

budimex

Scope of laboratory services of Budimex S.A.



TABLE OF CONTENTS

	Page
1 Asphalt testing	3
2 Testing of bitumen emulsions	3
3 Testing of mineral and asphalt mixes	3
4 Testing of soil-binder and mineral-cement-emulsion (MCE) mixes	4
5 Soil testing	4
6 Aggregate testing	5
7 Filler testing	7
8 Cement testing	7
9 Testing of cement concretes	8
10 Field tests and trips	8

1 Asphalt testing

Symbol	Description	Standard
A001	Penetration index	
A002	Rolling thin film oven (RTFOT) asphalt ageing	PN-EN 12607-1
A003	Determination of elastic recovery of modified asphalts	PN-EN 13398
A004	Determination of the tensile strength of modified asphalts	PN-EN 13589 PN-EN 13703
A005	Determination of penetration	PN-EN 1426
A006	Determination of ring and ball softening point	PN-EN 1427
A007*	Asphalt sampling	PN-EN 58
A008	Determination of complex shear modulus and phase shift angle	PN-EN 14770
A009	Multiple stress creep recovery (MSCR) testing	PN-EN 16659

2 Testing of bitumen emulsions

Symbol	Description	Standard
E001*	Determination of flow time with a flow viscometer	PN-EN 12846-1
E002*	Determination of the disintegration index of cationic asphalt emulsions	PN-EN 13075-1
E003*	Determination of sieve residues of asphalt emulsions	PN-EN 1429
E004*	Determination of water content in asphalt emulsions	PN-EN 16849

3 Testing of mineral and asphalt mixes

Symbol	Description	Standard
M001	Determination of density, Method A, by volume (pycnometric)	PN-EN 12697-5
M002	Designation of free space content	PN-EN 12697-8
M003	Determination of resistance to water and frost, Method A	PN-EN 12697-12
M004	Binder runoff, Schellenberg's method	PN-EN 12697-18
M005	Determination of Marshall stability and deformation	acc. to Issue 64 of IBDiM
M006	Determination of Marshall stability and deformation	PN-EN 12697-34
M007	Indirect testing of tensile strength of mma samples	PN-EN 12697-23
M008	Testing of mma characteristics by indirect tensile method on cylindrical samples (IT-CY) of the mma stiffness modulus	PN-EN 12697-26
M009	Rutting tests, small apparatus, procedure B in the air	PN-EN 12697-22
M010	Resistance to permanent deformations (large apparatus)	PN-EN 12697-22
M011	Mixing mma in laboratory conditions – laboratory batch	PN-EN 12697-35
M012	Determination of the thickness of the sample cut from the pavement	PN-EN 12697-36
M013	Preparation of samples (plates) compacted with a rolling device	PN-EN 12697-34
M014	Tests of mma stiffness using 4-point bending beam	PN-EN 12697-26
M015	Tests of mma fatigue resistance using 4-point bending beam	PN-EN 12694-24 (Annex D)
M016	Preparation of samples compacted by (Marshall) ramming	PN-EN 12697-30
M017	Determination of grain size and soluble binder content (extraction)	PN-EN 12697-2, PN-EN 933-1, PN-EN 12697-1
M018	Preparation of a cylindrical sample in a gyratory press	PN-EN 12697-31
M019	Determination of compactability with a gyratory press	PN-EN 12697-10
M020	Mma temperature measurement on WMA or on site	PN-S-96025:2000 PN-EN 12697-13
M021	Preparation, compaction of the sample for static penetration test of mastic asphalt	PN-EN 12697-20 or Issue 64 sheet 13

M022	Determination of static penetration for mastic asphalt	PN-EN 12697-20 or Issue 64 sheet 13
M023	Bitumen recovery in a rotary evaporator	PN-EN 12697-3
M024	Determination of the content of foreign parts in reclaimed asphalt	PN-EN 12697-42
M025	Hydrostatic density determination	PN-EN 12697-5
M026	Determination of bulk density, Method A for a dry sample Method B for a saturated surface dry sample Method C in surface sealing condition Method D based on geometric dimensions	PN-EN 12697-6
M027	Determination of bitumen layer compaction index	PN-EN 13108-20 Annex C
M028	Determination of Leutner shear strength	Issue 66 of IBDiM
M029	Resistance to permanent deformations – dynamic penetration	TP Asphalt-StB Teil 25 A 1:2009
M030	Low-temperature cracking and properties in axial tensile tests, thermal stress restrained specimen test (TSRST)	PN-EN 12697-46:2012
M031	Interlayer adhesion of bitumen layers, Leutner method	ILBSMWA using the Leutner method and technical requirements for adhesion, GDDKiA of 2014
M032	Interlayer adhesion of bitumen layers, Leutner method	PN-EN 12697-48:2022-04 p. 7
M033	Propagation of crack in semi-cylindrical sample bending test	PN-EN 12697-44
M034	Determination of potential presence of tar	KPRNPP-2013 Annex C

4 Testing of soil-binder and mineral-cement-emulsion (MCE) mixes

Symbol	Description	Standard
S001	Preparation of 8 or 16 cm diameter soil-binder samples (using a Marshall compactor or a hydraulic press) with maintenance	
S002	Approximate determination of the amount of cement in the soil-binder mix or MCE mix	
S003	Determination of optimal humidity and volumetric weight of soil-binder mix collected at the construction site or in the concrete plant	PN-88-B-04481:1998
S004	Determination of optimal humidity and volumetric weight of soil-binder mix collected at the construction site or in the concrete plant	PN-EN 13286
S005	Determination of compressive strength for soil-binder mix or MCE mix samples: a) after 7 days b) after 28 days c) after 42 / 56 days	PN-S-96012:1997
S006	Determination of frost resistance for soil-binder mix samples	PN-S-96012:1997
S007	Determination of frost resistance for mixes bound with a hydraulic binder	WT-5 2010
S008	Determination of compaction index for soil-binder layer or MCE layer	BN-77/8931-12
S009	Determination of the moisture content of soil-binder mix or MCE mix	PN-B-04481:1988

5 Soil testing

Symbol	Description	Standard
G001	Designation and classification of soils	PN-EN ISO 14688-1:2006
G002	Determination and description of soils	PN-B-02480:1986, PN-B-04481:1988
G003	Determination of natural humidity	PN-B-04481:1988
G004	Determination of the liquidity limit using the Casagrande method	PN-B-04481:1988

G005*	Determination of the liquidity limit using the cone penetrometer method	PN-B-04481:1988
G006	Determination of yield point	PN-B-04481:1988
G007	Determination of sand index	BN-64/8931-01
G008	Determination of passive capillarity	PN-B-04493:1960
G009	Determination of water permeability index	PN-B-04492:1955
G010	Determination of grain composition	PN-B-04481:1988
G011	Areometric analysis	PN-B-04481:1988
G012	Designation of wopt and ds using the Proctor method	PN-B-04481:1988
G013	Determination of California bearing ratio (CBR) without swelling	PN-S-02205:1998
G014	Determination of California bearing ratio (CBR) with swelling	PN-S-02205:1998
G015	Determination of organic content by oxidation method	PN-B-04481:1988
G016	Determination of organic content by loss-on-ignition method	PN-B-04481:1988
G017	Determination of angle of friction and cohesion in the direct shearing apparatus	PN-B-04481:1988
G018	Calculation of uniformity coefficient	PN-B-02480:1986
G019	Calculation of filtration coefficient	BN-76/8950-03
G020	Calculation of curvature coefficient	PN-B-02481:1998
G021	Determination of compressive strength of stabilised samples	PN-S-96012:1997
G022	Determination of frost resistance of stabilised samples	PN-S-96012:1997
G023	Determination of bulk density	PN-B-04481:1988
G024	Assessment of the suitability of soils for the construction of embankments	PN-S-02205-1998
G025	Assessment of soil suitability for cement stabilisation	PN-S-96012:1997
G026	Determination of optimal humidity and maximum bulk density	PN-EN 13286-2
G027	Calculation of degree of plasticity	PN-B-04481:1988, PN-B-02480:1986
G028	Calculation of plasticity index	PN-B-04481:1988, PN-B-02480:1986
G029	Wet sieve analysis	PN-B-04481:1988
G030	Determination of organic impurities by colour comparison	PN-B-06714-26:1978
G031	Determination of bulk density	PN-B-06714-07:1978
G032	Calculation of the tightness condition	PN-S-06102:1997
G033	Dry sieve analysis	PN-B-04481:1988
G034	Determination of compressive strength of mixture samples bound with a hydraulic binder acc. to PN-EN	PN-EN 13286-41
G035	Filtration coefficient test	PKN-CEN ISO/TS 17892-

6 Aggregate testing

Symbol	Description	Standard
K001	Testing of class and species characteristics of aggregate	PN-B-11111:1996, PN-B-11112:1996, PN-B-11113:1996
K002	Los Angeles abrasion test	PN-B-06714-42:1979
K003	Los Angeles shredding test	PN-EN 1097-2
K004	Determination of absorption	PN-B-06714-18:1978
K005	Determination of grain density and water absorption	PN-EN 1097-6
K006	Determination of frost resistance by direct method	PN-B-06714-19:1978
K007	Determination of frost resistance by direct modified method (NaCl)	PN-B-06714-19:1978
K008	Determination of grain composition	PN-B-06714-15:1991
K009	Determination of grain composition	PN-EN 933-1
K010	Determination of bulk density	PN-B-06714-07:1977
K011	Calculation of filtration coefficient based on sieve analysis	BN-76/8950-03
K012	Calculation of basic fraction, subsize and oversize	PN-B-06714-15:1991

K013	Determination of organic content by loss-on-ignition method	PN-B-04481:1988
K014	Determination of California bearing ratio (CBR)	PN-EN 13286-47
K015	Determination of California bearing ratio (CBR) with swelling	PN-EN 13286-47
K016	Determination of California bearing ratio (CBR)	PN-S-06102:1997
K017	Determination of California bearing ratio (CBR) with swelling	PN-S-06102:1997
K018	Calculation of curvature coefficient	PN-EN ISO 14688-2
K019	Determination of organic impurities by colour comparison	PN-B-06714-26:1978
K020	Determination of fine aggregate flow rate with determination of grain density	PN-EN 933-6
K021	Determination of compressive strength of water-saturated stone materials	PN-B-04110:1984
K022	Determination of compressive strength of water-saturated stone materials	PN-B-11110:1996
K023	Determination of the content of grains elongated over 100 mm. Grain length	PN-B-11114:1996, PN-EN 13450
K024	Determination of voids	PN-EN 1097-3
K025	Determination of grain absorption and density by pycnometer method 0.063–4 mm	PN-EN 1097-6
K026	Determination of grain absorption and density by pycnometer method 4.0–31.5 mm	PN-EN 1097-6
K027	Determination of the content of foreign particles	PN-B-06714-12:1976
K028	Determination of grain absorption and density using the wire basket method	PN-EN 1097-6
K029	Determination of grain absorption and density as per Annex B	PN-EN 1097-6
K030	Determination of Micro-Deval abrasion resistance (MDE)	PN-EN 1097-1
K031	Determination of the connection between aggregate and bitumen – rolling bottle after 6 or 24 hours	PN-EN 12697-11
K032	Determination of frost resistance in water (20 cycles)	PN-EN 13450 Annex F
K033	Determination of frost resistance in water (10 cycles)	PN-EN 1367-1
K034	Determination of frost resistance in 1% NaCl solution (10 cycles)	PN-EN 1367-6
K035	Boiling test for Sonnenbrand basalt	PN-EN 1367-3
K036	Determination of sand index	BN-64/8931-01
K037	Determination of SE4, SE(10) sand index	PN-EN 933-8
K038	Density determination in a pycnometer	PN-B-06714-03:1976
K039	Determination of mineral dust content	PN-B-06714-13:1976
K040	Determination of loss-on-ignition	BN-86-6710-03-22
K041	Determination of the percentage content of grains with crushed surfaces	PN-EN 933-5
K042	Determination of crushing strength	PN-B-06714-40:1978
K043	Determination of calcium breakdown	PN-B-06714-38:1978
K044	Determination of iron breakdown	PN-B-06714-39:1978
K045	Determination of silicate breakdown	PN-B-06714-37:1980
K046	Determination of bulk density	PN-EN 1097-3
K047	Determination of voids	PN-B-06714-10:1976
K048	Determination of tapped bulk density	PN-B-06714-07:1978
K049	Determination of tightness	PN-B-06714-08:1976
K050	Determination of porosity	PN-B-06714-09:1976
K051	Testing and evaluation of sands for construction mortars	PN-EN 13139:2003
K052	Designation of grain shape – shape index	PN-B-06714-16:1978
K053	Designation of grain shape – shape index	PN-EN 933-4
K054	Determination of flatness index	PN-EN 933-3
K055	Determination of fine particles content with methylene blue	PN-EN 933-9
K056	Determination of filler grain size in an air stream	PN-EN 933-10
K057	Determination of water content by drying in an oven	PN-EN 1097-5
K058	Determination of absorption	PN-EN 1097-6
K059	Determination of humidity	PKN-CEN ISO/TS 17892-1
K060	Determination of density of fine-grained soils	PKN-CEN ISO/TS 17892-2

Z komentarzem [A1]: Please highlight to the client that I'm not certain about the word "voids" (which is my change from the translator's best effort, which wasn't a word but did make sense in context).

K061	Determination of specific density – pycnometer method	PKN-CEN ISO/TS 17892-3
K062	Determination of granulometric composition – sieve method	PKN-CEN ISO/TS 17892-4
K063	Determination of Atterberg limits	PKN-CEN ISO/TS 17892-12
K065	Sieve analysis of aggregate with grain size up to 4mm (crushed sand, fine granulated mix)	PN-B-06714-15:1991 or PN-EN 933-1
K066	Sieve analysis of aggregate with grain size above 4 mm, mma sieve acc. to PN, sieve acc. to PN-EN 13043 or PN-EN 12620	PN-B-06714-15:1991
K067	Sieve analysis of aggregate with grain size above 4mm, for cement concrete acc. to PN	PN-B-06714-15:1991
K068	Sieve analysis of aggregate, sieve acc. to PN-EN 13450	PN-EN 933-1
K069	Sieve analysis of aggregate (mixture of aggregates) for: mechanically stabilised substructures, railway surfaces, sieve acc. to PN-B 11114:1996, lean concrete or concrete	PN-B-06714-15:1991
K070	Sieve analysis of aggregate (mixture of aggregates) for bound and unbound substructures, sieve acc. to PN-EN 13242	PN-EN 933-1
K071	Calculation of basic fraction, subsize and oversize	PN-B-06714-15:1991
K072	Basic requirements and tolerances for grain size	PN-EN 12620, 13043, 13450, 13242
K073	Calculation of uniformity coefficient	PN-B-02480:1986
K074	Determination of foreign impurities content	PN-B-06714-12:1976
K075	Determination of optimum humidity and maximum bulk density (Proctor)	PN-B-04481:1988
K076	Determination of optimum humidity and maximum bulk density (Proctor)	PN-EN 13286-2
K077	Determination of optimum humidity and maximum bulk density (Proctor) for self-draining aggregates	PN-EN 13286-2 Annex D
K078	Determination of potential alkaline reactivity using the quick method	PN-92/B-06714/46
K079	Determination of compressive strength of mixture samples bound with a hydraulic binder acc. to PN-EN	PN-EN 13286-41
K080	Determination of organic substance content	PN-EN 1744-1 p.15.1
K081	Filtration coefficient test	PKN-CEN ISO/TS 17892-11
K082	Cone penetrometer test	PKN-CEN ISO/TS 17892-6
K083	Determination of alkaline reactivity using the accelerated method acc. to test procedure PB/1/18	GDDKIA test procedure PB/1/18

7 Filler testing

Symbol	Description	Standard
W001	Determination of apparent viscosity (bituminous number) of filler aggregates	acc. to PN-EN 13179-2
W002	Evaluation of fine particles content, testing with methylene blue	PN-EN 933-9
W003	Ring and ball determination of filler stiffening properties	Test guidelines and criteria for assessment of lime powders for mineral and asphalt mixes IBDiM 1998
W004	Determination of water content by drying in a ventilated oven	PN-EN 1097-5
W005	Determination of filler density. Pycnometric method	PN-EN 1097-7
W006	Determination of filler grain size in an air stream	PN-EN 933-10
W007	Determination of filler solubility in water acc. to	PN-EN 1744-1

8 Cement testing

Symbol	Description	Standard
C001	Preparation of slurry with a standard consistency	PN-EN 196-3

C002	Determination of bonding time (start, end)	PN-EN 196-3
C003	Determination of volume changes (Chatelier method)	PN-EN 196-3
C004	Preparation of samples in the laboratory for determination of compressive and bending strength	PN-EN 196-1
C005	Determination of compressive and bending strength	PN-EN 196-1
C006	Cement sampling	PN-EN 196-7

Z komentarzem [A2]: I think this should be "La-Chatelier" but this isn't what the PL source says.

9 Testing of cement concretes

Symbol	Description	Standard
B001	Water absorption tests for concrete samples	PN-88-B-06250
B002	Test of concrete water permeability	PN-88-B-06250
B003	Compressive strength test	PN-88-B-06250, PN-EN 12390-3
B004	Splitting tensile test	PN-EN 12390-6
B005	PULL OFF adhesion test	PN-92-B-01814 PN-EN 1542
B006	Concrete mix consistency test using the drop cone method	PN-EN 12350-2
B007	Testing the air content in the concrete mix	PN-EN 12350-7
B008	Frost resistance test for concrete samples after 150* cycles	PN-88-B-06250; PN-B-06265:2018-10
B009	Preparation of cubic samples for tests and maintenance	PN-88-B-06250 PN-EN 12350-1
B010	Concrete mix sampling	PN-EN 12350-1
B011	Evaluation of concrete samples for compressive strength tests	PN-EN 12390-1
B012	Consistency test using the flow table method	PN-EN 12350-5
B013	Determination of bending strength of test specimens	PN-EN 12390-5
B014	Concrete density test	PN-EN 12390-7
B015	Water penetration depth test under pressure	PN-EN 12390-8
B016	Testing of concrete resistance to frost with de-icing agents	PKN-CEN/TS 12390-9; PN-B-06265:2018-10 Annex O
B018	Splitting tensile strength of concrete paving	PN-EN 1338
B019	Paving stone water absorption tests	PN-EN 1338
B020	Testing of frost resistance of paving stones with de-icing agents	PN-EN 1338
B021	Bending strength tests for concrete curbs	PN-EN 1340
B022	Water absorption tests for concrete curbs	PN-EN 1340
B023	Testing of frost resistance of concrete curbs with de-icing agents	PN-EN 1340
B024	Testing of bending strength of concrete slabs	PN-EN 1339
B025	Water absorption tests for concrete slabs	PN-EN 1339
B026	Testing of frost resistance of concrete slabs with de-icing agents	PN-EN 1340
B027	Determination of the rebound number with a Schmidt hammer	PN-EN 12504-2
B028	Compression strength test of injection grout	PN-EN 445
B029	Determination of air pore characteristics in hardened concrete	PN-EN 480-11

10 Field tests and trips

Symbol	Description	Standard
T001	Compaction test with SD-10, 30, 50 dynamic light probe to a depth of 10m	PN-B-04452
T002	Soil recognition with a hand drill up to a depth of 2m	PN-B-04481:1988
T003	Macroscopic analysis	PN-B-04481:1988
T004	Cylinder determination of compaction index	BN-77/8931-12
T005	Determination of compaction index with a water volume meter	BN-77/8931-12
T006	Load capacity test using a dynamic plate	

T007	Determination of load capacity and compaction by VSS (without counterweight)	PN-S-02205:1998
T008	Planograph testing of longitudinal evenness	PN-S-02205:1998
T009	Benkelman beam deflection test (without counterweight)	PN-S-02205:1998
T010	Manual drilling in the ground up to a depth of 2m	
T011	Preparation of the borehole log	
T012	Determination of the amount of emulsion used for sprinkling	
T013	Determination of the amount of cement used for stabilisation at the construction site	
T014	100, 150, 200, 250mm boreholes in asphalt and concrete surfaces	
T015	Measurement of longitudinal evenness with RSP laser profilograph	PN-EN 13036-6
T016	Measurement of transverse evenness with RSP laser profilograph	PN-EN 13036-6
T017	Measurement of macrotexture depth with RSP laser profilograph	
T018*	FWD deflection test	
T019*	Geological / geotechnical drilling with continuous auger drill up to 15m, including macroscopic analysis of soil	PN-86-B-02480
T020*	Assessment of pavement structure layer thickness using the GPR method	

* – Specialist tests not included in the scope of financing under the lump sum % of the contract value, possibility and conditions of implementation are determined individually with the laboratory

- NOTES:
1. Financing of pre-contracted tests is determined individually, with the possibility of settling costs as part of subsequent laboratory services
 2. The frequency of tests in the service is determined depending on the contract specifications