



Promat

PROMATECT®-250

How to calculate the thickness of fire protection for beams and columns

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How to calculate the thickness of fire protection for beams and columns

A/V ratio for beams and column cladding fire resistance up to 120 minutes.

The Building Regulations require certain elements of structure to have fire resistance for a specified minimum period.

The thickness of PROMATECT®-250 required to achieve this depends on the following factors:

- Period of fire resistance specified.
- The section factor of the steel (A/V) which is based on the size of the steel and the number of sides

exposed to the fire. The A/V ratios for steel sizes can be manually calculated or found in the Promat Passive Fire Protection Handbook, or the ASFP Yellow Book.

- The limiting temperature for the steel as advised by the structural engineer or structural steel frame designer. If this is not available, please consult ASFP Yellow Book.
- The following tables are then used to determine the thickness of PROMATECT®-250 to provide the required fire resistance period.

FIRE PROTECTION THICKNESS: PROMATECT®-250 FOR COLUMN AND BEAM CLADDINGS

350°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	250	65	-	-	15mm	-
	350	115	60	-	20mm	-
		190	85	55	25mm	-
		350	120	70	-	15mm + 15mm
			205	95	-	15mm + 20mm
			350	140	-	20mm + 20mm
				240	-	20mm + 25mm
				350	-	25mm + 25mm

400°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	80	-	-	15mm	-
		140	70	-	20mm	-
		245	105	70	25mm	-
		350	170	90	-	15mm + 15mm
			305	120	-	15mm + 20mm
			350	180	-	20mm + 20mm
				325	-	20mm + 25mm
				350	-	25mm + 25mm

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FIRE PROTECTION THICKNESS: PROMATECT®-250 FOR COLUMN AND BEAM CLADDINGS

450°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	95	50	-	15mm	-
		175	85	55	20mm	-
		305	125	80	25mm	-
		350	205	100	-	15mm + 15mm
			350	135	-	15mm + 20mm
				190	-	20mm + 20mm
				310	-	20mm + 25mm
				350	-	25mm + 25mm

500°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	115	55	-	15mm	-
		220	100	65	20mm	-
		350	155	95	25mm	-
			265	115	-	15mm + 15mm
			350	150	-	15mm + 20mm
				200	-	20mm + 20mm
				315	-	20mm + 25mm
				350	-	25mm + 25mm

550°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	135	65	-	15mm	-
		280	120	75	20mm	-
		350	185	110	25mm	-
			350	140	-	15mm + 15mm
				175	-	15mm + 20mm
				235	-	20mm + 20mm
				350	-	20mm + 25mm
					-	25mm + 25mm

600°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	165	75	50	15mm	-
		350	140	85	20mm	-
			220	125	25mm	-
			350	170	-	15mm + 15mm
				215	-	15mm + 20mm
				290	-	20mm + 20mm
				350	-	20mm + 25mm
					-	25mm + 25mm

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650°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	255	85	55	15mm	-
		350	160	95	20mm	-
			260	145	25mm	-
			350	230	-	15mm + 15mm
				290	-	15mm + 20mm
				350	-	20mm + 20mm
					-	20mm + 25mm
					-	25mm + 25mm
					-	25mm + 25mm

700°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	255	100	60	15mm	-
		350	190	110	20mm	-
			310	165	25mm	-
			350	340	-	15mm + 15mm
				350	-	15mm + 20mm
					-	20mm + 20mm
					-	20mm + 25mm
					-	20mm + 25mm
					-	25mm + 25mm

750°C

Fire resistance period (minutes)					Board thickness (mm)	
A/V Ratio	30	60	90	120	Single layer	Double layer
	350	325	115	70	15mm	-
		350	220	125	20mm	-
			350	190	25mm	-
				350	-	15mm + 15mm
					-	15mm + 20mm
					-	20mm + 20mm
					-	20mm + 25mm
					-	20mm + 25mm
					-	25mm + 25mm

Promat

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0605-PRO V1/01/2022

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