

Technical document 081-1

Test Methods for the determination
of squareness and the mechanical
characteristics of gypsum
plasterboard

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MODIFICATION HISTORY

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1. PREAMBLE

The purpose of this Technical document is to define the test methods for determining the following certified characteristics under the NF-Gypsum plasterboard mark:

- squareness
- deformation under load
- residual deformation
- flexural strength of gypsum plasterboard

Notwithstanding the method defined in standard EN 520, the test method described below for determining squareness aims to be representative of the method typically used in manufacturing facilities.

Where mechanical characteristics of gypsum plasterboard are concerned, Standard EN 520+A1 describes the test methods for determining the flexural strength and deformation under load. This document describes the test method for determining the residual deformation of boards, which is not defined in Standard EN 520+A1.

2. ALTERNATE METHOD FOR MEASURING GYPSUM PLASTERBOARD SQUARENESS

1.1. Principle

Board squareness is measured by comparing diagonal measurements.

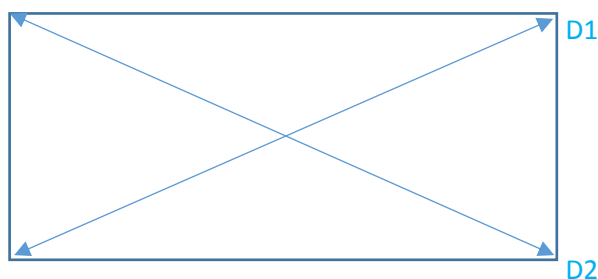
1.2. Equipment

A metal tape measure or ruler enabling measurements to be read to the nearest 1mm.

1.3. Operating procedure

Measure, to the nearest 1mm, distance D1, which corresponds to the board's first diagonal line. Next, measure, to the nearest 1mm, distance D2, which corresponds to the board's second diagonal line.

Figure 1



1.4. Expression of the results

Squareness is characterized by the absolute value of the difference divided by two $\frac{D1-D2}{2}$, expressed in millimetres.

1.5. Other method

Another test procedure may be used by the manufacturer to determine squareness of gypsum plasterboard (using a set square, for example). In this case, a correlation of results obtained must be established, either using the method described in this document or using the method defined in Standard EN 520+A1.

3. DETERMINING DEFORMATION UNDER LOAD, RESIDUAL DEFORMATION AND FLEXURAL STRENGTH

3.1 Principle

Tests for deformation under load, residual deformation and flexural strength are conducted on 300x400mm specimens cut out of the boards. The three characteristics are determined using the same specimens.

3.2 Apparatus

According to article 5.7.2 of Standard EN 520+A1.

3.3 Operating procedure

3.3.1 Preparation of specimens

According to article 5.7.3.1 of Standard EN 520+A1.

3.3.2 Test

Conduct the test on specimen (L) and specimen (T) from each sampled board immediately after drying, as indicated in 5.7.3.1 - Figure 14 of Standard NF EN 520+A1.

Position the specimen with the facing side either downwards (specimen L) or upwards (specimen T), on two parallel cylindrical supports with radii between 3mm and 15mm, spaced apart by 350 ± 1 mm.

Apply a preload of 3daN and adjust the bending indicator to 0.

Next, apply the load at a rate of 250 ± 125 N/min to the centre of the span, using a cylinder parallel to the supports with a radius between 3mm and 15mm, until reaching the load indicated in Table A.

Leave the load indicated in Table A for 1 minute and measure the deflection to the nearest 1/10mm (**deformation under load**).

Return the load to 3daN and stabilise it there, then after 1 minute, measure the deflection to the nearest 1/10mm (**residual deformation**).

Apply the load at a rate of 250 ± 125 N/min until specimen failure and measure the breaking load (**flexural strength**).

Specifications:

The minimum bending failure loads are given in Table A.

Values for deformation under load must be less than the values in Table A.

Residual deformation must be less than 0.50 mm.

Table A: Loads applied and limit values

Thickness of the board (mm)	Longitudinal direction (L) ⁽¹⁾				Transversal direction (T) ⁽²⁾			
	Total load applied in daN (load + preload)	Maximum deflection (mm)		Minimum failure load (daN)	Total load applied in daN (load + preload)	Maximum deflection (mm)		Minimum failure load (daN)
		Under load	Residual			Under load	Residual	
9.5	20	2.8		40	12	1.9		17
12.5	30	2.4		60	16	1.2		21
15	40	1.9	0.50	75	20	0.9	0.50	26
18	50	1.5		100	24	0.7		40
25	70	1.0		140	32	0.7		55

⁽¹⁾ Test specimen placed with the facing side downwards

⁽²⁾ Test specimen placed with the facing side upwards

3.4 Expression of the results

Record each individual value for the longitudinal and transversal directions.