

SPRA COMPONENT QUALITY STANDARD 12

GYPSUM BOARDS WITH MAT REINFORCEMENT FOR FLAT ROOFING

WHAT ARE SPRA COMPONENT QUALITY STANDARDS?

SPRA Component Quality Standards set a benchmark of performance for products used in single ply roofing systems. They are a vital aid to specification and define the minimum technical standard for membership of the Association. All SPRA Component Quality Standards are available to download from www.spra.co.uk.

PRODUCT DESCRIPTION

Gypsum boards with mat reinforcement are composed of set gypsum plaster core reinforced with fibres which may be inorganic and/or organic and are arranged in a woven or non-woven mat to form flat, rectangular boards. Admixtures, fillers and fibres dispersed in the core may also be present. They are usually continuously produced on an industrial scale.

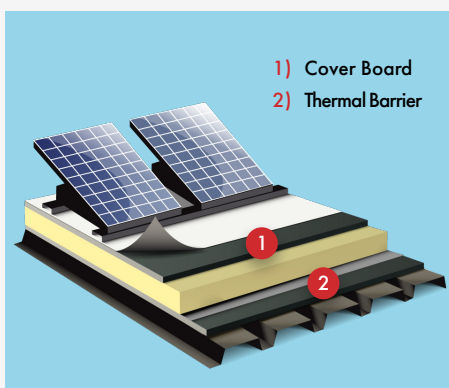
The properties of gypsum boards with mat reinforcement make them particularly suitable for use in situations where there are requirements for fire protection; acoustic insulation; thermal insulation; and/or racking strength.

DESIGNATED/HARMONISED STANDARD

EN 15283-1 Gypsum boards with fibrous reinforcement. Definitions, requirements and test methods – Gypsum boards with mat reinforcement.

TYPICAL APPLICATIONS

Cover board or thermal barrier in flat/low slope single ply roofing systems where additional resistance to compression, fire, foot traffic, heat, impact and/or wind uplift is required. **Not for use as a structural flat roof deck.**



DEFINITIONS

The following definitions are taken from joint SPRA—LRWA—NFRC technical guidance document, *Guidance for the Use of Building Boards with A1 or A2 Reaction to Fire Classifications in Flat Roofing*—

Cover Board

- Building board installed external to a profiled metal structural flat roof deck and/or profiled metal structural abutment wall upstand (including parapets) in a new cold or inverted roof construction to provide continuous support to the waterproofing; or
- Building board installed between the thermal insulation and waterproof covering (either horizontally or vertically) in a new warm roof construction to improve resistance to wind uplift and/or robustness.

Thermal Barrier

Layer with A1 or A2 Reaction to Fire classification used to improve the external fire exposure performance and/or the internal fire performance of a flat roof construction.

COVER BOARDS

In a warm roof construction, the position of a cover board allows it to affect the performance of both the single ply membrane installed above and the thermal insulation installed below.

A cover board provides a hard, smooth surface below a single ply membrane. This can increase the membrane's resistance to impact and static load, thereby reducing the likelihood of punctures. In a mechanically fastened system, resistance to wind uplift can be improved by the strength of a cover board and additional fastener pull out resistance. In an adhered system, resistance to wind uplift can be improved by the strength of the bond between the cover board and single ply membrane. Check the cover board's compatibility with adhesives with the relevant manufacturer.

Additional to the benefits provided to a single ply membrane installed above, a cover board protects thermal insulation installed below from compression by foot traffic and roof-mounted plant. Note that thermal insulation installed in a single ply roofing system must be designed and manufactured specifically for use in a flat roofing application. The use of a cover board to

compensate for a thermal insulation product's insufficient compressive strength, for example, is not recommended.

In a cold or inverted roof construction with a profiled metal structural flat roof deck, a cover board provides continuous support to the single ply membrane installed above and may act as a thermal barrier (see next section). A cover board with an A1 or A2 Reaction to Fire classification in accordance with EN 13501-1 *Fire classification of construction products and building elements. Classification using data from reaction to fire tests* (otherwise referred to as *non-combustible* or *limited combustibility*) can contribute to the resistance to external fire exposure of a single ply roofing system. If a fire burned through the single ply membrane, the cover board installed underneath could resist penetration and/or spread of flame. This could reduce damage to the building before the fire were extinguished. Any claims related to external fire performance should be supported by testing and classification in accordance with DD CEN/TS 1187 *Test methods for external fire exposure to roofs (test 4)* and EN 13501-5 *Fire classification of construction products and building elements. Classification using data from external fire exposure to roofs tests*, respectively.

THERMAL BARRIERS

Typically, a thermal barrier is installed directly above a structural flat roof deck and beneath other single ply roofing system layers. A thermal barrier with an A1 or A2 Reaction to Fire classification (EN 13501-1) can contribute to the resistance to external and internal fire exposure of a single ply roofing system. If a fire started inside of the building, the thermal barrier could protect any combustible thermal insulation that were installed above against the build-up of heat, and could slow the spread of heat along the top side of the structural flat roof deck. This is especially useful when the structural flat roof deck is not concrete and/or the ceiling finish is not plaster board.

Similar to a cover board (see above), a thermal barrier can contribute to the resistance to external fire exposure of a single ply roofing system by resisting penetration. Again, any claims related to external fire performance should be supported by testing and classification in accordance with DD CEN/TS 1187 (test 4) and EN 13501-5, respectively.

A thermal barrier provides a flat surface over a profiled metal structural flat roof deck. This can make the installation of an Air and Vapour Control Layer (AVCL) and thermal insulation easier. In an adhered system, a thermal barrier increases the area available to bond the AVCL and thermal insulation. This can improve the system's resistance to wind uplift.

The additional density provided by a thermal barrier can enhance the acoustic performance of a single ply roofing system by attenuating the transmission of noise through the roof. Furthermore, the extra weight can support the integrity and rigidity of the structural flat roof deck.

DELIVERY, STORAGE AND HANDLING

Gypsum boards with mat reinforcement must be protected from exposure to moisture before, during and after installation. The presence of moisture can have a detrimental effect on the performance of the product and the installation of single ply membranes.

RELEVANT STANDARDS AND LITERATURE

- **DD CEN/TS 1187** Test methods for external fire exposure to roofs
- **EN 12664** Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Dry and moist products of medium and low thermal resistance
- **EN 13501-1** Fire classification of construction products and building elements. Classification using data from reaction to fire tests
- **EN 13501-5** Fire classification of construction products and building elements. Classification using data from external fire exposure to roofs tests
- **EN 15283-1** Gypsum boards with fibrous reinforcement. Definitions, requirements and test methods – Gypsum boards with mat reinforcement
- **SPRA—LRWA—NFRCTechnical Guidance** Guidance for the Use of Building Boards with A1 or A2 Reaction to Fire Classifications in Flat Roofing

Refer to the latest versions unless otherwise stated.

CHARACTERISTIC	SYMBOL	VALUE/CLASS	TEST METHOD
DIMENSIONAL			
Edge Profile	—	Square	—
Length (nominal)	l	2,440mm	—
Width (nominal)	w	1,220mm	—
Surfacing	—	Fibreglass mat with non-asphaltic coating	—
Thickness	t	6.30, 12.7 or 15.9mm	—
Weight	—	5.90, 9.80 or 12.2kg/m ²	—
MECHANICAL			
Compressive Strength (nominal)	—	6,205kPa	—
Flexural Strength — Longitudinal	F	≥329N	EN 15283-1
Flexural Strength — Transverse	F	≥275N	EN 15283-1
Maximum span (thickness)	—	66.7mm (6.30mm) 127mm (12.7mm) 203mm (15.9mm)	—
MOISTURE			
Water Vapour Permeability	μ	14.6	EN 15283-1
REACTION TO FIRE			
Euroclass	—	A1 non-combustible	EN 13501-1
THERMAL			
Thermal Conductivity	λ	≥0.17W/mK	EN 12664
Thermal Resistance (thickness)	R	0.05m ² K/W (6.30mm) 0.10m ² K/W (12.7mm) 0.12m ² K/W (15.9mm)	—

SPRA ASSOCIATE MEMBERS

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