



# TEST REPORT

## TEST FOR THE DETERMINATION OF FLEXURAL AND COMPRESSIVE STRENGTH

### 1 | Identification

Name	LNEC/DE/NESDE
Address	Av. do Brasil, 101   1700-166 LISBON
Customer/applicant's order reference	DED/NCTC'S CONTRIBUTION TO THE "COLLECTION AND CONDUCT OF MECHANICAL CHARACTERISATION TESTS ON BEDDING MORTARS"

### 2 | Samples and sampling procedure

The sample of masonry mortar was taken on site by a technician from LNEC's Wall Coverings Unit (URPa) on 10 November 2025 at 09:30 am. The consistency of the sample was determined according to the standard EN 1015-3:1999 – Methods of test for mortar for masonry - Part 3: Determination of consistency of fresh mortar (by flow table) and the bulk density was assessed in accordance with standard EN 1015-6:1998 – Methods of test for mortar for masonry - Part 6: Determination of bulk density of fresh mortar. The sample was then cast into three metal moulds, each with three cavities measuring 160 mm × 40 mm × 40 mm, resulting in a total of nine test specimens. The average dimensions of the test specimens were 160.48 mm × 40.01 mm × 40.88 mm, intended for the tests to determine flexural strength and compressive strength. The sample and specimens identification are presented in Table 2.1.

Table 2.1 – Identification of the sample and test specimens

Sample description	Quantity	Test specimens
R1-M15	6 kg	R1-M15_1 a 9

### 3 | Tests carried out/Test conditions

#### 3.1 Test Method

The tests to determine flexural and compressive strength were conducted at 7, 28 and 60 days of curing time at LNEC's Wall Coverings Unit (URPa), following the provisions of standard NP EN 1015-11:2019 – Test methods for masonry mortars – Part 11: Determination of flexural and compressive strength of hardened mortar.

Before testing, the specimens were placed at a temperature of 20 °C (+3 / -2 °C) and a relative humidity of 95 ± 5% for 48 hours. They were then demoulded and kept in the same conditions for an additional five days.

After this period, the specimens were placed at a temperature of 20 °C (+3 / -2 °C) and a relative humidity of 65 ± 5%. They were then subjected to flexural and compressive strength tests at the specified curing times.



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For both the flexural and compressive strength tests, an ETI – HM-S/CPC universal testing machine from PROETI, S.A. was utilized. In the flexural test, at seven days of curing, a 2 kN load cell was used with a load application rate of 30 N/s. For the 28-day and 60-day curing times, a 200 kN load cell was employed at a loading rate of 40 N/s. In the compression tests, a 200 kN load cell was used at a loading rate of 300 N/s.

## 4 | Results

Table 4.1 shows the flexural and compressive strength values obtained at the curing times of 7, 28 and 60 days.

**Table 4.1 – Values obtained for flexural strength and compressive strength**

Curing time	Specimens	Flexural strength		Compressive strength	
		Rupture force	Stress	Rupture force	Stress
		(N)	(N/mm <sup>2</sup> )	(N)	(N/mm <sup>2</sup> )
7 days	R1-M15_1	1618	3.62	16426	10.27
				15818	9.89
	R1-M15_2	1379	3.10	15246	9.53
				12399	7.75
	R1-M15_3	1632	3.65	15124	9.45
				15604	9.75
Average		1543	3.46	15103	9.44
Standard deviation		± 142	± 0.31	± 1403	± 0.88
28 days	R1-M15_4	1996	4.40	23968	14.98
				22617	14.14
	R1-M15_5	2020	4.46	22778	14.24
				23461	14.66
	R1-M15_6	1975	4.44	23399	14.62
				21437	13.40
Average		1997	4.43	22943	14.34
Standard deviation		± 23	± 0.03	± 886	± 0.55
60 days	R1-M15_7	2576	5.91	25492	15.93
				26077	16.30
	R1-M15_8	2044	4.73	25295	15.81
				23971	14.98
	R1-M15_9	2763	6.32	22779	14.24
				-	-
Average		2461	5.65	24723	15.45
Standard deviation		± 373	± 0.83	± 1332	± 0.83

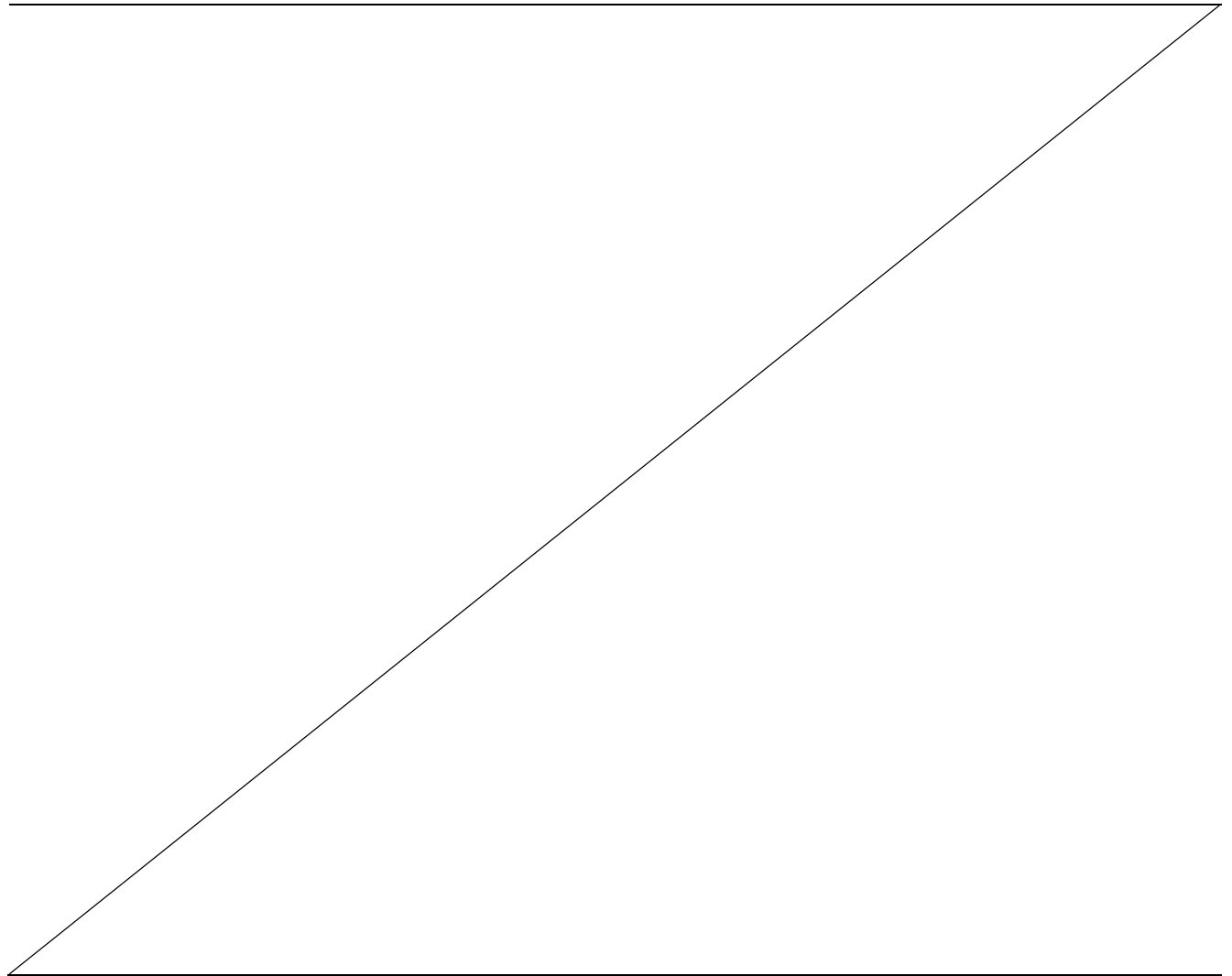


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## 5 | Comments

The results obtained in this test are part of the study on the mechanical characterisation of mortars conducted for LNEC/DE/NESDE.



Lisbon, LNEC, 6 March 2026

TESTED BY

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**Authorized by**

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