



25 July 2016

By email

ATTENTION: To Whom It May Concern

FIRE COMPLIANCE OF MEGAFORM WALL SYSTEMS

Megaform Building Systems have requested that Kirk Roberts provide a confirmation of the compliance of the Megaform Wall System with current Australian Standards.

We have used the solutions contained in AS3600-2009 to determine the compliance of the systems. The Megaform system is essentially a polystyrene permanent formwork system which creates a solid concrete wall within the formwork system. As such the table below shows the fire rating achieved by the systems in accordance with AS3600 Section 5.7:

Megaform System	System Concrete Core Thickness	Insulation Rating (Table 5.7.1)	Structural Adequacy (table 5.7.2) ² . (Required cover to reinforcing) ³		Fire Rating Achieved ⁵ and limitations
			35% axial utilisation	70% axial utilisation	
Series 230	100mm	90 minutes	30 minutes (10mm) ONE SIDED RATING AND 35% UTILISATION ONLY ⁴	N/A	30 minutes, 10mm minimum cover, ONE SIDED RATING AND 35% UTILISATION ONLY⁴
Series 280	150mm	180 minutes	90 minutes (10mm)	60 minutes (10mm)	90 minutes, 10mm minimum cover (35%)
Series 330	200mm	In excess of 240mm ¹ (175mm wall achieves 240 minutes)	180 minutes (45mm)	90 minutes (25mm)	180 minutes, 45mm minimum cover (35%)

1. Table 5.7.1 and 5.7.2 only cover fire resistance ratings up to 240mm.
2. Table 5.7.2 has structural adequacy ratings for walls subject to one sided fire and two sided fire. The summary table above assumes the most onerous requirement being two sided fire. The summary table above also provides two different structural adequacy ratings for the wall axial utilisation ratio. The axial utilisation factor is defined as: $\frac{N_f^*}{\phi N_{tu}}$ and must be checked by the designer for all instances. 70% is the maximum axial utilisation covered by AS3600. The structural adequacy rating may be provided by other means, however the summary table above is considered to be a conservative assessment of the fire capability of the systems. Linear Interpolation if allowed for axial utilisations between 35% and 70% - i.e. Series 360 with two sided fire will achieve 120 minutes provided the axial utilisation is less than 57%.
3. The bracketed values are the required cover to achieve the structural adequacy. We have checked the Megaform manual and confirm that the covers are generally provided for the systems.
4. The Series 230 wall only provides 30 minutes structural adequacy for a maximum axial utilisation of 35% and for one sided fire only. Higher axial utilisations or two sided exposure will require specific analysis and/or testing.
5. Integrity Rating is assumed to be met if the Insulation rating and Structural Adequacy ratings are met (refer Section 5.3.1).

To summarise the Megaform system is deemed to achieve the same fire performance as the similar thickness concrete wall and hence the fire performance of the walls can be checked against the requirements of AS3600. The building structural adequacy rating governs the overall fire performance of the walls and the building designer will be required to check the axial utilisation of the walls to determine the structural adequacy of the wall to determine the fire performance. The above table is a summary only and improved levels of performance can be proven using AS3600 on a case by case basis.

Please contact us if any further information or clarifications are required.

Regards,

A handwritten signature in blue ink, appearing to read 'Nick Calvert', with a stylized flourish at the end.

NICK CALVERT

Structural Manager

B.E. (Hons), MIPENZ, CPEng (ID: 242062), IntPE