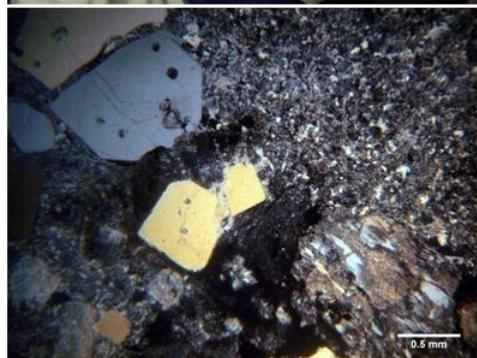


**LABORATORY OF GEOTECHNICAL, CONSTRUCTION MATERIALS,
RESTORATION AND ORNAMENTAL ROCKS. CATALOGUE OF
LABORATORY TESTS**

DECLARATION OF RESPONSIBILITY No.: MAD-L-057



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1. SOIL TESTS

Code	Description	Standard
1.1	Opening and description of a sample.	
1.2	Sample preparation for soil tests.	UNE 103 100 o NLT 101 / ASTM D 42-85
1.3	Preparation and cut up of samples for soil tests. Bag samples.	
1.4	Trimming of undisturbed soil samples for compression, triaxial or permeability tests	
1.5	Trimming of a soil specimen for the realization of consolidation tests or direct shear tests.	
1.6	Preparation of a remoulded soil specimen for the realization of triaxial or permeability tests.	
1.7	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.	UNE 103300:1993 / ASTM D2216-10
1.8	Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Soil Specimens.	UNE 103301:1994 / ASTM D7263-09
1.9	Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer	UNE 103302:1994 / ASTM D854-14
1.10	Minimum density of a sand.	NLT 204
1.11	Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.	UNE 103 101-95 / ASTM D6913 - 04
1.12	Standard test method for particle-size analysis of soils.	ASTM D422-63(2007)e2

1. SOIL TESTS

Code	Description	Standard
1.13	Standard test method for particle-size analysis of soils. Hydrometer method.	UNE 103 102-95 / ASTM D422-63(2007)e2
1.14	Particle-size analysis of a graded aggregate.	UNE 103 101-95 and NLT 104-91
1.15	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.	UNE 103-103-94 and 103-104-93 / ASTM D4318 - 10e1
1.16	Determination of no plasticity.	
1.17	Determination of shrinkage characteristics in a soil.	UNE 103-108-96
1.18	Test Method for Classification of Soils (ASTM, HRB, IG...).	ASTM 2487
1.19	Porosity determination of a soil.	UNE 7045
1.20	Standard Test Methods for Identification and Classification of Dispersive Clay Soils by the Pinhole Test.	NLT 207 / ASTM D4647 / D4647M
1.21	Standard Test Method for Dispersive Characteristics of Clay Soil by Double Hydrometer.	ASTM D-4221-11
1.22	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.	UNE 103 109-95 / ASTM D2419 - 14
1.23	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (Standard Proctor test).	UNE 103 500-94 / ASTM D698 - 12e2
1.24	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (Modified Proctor test).	UNE 103 501-94 / ASTM D1557 - 12e1

1. SOIL TESTS

Code	Description	Standard
1.25	Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils from Standard Proctor test.	UNE 103 502-95 / ASTM D1883 - 05
1.26	Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils from Modified Proctor test.	UNE 103 502-95 / ASTM D1883 - 05
1.27	Increase in the price of the compaction tests for preparing granular fractions for the replacement of soil.	
1.28	Standard Test Method for Unconfined Compressive Strength of Cohesive Soil.	UNE 103 400-93 / ASTM D2166 / D2166M - 13
1.29	Determination of Unconfined Compressive Strength of Cohesive Soil in triaxial apparatus with lateral pressure.	
1.30	Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading by oedometer in 5 cm diameter cell. With time consolidation curves, daily load and until eight loading steps and three unloading steps (it is not included specific gravity of soil solids). Until 10 kg/cm ² load.	UNE 103 405-94 / ASTM D2435 / D2435M - 11
1.31	Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading by oedometer in 7 cm diameter cell. With time consolidation curves, daily load and until eight loading steps and three unloading steps (it is not included specific gravity of soil solids). Until 10 kg/cm ² load.	UNE 103 405-94 / ASTM D2435 / D2435M - 11
1.32	Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading by oedometer in 5 cm diameter cell. With time consolidation curves, daily load and until eight loading steps and three unloading steps (it is not included specific gravity of soil solids). Until 60 kg/cm ² load.	UNE 103 405-94 / ASTM D2435 / D2435M - 11
1.33	Charge for increasing the consolidation time.	
1.34	Determination of oedometer consolidation curve (price per curve).	

1. SOIL TESTS

Code	Description	Standard
1.35	Standard Test Method for Measurement of Collapse Potential of Soils.	NLT-254/99 / ASTM D5333-03.
1.36	Standard Test Method for One-Dimensional Swell of Soils.	UNE 103 601-96 / ASTM D4546 - 14
1.37	Standard Test Method for One-Dimensional Swell of Soils. Swell pressure of soils in oedometer.	UNE 103 602-96 / ASTM D4546 - 14
1.38	Determination of swelling potential of a soil in the swell test apparatus (Lambe).	UNE 103 600-96
1.39	Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions (CD).	UNE 103 401-98 / ASTM D3080 / D3080M - 11
1.40	Standard Test Method for Consolidated Undrained Direct Simple Shear Testing of Cohesive Soils (CU).	UNE 103 401-98 / ASTM D6528 - 07
1.41	Test Method for Unconsolidated Undrained Direct Simple Shear Testing of Cohesive Soils (UU).	UNE 103 401-98 / ASTM D-6528-07
1.42	Test Method for Consolidated Undrained Direct Simple Shear Testing of Cohesive Soils (CU) determining the peak and residual strength (a slow cycle and a residual one).	UNE 103 401-98 / ASTM D6528 - 07
1.43	Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions (CD) determining the peak and residual strength (a slow cycle and a residual one).	UNE 103 401-98 / ASTM D3080 / D3080M - 11
1.44	Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions (CD) determining the peak and residual strength (a slow cycle, five fast cycles and a residual one).	UNE 103 401-98

1. SOIL TESTS

Code	Description	Standard
1.45	Standard Test Method for Consolidated Drained Triaxial Compression Test for Soils. Cell of 38.1 or 50 mm of diameter, 3 specimens, with prior consolidation, fracture drained, with volume change measure (CD).	UNE 103 402-98 / ASTM D7181 - 11
1.46	Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils. Cell of 38.1 or 50 mm of diameter, 3 specimens, with prior consolidation, fracture without drainage, with interstitial pressure measure (CU).	UNE 103 402-98 / ASTM D4767 - 11
1.47	Standard Test Method for Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils. Cell of 38.1 or 50 mm of diameter, 3 specimens, without prior consolidation, fracture without drainage, without interstitial pressure measure (UU).	UNE 103 402-98 / ASTM D2850 - 03a(2007)
1.48	Determination of strength parameters of a soil in triaxial set apparatus. Cell of 38.1 or 50 mm of diameter, 3 specimens, with prior consolidation, fracture without drainage, without interstitial pressure measure (CUU).	UNE 103 402-98
1.49	Permeability Testing in the Triaxial Cell with tail pressure (from specimen with a undisturbed sample in cell of 38.1 ó 50 mm of diameter).	UNE 103 402-98
1.50	Electrical resistivity of a soil in a laboratory (SOIL-BOX)	ASTM G57 95A
1.51	Thermanol conductivity and resistivity of a soil	ASTM D 5334

2. ROCK TESTS

Code	Description	Standard
1.1	Opening and description of sample.	
2.1	Preparation Rock Core as Cylindrical Test Specimens and Verifying Conformance to Dimensional and Shape Tolerances.	ASTM D4543 - 08
2.2	Preparation of a rock sample for cutting joints test in the Hoek cell (including the carving and the concreting of the specimen).	
2.3	Carving of rock prismatic specimen from a block by electromechanical saw.	
2.4	Crushing and preparation of rock simple for testing. (<25kg).	
2.5	Crushing of 20 to 60 kg of a rock sample.	
2.6	Grinding of a rock for the realization of chemical tests.	
2.7	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.	NLT 102:72 / ASTM D2216-10
2.8	Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Rock Specimens.	NLT 156:72 / ASTM D7263 - 09
2.9	Determination of natural and bulk density, and of total and open porosity.	UNE-EN 1936
2.10	Determination of porosity of a rock.	NLT-156:72
2.11	Determination of water absorption at atmospheric pressure.	UNE-EN 13755:2001

2. ROCK TESTS

Code	Description	Standard
2.12	Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens.	UNE 22950 - 1:90 / ASTM D2938-95(2002)
2.13	Standard Test Method for Splitting Tensile Strength of Intact Rock Core Specimens (Brazilian test).	UNE 22950 - 2:90 / ASTM D3967 - 08
2.14	Standard Test Methods for Compressive Strength and Young Elastic Modulus of Intact Rock Core Specimens.	UNE 22950 - 3:90 / ASTM D7012 - 14
2.15	Standard Test Methods for Compressive Strength and Elastic Moduli (Young modulus and Poisson's ratio) of Intact Rock Core Specimens.	UNE 22950 - 3:90 / ASTM D7012 - 14
2.16	Standard Test Methods for Compressive Strength and Elastic Moduli (Young modulus and Poisson's ratio) of Intact Rock Core Specimens with load and unload cycles.	UNE 22950 - 3:90 / ASTM D7012 - 14
2.17	Standard Test Method for Triaxial Compressive Strength of Undrained Rock Core Specimens Without Pore Pressure Measurements in cell of 38.1 mm of diameter.	UNE 22950 - 4:90 / ASTM D2664-04
2.18	Standard Test Method for Triaxial Compressive Strength of Undrained Rock Core Specimens Without Pore Pressure Measurements in cell NX of 55 mm of diameter.	UNE 22950 - 4:90 / ASTM D2664-04
2.19	Standard Test Method for Triaxial Compressive Strength of Undrained Rock Core Specimens Without Pore Pressure Measurements obtained from a larger sample.	UNE 22950 - 4:90 / ASTM D2664-04
2.20	Standard Test Method for Determination of the Point Load Strength Index of Rock. (A single rock sample).	UNE 22950 - 5:90 / ASTM D5731 - 08
2.21	Standard Test Method for Determination of the Point Load Strength Index of Rock. (10 rock samples).	UNE 22950 - 5:90 / ASTM D5731 - 08
2.22	Shear strength of a sample of rock on natural or induced joints with the Hoek cell. (Preparation not included) (Brown 1981).	
2.23	Shear strength of a sample of rock on natural or induced joints with the Hoek cell. Determining peak and residual strength. (Preparation not included) (Brown 1981).	

2. ROCK TESTS

Code	Description	Standard
2.24	Determination Schimazek index (it is included the brazilian test, the preparation of thin section and the Schimazek index calculation).	
2.25	Standard Test Method for Laboratory Determination of hardness Index of Rock Using the CERCHAR Method.	XP P94-430-1 / ASTM D7625 - 10
2.26	Standard Test Method for Laboratory Determination of Abrasiveness of Rock Using the CERCHAR Method.	NF P94-430-1 / ASTM D7625 - 10
2.27	D.R.I.: Drilling Rate Index.	NTNU 13A-98
2.28	Method for Determination of the Schmidt Hammer Rebound Hardness.	ISRM 1981
2.29	Method for Determination of the Shore Scleroscope Rebound Hardness.	ISRM 1981
2.30	Standard Test Method for Slake Durability of Shales and Similar Weak Rocks	NLT 251 / ASTM D4644 - 0
2.31	Stability of aggregates and rock fragments to the action of water collapse.	NLT-255-99 / UNE 146510:2008
2.32	Stability of aggregates and rock fragments against humidity-dryness cycle action. For 30 cycles of 3 specimens.	NLT 260/99 / UNE 146511:2008
2.33	Preparation of thin section (from 1 to 2 sections).	
2.34	Preparation of thin section (from 3 to 10 sections).	
2.35	Preparation of thin section (more than 10 sections).	

2. ROCK TESTS

Code	Description	Standard
2.36	Petrographic examination. Petrographic and mineralogical description.	UNE-EN 12407
2.37	Petrographic examination. Petrographic study with mineralogical count.	UNE-EN 12407
2.38	Petrographic examination. Petrographic description of sample hand.	UNE-EN 12407
2.39	X-ray diffraction.	
2.40	Measure of Lutton`s index (Jar Slake Index).	
2.41	Til-Test.	
2.42	Determination of color according to chromatic coordinates.	
2.43	Specifying color by the Munsell System	ASTM D1535
2.44	Determination of resistance to salt crystallization.	UNE-EN 12370
2.45	Determination of frost resistance. 15 cycles of ice - thaw for 4 specimens. 8h ice 16 h thaw. (It must be consulted for another variables).	UNE-EN 12371:2002
2.46	Determination of resistance to ageing by thermal shock. 14 specimens, 20 cycles.	UNE-EN 14066:2003
2.47	Ageing by UV radiation, 500 hours.	

2. ROCK TESTS

Code	Description	Standard
2.48	Determination of Mohs hardness.	MNL46
2.49	Determination of the speed of propagation of elastic waves in rocks with the ultrasonic impulse	

3. CHEMICAL TESTS OF SOILS AND ROCKS

Code	Description	Standard
3.1	Organic matter content of a soil by the potassium permanganate method.	UNE 103 204-93 / AASHTO T 1 9 4 -80
3.2	Determination of carbonate content in soils.	UNE 103 200-93 / NLT 111 / ASTM D-473
3.3	Quantitative analysis of soluble sulphate content of a soil.	UNE 103 201-96 / NLT 120 / ASTM C-88
3.4	Determination of soluble salts content of the soils.	UNE 103 205-2006 / NLT-114/99
3.5	Determination of gypsum content of the soils.	UNE 103 206-2006 / NLT-115/99
3.6	Determination of the Baumann-Gully index.	UNE-EN 16502-2015
3.7	Concrete durability. Aggressive soils for concrete. Determination of the ion sulfate content.	UNE 83963
3.8	Soil pH determination.	UNE - ISO 10390-2012
3.9	Soil quality. Determination of the specific electrical conductivity.	UNE 77 308 01 / ISO 11265 - 1994
3.10	Soxhlet extraction.	
3.11	Determination of potential redox.	
3.12	Determination of content of chloride ion.	MÉTODO VOLHARD

3. CHEMICAL TESTS OF SOILS AND ROCKS

Code	Description	Standard
3.13	Determination of total alkalinity in a soil. 1	UNE-EN ISO 9963-
3.14	Determination of alkalinity up to 8.3 in a soil.	UNE-EN ISO 9963-1

4. WATER TEST

Code	Description	Standard
4.1	Evaluation of the degree of attack of waters to concrete according to EHE, analyzing pH, lime dissolving Carbon Dioxide, amonium, magnesium, aqueous extract Sulphate and total dissolved solids.	EHE 08
4.2	Concrete durability. Water for mixing and aggressive waters. Determination of the pH. Potentiometric method.	UNE 83 952
4.3	Concrete durability. Water for mixing and aggressive waters. Determination of dry residue.	UNE 83 957
4.4	Concrete durability. Water for mixing and aggressives water. Ion sulfate content.	UNE 83 956
4.5	Chemical attack on concrete – Determination of aggressive carbon dioxide content in water.	UNE-EN 13577
4.6	Concrete durability. Aggressive water. Determination of the ion amonium content.	UNE 83 954
4.7	Concrete durability. Aggressive water. Determination of ion magnesium content.	UNE 83 955
4.8	Chemical analysis of water. Test of suitability for kneading and curing of concrete (pH, soluble salts, sulfates, chlorides, carbohydrates, organic substances soluble in ether).	EHE 08

5. AGGREGATES TESTS

Code	Description	Standard
5.1	Opening and description of the aggregates sample	
5.2	Preparation of the aggregate samples for testing.	
5.3	Crushing of the aggregate sample for the realization of the tests.	
5.4	Determination of moisture content of aggregates.	UNE 7328
5.5	Determination for the bulk density.	
5.6	Determination for the real density.	
5.7	Tests for general properties of aggregates - Part 3: Procedure and terminology for simplified petrographic description.	UNE-EN 932-3
5.8	Tests for geometrical properties of aggregates - Part 1: Determination of particle size distribution - Sieving method.	UNE-EN 933.1 y 933.2 / ASTM C -136
5.9	Tests for geometrical properties of aggregates. Part 2: Determination of particle size distribution. Test sieves, nominal size of apertures.	UNE-EN 933.1 y 933.2 /ASTM C 136
5.10	Material retained by the sieve UNE 0,080 mm.	ASTM C-137
5.11	Determination of aggregates lump clay for making mortars and concrete.	UNE 7133-58
5.12	Determination of thick aggregates soft particles for concrete.	UNE 7134-58 / ASTM C-235 49T

5. AGGREGATES TESTS

Code	Description	Standard
5.13	Tests for chemical properties of aggregates. Determination of low specific gravity particles in aggregates.	UNE-EN 1744-1:1999 / BS-812
5.14	Determination of content maximum size and thick aggregate granulometric modulus in fresh concrete.	UNE 7295:1976
5.15	Tests for chemical properties of aggregates - Part 1: Chemical analysis. Determination of organic matter content in sand.	UNE-EN 1744-1:1999 / BS- 812
5.16	Tests for chemical properties of aggregates - Part 1: Chemical analysis. Determination of ion sulfate content.	UNE-EN 1744-1:1999 / BS - 812
5.17	Tests for chemical properties of aggregates - Part 1: Chemical analysis. Quantitative determination of the sulfurous compounds.	UNE-EN 1744-1:1999 / BS- 812
5.18	Tests for geometrical properties of aggregates - Part 4: Determination of particle shape - Shape index.	UNE-EN 933-4 / DIN 4226
5.19	Tests for geometrical properties of aggregates - Part 3: Determination of particle shape - Flakiness index.	UNE-EN 933-3 / BS- 812
5.20	Tests for mechanical and physical properties of aggregates - Part 6: Determination of particle density and water absorption.	UNE-EN 1097-6 / ASTM C-128
5.21	Aggregates for bituminous mixtures and surface treatments for roads, airfields and other traffic areas.	UNE-EN 13043
5.22	Test for geometrical properties of aggregates. Par 5: Determination of percentage of crushed and broken surfaces in coarse aggregates particles.	UNE-EN 933-5
5.23	Tests for thermal and weathering properties of aggregates - Part 2: Magnesium sulfate test.	UNE-EN 1367-2 / ASTM C-88
5.24	Aggregates for concrete. Determination of the coefficient of friability of the sands.	UNE 83115:1989 EX / NF P 18-576:1978

5. AGGREGATES TESTS

Code	Description	Standard
5.25	Tests for mechanical and physical properties of aggregates - Part 1: Determination of the resistance to wear (Micro-Deval).	UNE-EN 1097-1 / NF P18 572
5.26	Tests for mechanical and physical properties of aggregates - Part 2: Methods for the determination of resistance to fragmentation.	UNE-EN 1097-2-99 / ASTM C-535
5.27	Determination of fines in aggregates used to manufacture concretes.	UNE 7135
5.28	Tests for geometrical properties of aggregates - Part 8: Assessment of fines - Sand equivalent test.	UNE-EN 933-8 / ASTM D-2419
5.29	Tests for chemical properties of aggregates - Part 1: Chemical analysis. Determination of acid soluble sulfates.	UNE-EN 1744-1:1999 / BS- 812
5.30	Tests for chemical properties of aggregates - Part 1: Chemical analysis. Determination of chloride salts. Volumetric method (Volhard).	UNE-EN 1744-1:1999 / BS-812
5.31	Tests for geometrical properties of aggregates - Part 9: Assessment of fines - Methylene blue test.	UNE-EN 933-9 / NF P096 - 068
5.32	Unbound and hydraulically bound mixtures - Part 41: Test method for the determination of the compressive strength of hydraulically bound mixtures.	NLT-305 y UNE-EN 13286-41
5.33	Cement treated materials. Test methods. Determination of the workability period.	UNE 41240
5.34	APC: Accelerated Polishing Coefficient	
5.35	Adhesiveness of thick aggregate	
5.36	Flakiness index and points of the aggregates.	

5. AGGREGATES TESTS

Code	Description	Standard
5.37	Reactivity of alkali-concrete.	UNE 146508:99 / ASTM C-227
5.38	Abrasion resistance of aggregates.	

6. "IN SITU" TESTS

Code	Description	Standard
6.1	Superficial sampling of unaltered sample.	UNE 7371-75
6.2	Sampling in undisturbed soil in trial pit or borehole. Minimum bucket 200 mm and minimum cylinder diameter 150 mm.	
6.3	Removing a specimen rock from block rock by probe.	
6.4	Checking the natural moisture in situ.	NLT 103 / BD-1377.1
6.5	Determination in situ of the density of a soil by sand method. Until three determinations. Moisture content is included.	UNE 103 503
6.6	Static plate bearing test (not including reaction).	NLT 357 / DIN 18134
6.7	Plate bearing test of soils with dynamic plate. Part 2: Rigid plate, diameter $2r=300$ mm, Method 2.	UNE 103807-2:2008
6.8	Dynamic penetrometer PANDA 2 of variable energy test.	XP P94-105

7. TESTS FOR CONCRETE STUDIES

Code	Description	Standard
7.1	Testing hardened concrete - Part 2: Making and curing specimens for strength tests. Theoretical and experimental verification of a batch of concrete, including making the necessary series of three different batches cylindrical specimens of 15 x 30 cm, for each curing age, facing and compression test, until reaching the specific characteristics (excluding necessary tests of aggregates).	UNE-EN 12390-2 y 3 / ASTM C -31 / NF P 18406
7.2	Theoretical and experimental verification of a batch of concrete, including making the necessary series of batches different four prisms of 15 x 15 x 60 cm, cured, facing and assay flexo-drive two ages up to the specifics (not including testing of aggregates).	

8. HARDENED CONCRETE TESTS

Code	Description	Standard
8.1	Method for density, absorption and voids in hardened concrete.	ASTM C-642.
8.2	Petrography of aggregates and sand for concrete impregnated with fluorescent resin with determination of potential reactivity.	RILEM TC 191-ARP.RILEM Recommended Test Method AAR-1
8.3	Petrographic study of concrete impregnated with fluorescent epoxy resin determining with thin section: state of cracking, pore homogeneity of the paste, type of aggregate and irregularities.	ASTM C-856-95
8.4	Testing hardened concrete - Part 3: Compressive strength of test specimens.	UNE-EN 12390-3:2003 NF P 18406
8.5	Testing hardened concrete - Part 6: Tensile splitting strength of test specimens.	UNE-EN 12390-6:2001 / BS 1881
8.6	Products and systems for the protection and repair of concrete structures - Test methods - Determination of carbonation depth in hardened concrete by the phenolphthalein method (It is included Brazilian test).	UNE-EN 14630
8.7	Testing hardened concrete - Part 8: Depth of penetration of water under pressure.	UNE-EN 12390-8 EHE08 / DIN 1048
8.8	Admixtures for concrete, mortar and grout - Test methods - Part 11: Determination of air void characteristics in hardened concrete.	UNE-EN 480-11:2006
8.9	Test for aggregates. Determination of the alkali-silica and alkali-silicate potential reactivity of aggregates. Accelerated mortar bar test.	UNE 146508-ex
8.10	Testing concrete in structures - Part 2: Non-destructive testing - Determination of rebound number.	UNE-EN 12504-2:2002 ASTM C -900
8.11	Testing concrete in structures - Part 1: Cored specimens - Taking, examining and testing in compression.	UNE-EN 12504-1:2009 / ASTM C - 805
8.12	Testing concrete - Part 4: Determination of ultrasonic pulse velocity (minimum 15 measures).	UNE-EN 12504-4:2002

9. FRESH CONCRETE TESTS

Code	Description	Standard
9.1	Testing fresh concrete - Part 1: Sampling. Part 2: Slump-test. Testing hardened concrete - Part 2: Making until 5 specimens of 15 x 30 cm, and curing specimens for strength tests to 7 and 28 days.	UNE-EN 12350-1 y 2 y UNE-EN 12390-2 y 3 / BS 1881 / ASTM C - 143/ ASTM C-31 / NF P 18406
9.2	Charge for each additional specimen of the same sample.	
9.3	Testing fresh concrete - Part 1: Sampling. Part 2: Slump-test. Testing hardened concrete - Part 2: Making until 3 prismatic specimens of 15x15x60 cm, and curing specimens for strength tests to 28 days.	UNE-EN 12350-1 y 2 y UNE-EN 12390-5 / BS -1881 / NF P 18406 /ASTM C-78 / ASTM C-293
9.4	For each additional specimen of the same sample.	
9.5	Curing, facing and compression test of a concrete specimen according to standards 83301 and 83304.	UNE-EN 12390-2 y 3 / ASTM C-31 / NF P 18406
9.6	Curing and traction test of cored concrete specimen (Brazilian test).	UNE-EN 12390-2 y 6 ASTM C-31 / BS -1881
9.7	Curing and flexural strength of test prismatic specimens according to UNE 83305.	UNE-EN 12390-2 y 5 / ASTM C-31 / BS-1881
9.8	Testing fresh concrete - Part 7: Air content - Pressure methods.	UNE-EN 12350-7 / BS-1881
9.9	Testing fresh concrete - Part 8: Self-compacting concrete - Slump-flow test.	UNE-EN 12350-8
9.10	Testing fresh concrete - Part 6: Density.	UNE-EN 12350-6 / BS-1881

10. RESTORATION AND ORNAMENTAL ROCK TESTS

Code	Description	Standard
10.1	Real and bulk volumetric mass.	RILEM I-2-80
10.2	Mercury porosimetry.	
10.3	Accessible pores of water	RILEM I-1-80
10.4	Saturation coefficient.	RILEM II-1-80
10.5	Water absorption under low pressure.	RILEM II-4-80
10.6	Natural stone test methods - Determination of water absorption at atmospheric pressure.	UNE-EN 13755:2001
10.7	Evaporation curve.	RILEM II-5-80

11. CERAMICS AND TILES TESTS

Code	Description	Standard
11.1	Methods of test for masonry units - Part 16: Determination of dimensions.	UNE-EN 16:2001 772-
11.2	Methods of test for masonry units – Part 3: Determination of net volume and percentage of voids of clay masonry unit by hydrostatic weighing.	UNE-EN 3:1999 772-
11.3	Ceramic products of cooked clay. Determination of calcareous inclusions.	UNE 67039-93 EX.
11.4	Clay bricks. Efflorescence test.	UNE 67029-95
11.5	Blocks of cooked clay. Efflorescence tests.	UNE 67047-98
11.6	Clay bricks. Freezing test.	UNE 67028-97 EX
11.7	Clay products. Moisture expansion test.	UNE 67036-99
11.8	Methods of test for masonry units – Part 11: Determination of water absorption of aggregate concrete.	UNE-EN 11:2001 772-
11.9	Burned clay bricks. Determination of the water absorption.	UNE 67027
11.10	Geometric characteristics: tiles, pavers, blocks.	
11.11	Ceramic tiles. Part 3: Determination of water absorption, bulk porosity, bulk relative density and bulk density.	UNE 10545-3

12. MORTAR AND GROUTING TESTS

Code	Description	Standard
12.1	Methods of test for mortar for masonry – Part 2: Bulk sampling of mortars and preparation of test mortars.	UNE-EN 1015-2
12.2	Sampling of hardened mortar.	UNE 83 810
12.3	Preparation of paste in laboratory and conservation until test.	UNE-EN 1015-3:2000
12.4	Methods of test for mortar for masonry. Determination of consistence of fresh mortar. (By Abrams's cone).	UNE 83 313
12.5	Methods of test for mortar for masonry. Part 3: Determination of consistence of fresh mortar. (By flow table).	UNE-EN 1015-3
12.6	Methods of test for mortar for masonry - Part 12: Determination of adhesive strength of hardened rendering and plastering mortars on substrates.	UNE-EN-1015-12
12.7	Lime/aggregate weight ratio by calcination.	
12.8	Lime/aggregate ratio points by counting under a microscope.	
12.9	Methods of test for mortar for masonry - Part 18: Determination of water absorption coefficient due to capillary action of hardened mortar. (It is included preparation of prisms in laboratory).	UNE-EN-1015-18
12.10	Methods of test for mortar for masonry - Part 10: Determination of dry bulk density of hardened mortar.	UNE-EN-1015-10

13. MICROSPHERES TESTS

Code	Description	Standard
13.1	Particle-size analysis.	UNE-EN 1423
13.2	Refraction index.	UNE-EN 1423 ANEXO A
13.3	Water resistance.	UNE-EN 1423 ANEXO B
13.4	HCL resistance.	UNE-EN 1423 ANEXO B
13.5	CaCL resistance.	UNE-EN 1423 ANEXO B
13.6	NaS resistance.	UNE-EN 1423 ANEXO B
13.7	Defective microspheres. Determination of the quality.	UNE-EN 1423 ANEXO C Y D
13.8	Determination of the presence of water outflow	UNE-EN 1423 ANEXO E
13.9	Determination of a treatment of floatation.	UNE-EN 1423 ANEXO F

14. GENERAL SERVICES

Code	Description	Standard
14.1	Laboratory results report.	
14.2	Mobilization of laboratory technician at work site.	
14.3	Sample transport.	
14.4	Borehole log.	
