4.10 KF70® Fire Resistance Tables

Index of KF70® Fire Resistance Tables

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.

Notation

Dcs = depth of composite slab.
L = Span between permanent supports.

Loads

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

Short & Long-Term Factors

Short-term factor ψ = 0.7
Long-term factor ψ = 0.4
Combination-term factor ψ = 0.4

Concrete Properties

Normal wet density of concrete 2400kg/m^3
Normal dry density of concrete 2350 kg/m^3
Concrete strength f'c = 25MPa
Exposure Classification A1 with moderate crack control
Cover to top reinforcement is 30mm

Reinforcing

Steel Yield Strength f_{sy} = 500MPa
Bars - N12@200 indicates N12 bars at 200mm centers.

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.

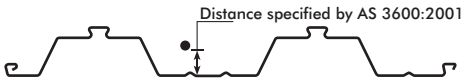


Figure 4.10.A Fire Reinforcement Detail

Spans

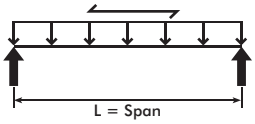
Spans L1, L2, L3 etc. cannot differ by more than 5% from both L1 and Ln.

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.

KF70® Fire Resistance
Single Spans - Floor Live Load 1.5kPa

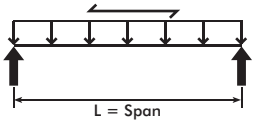


1.5kPa

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	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
1,500	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
2,000	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
2,500	130	SL82	-	1xN10/300✦	130	SL82	-	1xN10/300✦	150	SL92	-	1xN16/300✦
3,000	130	SL82	-	1xN10/300✦	130	SL82	-	1xN12/300✦	150	SL92	-	1xN16/300✦
3,500	130	SL82	-	1xN12/300✦	130	SL82	-	1xN16/300✦	150	SL92	-	1xN20/300✦
4,000	140	SL92	-	1xN12/300✶	140	SL92	-	1xN16/300✦	150	SL92	-	1xN20/300✦
4,500	160	SL102	-	1xN16/300✦	160	SL102	-	1xN16/300✦	165	SL102	-	2xN20/300✦
5,000	180	SL81	-	1xN16/300✦	185	SL81	-	1xN16/300✶	190	SL81	-	2xN20/300✦
5,500	215	RL918T	-	1xN16/300✦	220	RL918T	-	1xN16/300✶	220	RL918T	-	2xN20/300✦
6,000	245	RL1018T	-	1xN16/300✦	245	RL1018T	-	1xN16/300✶	245	RL1018T	-	2xN20/300✦
6,500	280	RL1118T	-	1xN16/300✶	270	RL1118T	-	1xN20/300✦	275	RL1118T	-	2xN20/300✦
7,000	305	RL1118T	-	1xN16/300✶	300	RL1118T	-	1xN20/300✦	305	RL1118T	-	2xN20/300✦

Table 4.10.A KF70® Fire Resistance - Single Spans - Floor Live Load 1.5kPa

KF70® Fire Resistance
Single Spans - 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	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
1,500	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
2,000	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
2,500	130	SL82	-	1xN10/300✦	130	SL82	-	1xN10/300✦	150	SL92	-	1xN16/300✦
3,000	130	SL82	-	1xN10/300✶	130	SL82	-	1xN12/300✶	150	SL92	-	1xN16/300✦
3,500	130	SL92	-	1xN12/300✦	130	SL82	-	1xN16/300✦	150	SL92	-	2xN16/300✦
4,000	155	SL102	-	1xN12/300✶	155	SL102	-	1xN16/300✦	160	SL102	-	2xN16/300✦
4,500	180	SL81	-	1xN16/300✦	180	SL81	-	1xN16/300✦	180	SL81	-	2xN16/300✦
5,000	200	SL81	-	1xN16/300✦	210	RL918T	-	1xN16/300✶	215	RL918T	-	2xN16/300✦
5,500	235	RL918T	-	1xN16/300✦	240	RL1018T	-	1xN16/300✶	240	RL1018T	-	2xN20/300✦
6,000	265	RL1018T	-	1xN16/300✦	270	RL1018T	-	1xN16/300✶	270	RL1018T	-	2xN20/300✦
6,500	300	RL1118T	-	1xN16/300✶	300	RL1118T	-	1xN20/300✦	295	RL1118T	-	2xN20/300✦
7,000	330	RL1218T	-	1xN16/300✶	325	RL1118T	-	1xN20/300✶	325	RL1118T	-	2xN20/300✦

Table 4.10.B KF70® Fire Resistance - Single Spans - Floor Live Load 3.0kPa

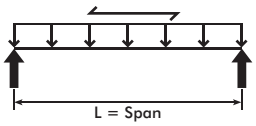
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

✦ 20mm
✶ 40mm
† 60mm

Shaded cells denote that internal span fire reinforcement is required. (No end spans)

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

KF70® Fire Resistance
Single Spans - Floor Live Load 5.0kPa



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	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
1,500	130	SL82	-	-	130	SL82	-	-	150	SL92	-	-
2,000	130	SL82	-	-	130	SL82	-	-	150	SL92	-	1xN12/300✦
2,500	130	SL82	-	1xN10/300✦	130	SL82	-	1xN12/300✦	150	SL92	-	1xN16/300✦
3,000	130	SL82	-	1xN12/300✦	135	SL82	-	1xN12/300✶	150	SL92	-	1xN20/300✦
3,500	150	SL92	-	1xN12/300✶	145	SL92	-	1xN16/300✦	170	SL102	-	1xN20/300✦
4,000	170	SL102	-	1xN16/300✦	170	SL102	-	1xN16/300✦	180	SL81	-	1xN20/300✦
4,500	195	SL81	-	1xN16/300✦	195	SL81	-	1xN16/300✦	200	SL81	-	1xN20/300✶
5,000	230	RL918T	-	1xN16/300✦	230	RL918T	-	1xN16/300✶	235	RL918T	-	2xN20/300✦
5,500	255	RL1018T	-	1xN16/300✦	260	RL1018T	-	1xN16/300✶	260	RL1018T	-	2xN20/300✦
6,000	290	RL1118T	-	1xN16/300✶	290	RL1118T	-	1xN16/300✶	290	RL1118T	-	2xN20/300✦
6,500	320	RL1118T	-	1xN16/300✶	315	RL1118T	-	1xN20/300✦	320	RL1118T	-	2xN20/300✦
7,000	355	RL1218T	-	1xN16/300✶	350	RL1218T	-	1xN20/300✶	350	RL1218T	-	2xN20/300✦

Table 4.10.C KF70® Fire Resistance - Single Spans - 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

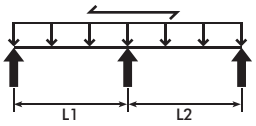
✶ 40mm

† 60mm

Shaded cells denote that internal span fire reinforcement is required. (No end spans)

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

KF70® Fire Resistance
Double Spans - Floor Live Load 1.5kPa

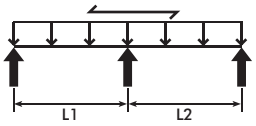


1.5kPa

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	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
1,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,000	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
3,000	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
3,500	130	SL82	N10@400	1xN10/600✦	130	SL82	N10@400	1xN10/300✶	150	SL92	N10@400	1xN16/300✶
4,000	130	SL82	N10@400	1xN10/300✦	130	SL82	N10@400	1xN10/300†	150	SL92	N10@400	2xN16/300✶
4,500	130	SL82	N10@300	1xN10/300✶	130	SL82	N10@300	1xN16/300✶	150	SL92	N10@400	2xN16/300✶
5,000	135	SL92	N10@250	1xN12/300✶	135	SL92	N12@350	1xN16/300✶	160	SL102	N10@300	2xN16/300✶
5,500	155	SL102	N12@300	1xN12/300✶	160	SL102	N12@350	1xN16/300✶	160	SL102	N10@250	2xN20/300✶
6,000	165	SL81	N12@300	1xN12/300✶	170	SL102	N12@275	1xN16/300†	170	SL102	N12@275	2xN20/300✶
6,500	185	SL81	N12@300	1xN12/300†	185	SL81	N12@300	1xN16/300✶	185	SL81	N12@275	2xN20/300✶
7,000	200	SL81	N16@300	1xN16/300✦	200	SL81	N12@250	1xN16/300✶	200	SL81	N16@275	2xN20/300✶

Table 4.10.D KF70® Fire Resistance - Double Spans - Floor Live Load 1.5kPa

KF70® Fire Resistance
Double Spans - 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	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
1,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,000	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
3,000	130	SL82	N10@400	1xN10/300✦	130	SL82	N10@400	1xN10/300*	150	SL92	N10@400	1xN12/300✶
3,500	130	SL82	N10@400	1xN10/300✦	130	SL82	N10@400	1xN10/300✶	150	SL92	N12@400	1xN16/300✶
4,000	130	SL82	N10@250	1xN10/300✦	130	SL82	N10@250	1xN12/300✶	150	SL92	N12@400	2xN16/300✶
4,500	135	SL92	N10@200	1xN10/300✶	140	SL92	N10@225	1xN12/300†	150	SL92	N12@375	2xN16/300✶
5,000	150	SL92	N12@225	1xN12/300✶	150	SL92	N12@225	1xN16/300✶	150	SL102	N12@275	2xN20/300✶
5,500	170	SL102	N12@225	1xN12/300✶	170	SL102	N12@225	1xN16/300✶	170	SL102	N12@225	2xN20/300✶
6,000	185	SL81	N12@225	1xN12/300✶	185	SL81	N12@250	1xN16/300✶	190	SL81	N12@250	2xN20/300✶
6,500	200	SL81	N16@250	1xN12/300✶	200	SL81	N12@200	1xN16/300✶	205	RL918T	N16@275	2xN20/300✶
7,000	230	RL918T	N16@250	1xN12/300†	230	RL918T	N16@250	1xN16/300✶	225	RL1018T	N16@225	2xN20/300✶

Table 4.10.E KF70® Fire Resistance - Double Spans - Floor Live Load 3.0kPa

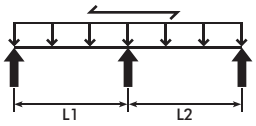
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

✦ 20mm
✶ 40mm
† 60mm

Shaded cells denote that internal span fire reinforcement is required. (No end spans)

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

KF70® Fire Resistance
Double Spans - Floor Live Load 5.0kPa



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	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
1,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,000	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
3,000	130	SL82	N10@400	1xN10/300✦	130	SL82	N10@400	1xN10/300✶	150	SL92	N10@400	1xN16/300✶
3,500	130	SL82	N10@250	1xN10/300✦	130	SL82	N10@250	1xN10/300†	150	SL92	N12@250	1xN16/300✶
4,000	140	SL92	N10@200	1xN10/300✶	140	SL92	N10@200	1xN12/300✶	150	SL92	N12@325	1xN20/300✶
4,500	150	SL92	N12@200	1xN10/300✶	150	SL92	N12@200	1xN12/300†	160	SL102	N16@200	1xN20/300✶
5,000	170	SL102	N12@200	1xN10/300✶	170	SL102	N12@200	1xN12/300†	170	SL81	N16@200	1xN20/300✶
5,500	185	SL81	N12@200	1xN10/300†	185	SL81	N12@200	1xN16/300✶	185	SL81	N16@200	1xN24/300✶
6,000	200	SL81	N16@225	1xN12/300✶	200	SL81	N16@300	1xN16/300✶	205	RL918T	N16@200	1xN24/300✶
6,500	230	RL918T	N16@200	1xN12/300✶	225	RL918T	N16@200	1xN16/300✶	225	RL918T	N16@200	1xN24/300✶
7,000	250	RL1018T	N16@200	1xN12/300✶	250	RL1018T	N16@200	1xN16/300✶	250	RL1018T	N16@200	1xN24/300✶

Table 4.10.F KF70® Fire Resistance - Double Spans - Floor Live Load 5.0kPa

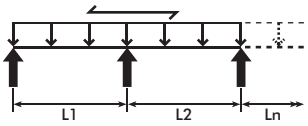
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

✦ 20mm
✶ 40mm
† 60mm

Shaded cells denote that internal span fire reinforcement is required. (No end spans)

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

KF70® Fire Resistance
Continuous Spans - Floor Live Load 1.5kPa

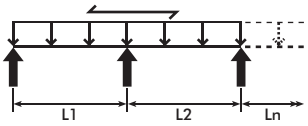


1.5kPa

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	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
1,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,000	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
3,000	130	SL82	N10@400	1xN10/600✦	130	SL82	N10@400	1xN10/600✦	150	SL92	N10@400	1xN12/300✶
3,500	130	SL82	N10@400	1xN10/600✦	130	SL82	N10@400	1xN10/300✶	150	SL92	N10@400	1xN16/300✶
4,000	130	SL82	N10@400	1xN10/300✦	130	SL82	N10@400	1xN10/300†	150	SL92	N12@400	1xN16/300✶
4,500	130	SL82	N10@400	1xN10/300✶	135	SL92	N10@400	1xN12/300†	160	SL102	N12@400	1xN20/300✶
5,000	145	SL92	N10@400	1xN12/300✶	145	SL102	N10@400	1xN16/300✶	170	SL102	N12@400	1xN20/300✶
5,500	165	SL102	N10@400	1xN12/300✶	165	SL102	N10@400	1xN16/300✶	180	SL81	N12@400	1xN20/300✶
6,000	180	SL81	N10@400	1xN12/300✶	180	SL81	N10@400	1xN16/300✶	200	SL81	N12@400	1xN20/300✶
6,500	200	SL81	N12@250	1xN12/300✶	200	SL81	N12@300	1xN16/300✶	205	RL918T	N12@275	2xN20/300✶
7,000	230	RL918T	N12@200	1xN12/300†	230	RL918T	N12@200	1xN16/300✶	230	RL918T	N12@225	2xN20/300✶

Table 4.10.G KF70® Fire Resistance - Continuous Spans - Floor Live Load 1.5kPa

KF70® Fire Resistance
Continuous Spans - 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	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
1,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,000	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
3,000	130	SL82	N10@400	1xN10/600✦	130	SL82	N10@400	1xN10/300✦	150	SL92	N10@400	1xN12/300✶
3,500	130	SL82	N10@400	1xN10/600✶	130	SL82	N10@400	1xN10/300✶	150	SL92	N10@400	1xN16/300✶
4,000	135	SL82	N10@400	1xN10/300✶	130	SL82	N10@375	1xN12/300✶	160	SL102	N12@400	1xN16/300✶
4,500	145	SL92	N10@350	1xN12/300✦	145	SL92	N10@350	1xN12/300†	170	SL81	N12@300	1xN16/300✶
5,000	160	SL102	N10@400	1xN12/300✶	160	SL102	N10@350	1xN16/300✶	185	RL918T	N16@300	1xN20/300✶
5,500	180	SL81	N10@400	1xN12/300✶	180	SL81	N10@400	1xN16/300✶	190	RL918T	N16@300	1xN20/300✶
6,000	200	SL81	N10@325	1xN12/300✶	200	SL81	N10@300	1xN16/300✶	200	RL918T	N16@300	2xN20/300✶
6,500	235	RL918T	N12@200	1xN12/300✶	225	RL918T	N12@200	1xN16/300✶	225	RL918T	N16@300	2xN20/300✶
7,000	250	RL1018T	N16@300	1xN12/300†	250	RL1018T	N16@300	1xN16/300✶	250	RL1018T	N16@300	2xN20/300✶

Table 4.10.H KF70® Fire Resistance - Continuous Spans - Floor Live Load 3.0kPa

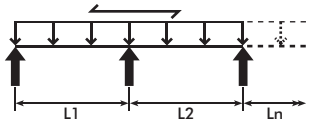
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

✦ 20mm
✶ 40mm
† 60mm

Shaded cells denote that internal span fire reinforcement is required. (No end spans)

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

KF70® Fire Resistance
Continuous Spans - Floor Live Load 5.0kPa



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	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
1,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,000	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	-
2,500	130	SL82	N10@400	-	130	SL82	N10@400	-	150	SL92	N10@400	1xN10/300✶
3,000	130	SL82	N10@400	1xN10/600✶	130	SL82	N10@400	1xN10/300✶	160	SL102	N10@400	1xN12/300✶
3,500	130	SL82	N10@350	1xN10/300✶	130	SL82	N10@375	1xN12/300✶	160	SL102	N12@300	1xN16/300✶
4,000	140	SL92	N10@300	1xN10/300✶	140	SL92	N10@300	1xN12/300✶	170	SL102	N12@300	1xN16/300✶
4,500	160	SL102	N10@300	1xN10/300✶	160	SL102	N10@300	1xN12/300†	170	SL81	N12@300	1xN20/300✶
5,000	180	SL81	N10@300	1xN10/300✶	180	SL81	N10@300	1xN12/300†	180	SL81	N12@300	1xN20/300✶
5,500	200	SL81	N10@250	1xN12/300✶	210	RL918T	N12@225	1xN12/300†	205	RL918T	N12@200	1xN20/300✶
6,000	235	RL918T	N12@200	1xN12/300✶	235	RL918T	N16@300	1xN12/300†	225	RL918T	N16@300	1xN20/300✶
6,500	250	RL1018T	N16@300	1xN12/300✶	250	RL1018T	N16@300	1xN16/300✶	245	RL1018T	N16@300	2xN20/300✶
7,000	270	RL1018T	N16@275	1xN12/300†	270	RL1018T	N16@250	1xN16/300✶	270	RL1018T	N16@300	2xN20/300✶

Table 4.10.I KF70® Fire Resistance - Continuous Spans - 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. (No end spans)

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