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OVERVIEW OF LABORATORY SERVICES

valid from 01.01.2022

PREPARATION OF CYLINDRICAL SPECIMEN

Preparation of one plane-parallel cylindrical specimen *Core diameter: 26 mm, 30 mm, 40 mm, 50 mm, 63 mm, additional on request*	50,00

DENSITY AND MOISTURE CONTENT

Determination of bulk density via buoyancy method	10,00
Determination of bulk density via weight and volume *incl. specimen preparation*	60,00
Determination of true density via pycnometer	45,00
Determination of moisture content via drying	15,00

PERMEABILITY AND POROSITY

Determination of permeability via Darcy's method *incl. specimen preparation*	140,00
Determination of permeability via fluid circulation under defined confining pressure *incl. specimen preparation*	210,00
Determination of effective porosity via drying and saturation *incl. specimen preparation*	60,00
Determination of porosity via pycnometer, weight and volume *incl. specimen preparation*	70,00

ABRASIVENESS AND WEATHERING RESISTANCE

Determination of Cerchar abrasiveness index (CAI) from five individual tests	95,00
Determination of abrasion potential (LAK) (grain fraction 4-6,3 mm) of loose rock material	160,00
Determination of abrasion potential (LAK) (grain fraction 4-6,3 mm) of loose rock material *incl. specimen preparation of non-standard grain fraction*	180,00
Determination of weathering resistance via Slake-Durability-Test (two cycles)	130,00

STRENGTH AND ELASTIC PARAMETER

Determination of point load strength (IS50) per individual test *incl. specimen preparation*	45,00
Determination of point load strength (IS50) via the LOGAR method from 10 individual tests *incl. specimen preparation*	175,00
Determination of uniaxial compressive strength *incl. specimen preparation*	150,00
Determination of uniaxial compressive strength incl. determination of Deformation modulus and Young's modulus *incl. specimen preparation*	200,00
Determination of uniaxial compressive strength incl. determination of Deformation modulus, Young's modulus and Poisson's ratio *incl. specimen preparation*	230,00
Determination of triaxial compressive strength *incl. specimen preparation*	275,00
Determination of triaxial compressive strength incl. determination of Deformation modulus and Young's modulus *incl. specimen preparation*	300,00
Determination of triaxial compressive strength incl. determination of Deformation modulus and Young's modulus as well as friction parameters (Mohr-Coulomb) and strength criteria (Hoek-Brown) *incl. specimen preparation*	350,00

TENSILE AND SHEAR STRENGTH

Indirect determination of tensile strength via Brazilian disc test *incl. specimen preparation*	65,00
Determination of hydraulic tensile strength via fluid injection *incl. specimen preparation*	175,00
Determination of shear strength via direct shear test on existing joints (3 load cycles with a maximum normal load of 200 kN) *incl. specimen preparation*	750,00

ULTRASONIC VELOCITY

Determination of P- and S-wave velocity on core material (lateral)	on request
Determination of P- and S-wave velocity on prepared specimen (axial) *incl. specimen preparation*	on request

FRACTURE TOUGHNESS

Determination of fracture toughness (K_{IC}) via three-point-bending test *incl. specimen preparation*	125,00

SWELLING POTENTIAL

Determination of swelling potential and unconfined swelling strain of pulverized rock material (Thuro) *incl. specimen preparation*	110,00

MINERALOGICAL INVESTIGATION

Determination of mineral content via thin section analysis *incl. specimen preparation*	on request
Quantitative mineral analysis via X-ray diffraction	on request
Determination of equivalent quartz content via X-ray diffraction	250,00

REPORT

Brief report incl. significant parameters, diagrams and photographic documentation	included
Extended report incl. detailed technical descriptions and test procedure	on request

Norms and recommendations

DENSITY, MOISTURE CONTENT, PERMEABILITY AND POROSITY

Density, moisture content and porosity	ISRM SM for Determining Water Content, Porosity, Density, […] - 1977, Part 1
Permeability	ASTM Standard Test Method for Permeability of Rocks by Flowing Air - 2013

STRENGTH AND ELASTIC PARAMETER

Point load test	ISRM SM for Determining Point Load Strength - 1985 DGGT Empfehlung Punktlastversuche an Gesteinsproben - 1982
Uniaxial compressive test	ISRM SM for Determining the Uniaxial Compressive Strength and Deformability of Rock Materials - 1979 ISRM SM Complete Stress- Strain Curve for Intact Rock in Uniaxial Compression - 1999 DGGT Empfehlung Einaxiale Druckversuche an zylindrischen Gesteinsprüfkörpern - 2004
Triaxial compressive test	ISRM SM for Determining the Strength of Rock Materials in Triaxial Compression - 1978 ASTM D 2664-95a Standard Test Method for Triaxial Strength […] DGGT Empfehlung Dreiaxiale Druckversuche an Gesteinsproben - 1979 DGGT Empfehlung Mehrstufentechnik bei dreiaxialen Druckversuchen […] - 1987

TENSILE AND SHEAR STRENGTH

Brazilian disc test	ISRM SM for Determining Tensile Strength of Rock Materials - 1978 DGGT Empfehlung Indirekter Zugversuch an Gesteinsproben Spaltzugversuch - 2008
Shear strength	ISRM SM for Determining Shear Strength - 1974, Part 2 DGGT Empfehlung Laborscherversuch an Felstrennflächen - 1988

ABRASIVENESS AND WEATHERING RESISTANCE

Cerchar abrasiveness index LCPC-Test	ISRM SM Cerchar Abrasivity (Alber et al. 2013) DGGT Empfehlung Abrasivitätsuntersuchungen an Lockergestein […] - 2006
Slake Durability Test	ISRM SM for Determining Water Content,[…] and Slake Durability Index Properties - 1978, Part 2 DGGT Empfehlung Siebtrommelversuch - 2002

ULTRASONIC VELOCITY

Ultrasonic velocity	ISRM SM for Determining Sound Velocity - 1978 Upgraded ISRM SM for Determining Sound Velocity - 2013

FRACTURE TOUGHNESS

Fracture toughness	ISRM SM for Determining the Fracture Toughness of Rock - 1988, Part 1

SWELLING POTENTIAL

Rock swelling potential of pulverized rock	Der Pulver-Quellversuch (Thuro 1993)

Test procedure

All laboratory investigations are conducted using calibrated measuring instruments under consideration of existing standards and recommendations.

Remark

Delivered material will be disposed 14 days after completion of the measurements.