

## Appendix D

### Test Reports for Lightweight Concrete Panels Used as Wall and Floor of PBUs

<b>Product Name</b>	
<b>Manufacturer</b>	
<b>Concrete Mix Raw Materials</b> <i>(No need to indicate proportion)</i>	
<b>Grade of concrete</b>	
<b>Density of concrete (kg/m3)</b>	

#### Instructions

1. Unless otherwise stated, please conduct and submit test reports according to the test standards listed below.
2. All test reports shall be the original or certified true copies issued by local or overseas laboratories accredited to ISO/IEC 17025, SAC-SINGLAS and SAC-MRA<sup>Note 1</sup> within last 5 years.
3. The manufacturer of the lightweight concrete panels used in the PBU system shall establish a Quality Management System certified according to EN ISO 9001.

S/N	Test Standard	Criteria
<b>A Strength Performance</b>		
1	<u>SS492:2001</u> Specification for performance requirements for strength and robustness (including methods of test) for partition walls.	To achieve a grade of <b>Medium Duty (MD)</b> and above.
<b>B Fire Safety<sup>#</sup> and Thermal Properties</b>		
2.	<u>EN 13501-1: 2007 +A1: 2009</u> Fire classification of construction products and building elements on flame spread and smoke density.	As per the Section 3.15.19 of the <u>Code of Practice for Fire Precautions in Buildings 2018</u> available on the SCDF website.
3.	<u>BS EN 45545-2:2013+A1:2015</u> Toxicity emission of construction products and building elements.	
<p><sup>#</sup> The tests required for fire safety may vary according to the type and composition of lightweight concrete. As such, please be advised to consult SCDF on the necessary tests to be conducted. The consultation can be facilitated by the PBU screening panel secretariat after the submission of application.</p>		

S/N	Test Standard	Criteria
<b>C</b>	<b>Physical and Moisture Related Properties</b>	
4.	<u>BS EN 772-11:2011</u> Methods of test for masonry units Part 11: Determination of water absorption due to capillary action.	<b><u>Coefficient of Water Absorption due to Capillary Action (<math>\text{g}/\text{m}^2 \cdot \text{s}^{0.5}</math>) should not exceed 30, 25 and 20</u></b> (rounded to nearest integer) at test duration of 10 minutes, 30 minutes and 90 minutes respectively.
5.	<u>BS EN 772-1:2000</u> Methods of test for masonry units – Part 1: Determination of compressive strength*  *To adopt conditioning by immersion.	<b><u><math>\geq 80\%</math> of mean declared value</u></b> (compressive strength in dry state, as tested in the normal cube strength test), accordance with EN 771-4.
6.	<u>BS EN 12467: 2012*</u> Moisture resistance properties of material.  *Test standards and requirements to adopt <u>Category A</u> unless otherwise stated.	
	a) Water impermeability*  *For panel boards used as floor panels within the PBU system, please adopt a water height of 50mm above the sample panel board during the test.	Traces of moisture may appear on the under face of the sheet, <b><u>but in no instance shall there be any formation of drops of water.</u></b>
	b) Heat-rain*  *Test to be conducted on uncoated panel boards (e.g. without water proofing, paint, tiles etc) for 50 cycles. Any additional material which appears on the back panel surface during the test should be sampled and tested for identification purpose.  The same specimen is to be tested for water impermeability after the heat-rain test, in accordance with the test methods specified in the BS EN 12467.	<b><u>No visible cracks, delamination, warping and bowing or other defects.</u></b>  Traces of moisture may appear on the under face of the sheet, <b><u>but in no instance shall there be any formation of drops of water.</u></b>

*Note 1:* Singapore Accreditation Council (SAC) signs bilateral Mutual Recognition Arrangement (MRA) with other national accreditation bodies. It is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Arrangement and regional cooperation bodies such as the Asia Pacific Laboratory Accreditation (APLAC).