*
4,000	125	SL92	N10@225	-	125	SL92	N10@225	1xN10/300†	145	SL102	N10@400	1xN16/300*
4,500	140	SL102	N10@200	-	140	SL102	N10@200	1xN10/300†	145	SL102	N10@225	1xN16/300*
5,000	160	SL81	N10@200	-	160	SL81	N10@200	1xN10/300†	160	SL81	N10@225	1xN20/300†
5,500	180	SL81	N10@200	1xN10/300†	180	SL81	N10@200	1xN12/300†	180	SL81	N10@200	1xN20/300*
6,000	200	RL918T	N16@300	1xN10/300†	200	RL918T	N16@300	1xN12/300†	200	RL918T	N16@300	1xN20/300*
6,500	225	RL1018T	N16@275	1xN10/300*	225	RL1018T	N16@275	1xN12/300*	225	RL1018T	N16@275	1xN20/300*
7,000	250	RL1018T	N16@250	1xN10/300*	250	RL1018T	N16@250	1xN12/300*	250	RL1018T	N16@250	1xN20/300*

**Table 3.10.I KF57® Fire Resistance - Continuous Span - Floor Live Load 5.0kPa**

The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- \* 40mm
- ‡ 60mm

Shaded cells denote that internal span fire reinforcement is required.

These tables have been prepared considering KF57 0.6mm. For other gauges refer to KingFlor Designer.

Refer to the start of this section for additional parameters used to calculate the above table.