

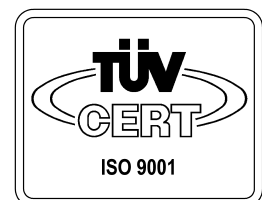
DasKeramikinstitut

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List of Services

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1. Sample preparation

1.10	Drying, Milling, Homogenizing, Separation following DIN 51061-2 and DIN 51062
1.20	Test piece selection <ul style="list-style-type: none"> • semi finished or finished products
1.30	Sampling/ Sample preparation <ul style="list-style-type: none"> • ceramic suspensions • granular materials • powdered materials
1.40	Preparation <ul style="list-style-type: none"> • to a casting slip • to a plastic mass • to a pressable mass
1.50	Sample preparation <ul style="list-style-type: none"> • de-airing extrusion method of moulding • dry pressing • shaping into plaster moulds • casting

2. Ceramic-Physical-Technological Tests

2.10	Moisture following DIN 51078
2.20	Plus mesh following DIN 66165-1 and -2 <ul style="list-style-type: none"> • wet • dry
2.30	Test Sieving following DIN 66165-1 and -2, <ul style="list-style-type: none"> • wet • dry
2.40	Particle Size Distribution 0,04 - 400 µm using a laser granulometer (CILAS 1064) following testing station instruction 15 <ul style="list-style-type: none"> • in water • in alcohol
2.50	Particle Size Distribution using a SediGraph 5100 following DIN EN 725-5 <ul style="list-style-type: none"> • determining true density (Accupyc) • determining plus mesh

	<ul style="list-style-type: none"> particle size distribution including decomposition by ultrasonic or shaking 0,1...200µm
2.60	Bulk Density following DIN EN 1097-3
2.70	True Density following DIN EN 993-2 by using a He-pycnometer (Accupyc) following testing station 86
2.80	Linear Drying Shrinkage following operating instruction 8 965
2.90	Modulus of Rupture following operating instruction 95
2.100	Apparent Specific Gravity following operating instruction 88
2.110	Firing and Total Shrinkage following operating instruction 8965
2.120	Loss of Ignition (LOI) following DIN 51 081
2.130	Degree of Deformation as a result of the firing process following operating instruction 18889
2.140	Verbal Assessment of fired samples e.g. <ul style="list-style-type: none"> fired colours smelt outs property of surface
2.150	Bending Strength after firing following DIN EN 993-6
2.160	Impact Bend Breaking Work following operation instructions 20471
2.170	Compression strength following DIN EN 993-5 <ul style="list-style-type: none"> test piece preparation by sawing and core boring test pieces: max. 520 X 320 X 320 mm³
2.180	Water Absorption following DIN EN 993-1 or DIN EN ISO 10545-3, respectively <ul style="list-style-type: none"> boiling method vacuum method impregnation method
2.190	Apparent Bulk Density of fired samples following DIN EN 993-1
2.200	Open Porosity following DIN EN 993-1; completion to part 2.190 and 2.200
2.210	Specific Surface Area of solids following DIN 66 132, BET-method according to HAUL and DÜMBGEN following DIN EN 725-6 (Area meter II by Stroehlein Instruments); measurable specific surfaces: 0,1 - 1000 m ² /g

2.220	<p>Pore Size Volume/ Pore Size Distribution following testing station instruction 76 using a mercury porosimeter (CARLO ERBA STRUMENTATIONE)</p> <ul style="list-style-type: none"> • micropores: < 7 µm - approximately 4 nm • macropores: 20 µm - approximately 2 µm • calculating the specific surface following pore model guideline • complete measure including sample preparation
2.230	<p>Review of the Wetting Ability of low viscose media on solid surfaces by determination of the contact angle at room temperature; Stereo microscope Stemi 2000 (Carl Zeiss)</p>
2.240	<p>Measurement of Geometrical Properties of for instance roofing bricks and tiles following DIN EN 1024 or DIN EN ISO 10545-2 respectively</p>

3. Mineralogical Analyses

3.10	<p>qualitative phase analyse (XRD), overview diffractogram following DIN EN 13925, 1-3</p>
3.20	<p>phase analyse (XRD), quantitative, Clay</p> <ul style="list-style-type: none"> • quantitative analysis - overview diffractogram • determination of feldspar, quartz; identification of different clay minerals like Kaolinite, Illite, Smectite, Mica, Montmorillonite • determination of Chlorite, Hematite, Calcite, Dolomite, Anatase, Goethite and further
3.30	<p>phase analysis (XRD), quantitative, Refractories</p> <ul style="list-style-type: none"> • qualitative analysis • determination of Quartz, Mullite, Cristobalite, Corundum and Cordierite/ Indialite, Si₃N₄-phases, Silicium
3.40	<p>phase analysis (XRD), quantitative, Porcelain, following DIN EN 13925, 43</p> <ul style="list-style-type: none"> • qualitative analysis – general diffractogram • determination of Quartz, Mullite and Cristobalite

4. Chemical Analyses

	<p>We recommend:</p> <ul style="list-style-type: none"> • X-ray fluorescence analysis (XRF) to analyse solids/ powders following 4.10 – 4.50 • wet chemical analysis to analyse aqueous mediums following 4.60 – 4.150 following working station instructions 50-52
4.10	Silicate Analysis (XRF) , quantitative, following DIN 51001, SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , TiO ₂ , CaO, K ₂ O, MgO, Na ₂ O, LOI
4.20	XRF-Screening possible from Fluorine to Uranium
4.30	Determination of Pollutants (XRF) of industrial sludges
4.40	Significant Components for Emission (XRF) <ul style="list-style-type: none"> • determination of Fluorine, Sulphur and Chlorine in bodies and raw materials • determination of sulfide and sulfate
4.50	V, Mn, Co, Sr, Zr, Ba, Cr, Ni, Zn, Mo und Cu in Silicate materiales <ul style="list-style-type: none"> • range of concentration: 0,01% • ignited or dried samples • completion of silicate analysis (4.10) or separate test
4.60	Water Soluble Salts <ul style="list-style-type: none"> • sample preparation • percolation following DIN 51100 • elution following DIN 38414, 4 • SO₃ following DIN EN 955-2 • alkali and alkaline earth following DIN EN 11885 • chloride following DIN EN ISO 38405 D1 • sulfate following DIN EN ISO 38405 D5
4.70	pH-Value following operation instruction 37159
4.80	Electric Conductivity following DIN EN 27888
4.90	Carbonate Content according to GEISLER
4.100	Cl⁻-Content following DIN 10304
4.110	SO₄⁻-Content following DIN 10304
4.120	Methylene Blue Value soils, clays, kaolines

4.130	<p>Acid Resistance/ Pollutant Emission following DIN EN 1388-1</p> <ul style="list-style-type: none"> • Lead and Cadmium determination • cold acidification, per article • hot extraction, per article • determination of lead • determination of cadmium <p>The test of pollutant emission follows different foreign standards is possible by arrangement.</p>
4.140	<p>Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Na, Ni, P, Pb, S, Sb, Si, Sn, Sr, Ti, V, Zn, Zr following DIN EN ISO 11885 atomic emission spectrometry with inductively coupled plasma (ICP-OES)</p>
4.150	<p>Element Screening</p> <ul style="list-style-type: none"> • elements mentioned under 4.140 • semi-quantitative evaluation (percolation, eluation)
4.160	<p>Total Organic Carbon (TOC); Total Inorganic Carbon (TIC)</p> <ul style="list-style-type: none"> • solids or liquids • following ISO 10694

5. Thermal Analyses

5.10	<p>simultaneous Thermal Gravimetric Analyses (TG)/ Differential Thermal Analyses (DTA) → up to 1550°C</p> <ul style="list-style-type: none"> • nitrogen atmosphere is possible • heating specified by client
5.20	<p>Dilatometry</p>
5.210	<p>Test piece preparation for Dilatometry</p> <ul style="list-style-type: none"> • casting or plastic moulding of test bard • sawing out and grinding from unfired pieces • sawing out and grinding from fired pieces
5.220	<p>Dilatometric Measurements/ Thermal Expansion Coefficient following DIN 51 045, 1-5</p> <ul style="list-style-type: none"> • up to 1550°C
5.230	<p>Expansion-Shrinkage Curve following DIN 51045, 1-5</p> <ul style="list-style-type: none"> • room temperature up to 1550°C
5.240	<p>Low Temperature Dilatometric Measurements following DIN 51 045, 1-5; temperature range: -170°C...490°C</p>

	<ul style="list-style-type: none"> determination of Moisture Expansion after hydrothermal treatment determination of the Thermal Expansion Coefficient up to 450°C
5.30	Heating Microscope Analyses following testing station instruction 21 <ul style="list-style-type: none"> up to 1550 °C videoprint shots inclusive heating specified by client

6. Rheological Characteristics and Filtration Behaviour

6.10	Water Absorption (Swelling) Capacity according to ENSLIN following operating instruction 18884
6.20	Mixing Water Requirement according to PFEFFERKORN following operating instruction 18887; determining the deformation ratio for the evaluation of the Processing Moisture
6.30	Filtration Capability following testing station instruction 135 by using a 'baroid' <ul style="list-style-type: none"> suspensions
6.40	Casting Slip Characterisation/ Optimal Deflocculation of raw materials and masses <ul style="list-style-type: none"> density and litre weight viscosity measurements according to LEHMANN or KEYL following DIN EN ISO 2431 (flow time with beaker including determination of thixotropy) viscosity according to GALLENKAMP including thixotropy following DIN EN ISO 2431 body formation, time to truncate and assessment of body features following operating instruction 18879 optimal liquefaction of plastic raw materials and masses by using up to 2 deflocculants, complete characterisation of the casting slip in the optimum viscosity measurement with a rotating-cylinder viscosimeter (Rheolab MC 1), shear gradient or shear stress is specified by client
6.50	Characterisation of Pressure Casting Slips Testing the pressure casting slip on an pressure casting equipment (DGA80-DORST) with characterisation of the technological behaviour including assessment of it's body formation

7. Optical Characteristics

7.10	Gloss Measurements following testing station instruction 103 <ul style="list-style-type: none"> on flat surfaces
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	<ul style="list-style-type: none"> • remission measurement with 3 angles
7.20	<p>Colour Measurement using a Minolta-Spectrometer following DIN 51033, part 2, 3, 8</p> <ul style="list-style-type: none"> • L*, a*, b*-Values or other colour system values • degree of whiteness (different standards)

8. Microscopic Analyses

8.10	Polished Surface Preparation
8.20	Stereomicroscopic Analyses
8.30	Microscopic Colour Photographs
8.40	Electron Microprobe Analyses
8.50	Scanning Electron Microscopic Analyses

9. Drying Process

9.10	<p>Drying by given Temperature-Humidity Profile</p> <ul style="list-style-type: none"> • drying chamber: 0,9 m³ • effective filler dimensions: 0,70x1,00x1,25 m³ (WxLxH) • temperature range: 140°C max. • registration of the ‚BIGOT-Curve‘
9.20	<p>Drying in a Climate Test Chamber (WK1 - 180/40)</p> <ul style="list-style-type: none"> • drying chamber: 0,25 m³ • effective filler dimension: 0,125 m³, approx. 0,55 x 0,45 x 0,5 m³ • temperature working range: - 40 to 180 °C • climate working range: 10 to 95 °C; 10 to 98 % rel. humidity • dew point temperature range: 4 to 94 °C
9.30	<p>Drying in a Spray Dryer</p> <ul style="list-style-type: none"> • water evaporation capacity: 60 l/h, • max. pressure of pump: 20 bar, • deposit: 120 l; • unary bushing system • different spray heads and twist bodies to realise a corresponding grading fraction (100-400µm)

- 9.40 **Drying in a Laboratory Dryer** with Circulation Air;
- drying chamber: 0,75 m³
 - temperature range: 20 to 250 °C

10. Firing Data

- 10.10 **Chamber Kiln for Rapid Firing**
- gas fired
 - net capacity: 0,25 m³
 - net dimensions: 0,90x0,50x0,55 m³
 - firing temperature: 1440°C max.
 - cycle time: up to 1100°C within 90min; up to 1400°C within 120min
 - oxidising and reducing atmosphere
 - possibility to add separate O₂
 - automatic registration of temperature and atmosphere conditions (CO₂, CO, O₂)
- 10.20 **Chamber Kiln**
- gas fired
 - net capacity: 0,24 m³
 - net dimensions: 0,5 x 0,6 x 0,8 m³ (WxLxH)
 - firing temperature: max. 1300°C
 - cycle time: 4 h min.
 - oxidising firing
 - thermal afterburning
- 10.30 **Chamber Kiln**
- gas fired
 - net capacity : 0,25 m³
 - net dimensions: 1,0 x 0,45 x 0,6 m³ (WxLxH)
 - firing temperature: max. 1600°C
 - cycle time: ca. 20 h min.
 - firing system: IVF (Infinite Variable Flash Firing)
 - control type: modulating, impulse
 - oxidising and reducing atmosphere
 - thermal afterburning
 - possibility to add separate O₂
 - computer control of temperature and atmosphere conditions (CO, CO₂, O₂) and pressure in the furnace chamber
 - data capture of relevant parameters
 - data transfer to other systems as ASCII-File
- 10.40 **Chamber Kiln ,SO 1093'**
- electrical heated
 - net dimensions: 350 x 350 x 400 mm³

	<ul style="list-style-type: none">• firing temperature: 1380 °C max.• thermal afterburning• free programmable heating and cooling
10.50	Gradient Kiln <ul style="list-style-type: none">• electrical heated• firing temperature: max. 1300 °C• 6 temperature segments (= 6 measurement positions)• effective section dimension: 150 x 150 x 80 mm³• temperature-time program of all sections are free programmable• registration of chosen temperature course
10.60	High Speed Kiln ,HTM' <ul style="list-style-type: none">• firing temperature: 1550 °C max.• cycle time: 30 min• to heat to 1200 °C in 4 min possible• especially suitable for tile firing• effective filler dimensions: 250 x 200 mm² (for instance for 2 tiles)• furnace chamber is variable to approx. 100 mm
10.70	Lift Floor Kiln for Rapid Firing <ul style="list-style-type: none">• electrical heated• effective filling capacity: 300 x 230 x 200 mm³• firing temperature: 1800 °C max.• permanent working temperature: 1730 °C• heating rate: 15 K/min max.
10.80	Laboratory Firing Aggregates <ul style="list-style-type: none">• electrical heated• 9 KW – kiln: up to 1350 °C• high temperature kiln 1: up to 1600 °C• high temperature kiln 2: up to 1750 °C

11. Tests on Glazes

11.10	Length of Flow following operation instruction 18880 <ul style="list-style-type: none"> channel viscosimeter glazes and ceramic fluxes
11.20	Melting Behaviour and Dilatometer Analyses; melting behaviour with heating microscope
11.30	Glaze Stress Test according to STEGER
11.40	Resistance to Scratching according to MOHS following DIN EN 101
11.50	Glaze Abrasion Resistance following operation instruction 18881 <ul style="list-style-type: none"> sprinkling method with corundum K63 (it corresponds to grain 24 following DIN) 10 pieces
11.60	Glaze Cracking Resistance following DIN EN ISO 10545-11 and operating instruction 37160 <ul style="list-style-type: none"> under hydrothermal conditions (autoclave test)
11.70	Moisture Expansion <ul style="list-style-type: none"> test piece preparation hydrothermal stress (autoclave test) determining moisture expansion
11.80	Colour Measurements and Degree of Whiteness (see 7.20)
11.90	Gloss Measurements following testing station instruction 103 <ul style="list-style-type: none"> on flat surfaces remission measurement with 3 angles
11.100	Determination of the Contact Angle for a review of the wetting ability of glazes at room temperature; stereo microscope 'Stemi 2000' (Carl Zeiss)

12. Tests on Ceramic Tiles and Plates

12.00	Measurement of Geometrical Properties of tiles and plates following DIN EN 10545-2
12.10	Water Absorption following DIN EN ISO 10545-3
12.20	Drying Transverse Strength following DIN EN ISO 10545-4

	<ul style="list-style-type: none"> • wall and floor tiles
12.30	Bending Strength after Firing following DIN EN ISO 10545-4
12.40	Resistance to Scratching according to MOHS following DIN EN 101
12.50	Surface Abrasion following DIN EN ISO 10545-7 <ul style="list-style-type: none"> • resistance of glazed tiles and plates
12.60	Linear Thermal Expansion following DIN EN ISO 10545-8 <ul style="list-style-type: none"> • ceramic tiles and plates
12.70	Thermal Shock Resistance following DIN EN ISO 10545-9 <ul style="list-style-type: none"> • ceramic tiles and plates
12.80	Moisture Expansion following DIN EN 10545-10 <ul style="list-style-type: none"> • ceramic tiles and plates
12.90	Resistance against Glaze Cracks following DIN EN ISO 10545-11 <ul style="list-style-type: none"> • ceramic tiles and plates
12.100	Determination of Frost Resistance following DIN EN 10545-12 <ul style="list-style-type: none"> • ceramic tiles and plates
12.110	Chemical Resistance following DIN EN ISO 10545-13 <ul style="list-style-type: none"> • ceramic slabs and plates
12.120	Resistance against Specking following DIN EN 10545-14
12.130	Pollutant emission <ul style="list-style-type: none"> • determination of lead and cadmium following DIN EN ISO 10545-15

13. Tests on Roofing Tiles

13.10	Frost Resistance following DIN EN 539-2 <ul style="list-style-type: none"> • roofing tiles and roofing tile accessories • frost acts on all over after impregnation in vacuum
13.20	Water impermeability of roofing tiles test following DIN EN 539-1
13.30	Water Soluble Salts following DIN 51110 <ul style="list-style-type: none"> • elution method
13.40	Floating Enclosures following DIN 105-1

	<ul style="list-style-type: none"> • steam test
13.50	<p>Abrasive wear test according to BÖHME following DIN 52108</p> <ul style="list-style-type: none"> • loss of volume • loss of thickness •
13.60	<p>Moisture Expansion</p> <ul style="list-style-type: none"> • sample preparation • autoclave treatment • measurement
13.70	<p>Determination of the Crazing Safety of glazed structural ceramics in the autoclave</p>
13.80	<p>Determination of UV-Resistance/ Light Stability of glazed structural ceramics by means of cyclic stress with UV radiation and sprinkling</p>
13.90	<p>Determination of the Weathering Resistance of glazed structural ceramics to moisture and temperature in the climate chamber</p>
13.100	<p>Determination of the Resistance of Surfaces to Boiling Water and Water vapour in accordance with DIN ISO 2744 by using the tester as described in DIN ISO 2733</p>
13.110	<p>Measurement of Geometrical Properties following DIN EN 1024</p>
13.120	<p>Bending carrying capacity of roofing tiles following DIN EN 538</p>

14. Tests on bricks

14.10	<p>Frost Resistance following DIN EN 539-2</p> <ul style="list-style-type: none"> • Hard burn bricks and clinkers • frost acts on all over after impregnation in vacuum
14.30	<p>Water Soluble Salts following DIN 51110</p> <ul style="list-style-type: none"> • elution method
14.30	<p>Floating Enclosures following DIN 105-1</p> <ul style="list-style-type: none"> • steam test
14.40	<p>Acid resistance:</p> <ul style="list-style-type: none"> • following DIN EN ISO 10545-13: bricks, lumps • following DIN 51102-1: sewerage stoneware, in lumps • following DIN EN 993-16: ceramic clinker for acid protective building, grained

	<ul style="list-style-type: none"> • following DIN 4051: sewer brick, grained
14.50	<p>Abrasive wear test according to BÖHME following DIN 52108</p> <ul style="list-style-type: none"> • loss of volume • loss of thickness •
14.60	<p>Moisture Expansion after hydrothermal treatment</p> <ul style="list-style-type: none"> • sample preparation • autoclave treatment • measurement using a low temperature dilatometer
14.70	<p>Determination of the Crazing Safety of glazed structural ceramics in the autoclave</p>
14.80	<p>Determination of UV-Resistance/ Light Stability of glazed structural ceramics by means of cyclic stress with UV radiation and sprinkling</p>
14.90	<p>Determination of the Weathering Resistance of glazed structural ceramics to moisture and temperature in the climate chamber</p>
14.100	<p>Determination of the Resistance of Surfaces to Boiling Water and Water vapour in accordance with DIN ISO 2744 by using the tester as described in DIN ISO 2733</p>
14.110	<p>Measurement of Geometrical Properties following DIN EN 1024</p>
14.120	<p>Determination of compression strength following DIN 105-1</p>

15. Tests on clay pavers

15.10	<p>Frost Resistance following DIN EN 1344 resp. DIN 18503 (paving clinkers)</p>
15.30	<p>Water Soluble Salts following DIN 51110</p> <ul style="list-style-type: none"> • elution method
15.30	<p>Floating Enclosures following DIN 105-1</p> <ul style="list-style-type: none"> • steam test
15.40	<p>Acid resistance:</p> <ul style="list-style-type: none"> • following DIN 51102-1: sewerage stoneware, in lumps • following DIN EN 993-16: ceramic clinker for acid protective building, grained • following DIN EN 1344: clay pavers • following DIN 18503: paving clinkers • following DIN 4051: sewer brick, grained

15.50	Abrasive wear test according to BÖHME following DIN 52108 <ul style="list-style-type: none"> • loss of volume • loss of thickness •
15.60	Moisture Expansion after hydrothermal treatment <ul style="list-style-type: none"> • sample preparation • autoclave treatment • measurement using a low temperature dilatometer
15.70	Determination of the Crazing Safety of glazed structural ceramics in the autoclave
15.80	Determination of UV-Resistance/ Light Stability of glazed structural ceramics by means of cyclic stress with UV radiation and sprinkling
15.90	Determination of the Weathering Resistance of glazed structural ceramics to moisture and temperature in the climate chamber
15.100	Determination of the Resistance of Surfaces to Boiling Water and Water vapour in accordance with DIN ISO 2744 by using the tester as described in DIN ISO 2733
15.110	Measurement of bending strength following DIN EN 1344 (clay pavers) as determination of compression and bending strength following DIN 18503 (paving clinkers)
15.120	Determination of water absorption following DIN 18503
15.130	Determination of water permeability on water permeable bricks

16. Tests on Granular Materials

16.10	Test sieving following DIN 66165, 5
16.20	Sprinkling Behaviour following testing station instruction 84
16.30	Bulk Density following DIN EN 1097-3
16.40	Abrasion following testing station instruction 83
16.50	Granules Strength following testing station instruction 24 <ul style="list-style-type: none"> • single determinations of a defined fraction • statistical evaluation

17. Tests on Plasters and other Moulding Materials

17.10	Plus Mesh following DIN 4188-1 <ul style="list-style-type: none"> • perforated bottoms • 3,15 mm; 1,25 mm; 0,2 mm
17.20	Particle Size Distribution following testing station instruction 15 <ul style="list-style-type: none"> • Cilas laser granulometer • 0,04 – 400 µm • alcohol
17.30	Strew Amount following DIN 1168-2
17.40	Consistence following working station instruction 125
17.50	Setting Time following DIN 1168-2
17.60	Judgement of Corrosion Behaviour of plasters
17.70	Compression Strength following DIN 1168-2
17.80	Diffusion Coefficient following operating instruction 18 879
17.90	Determination of Permeability by using a ‚baroid‘ following testing station instruction 135
17.100	Determination of the Bending Strength following DIN EN 993-6
17.110	Water Absorption, Open Porosity and Bulk Density following DIN EN 993-1 <ul style="list-style-type: none"> • vacuum method
17.120	Pore Size Volume/ Pore Size Distribution following testing station 76 by using a mercury porosimeter (CARLO ERBA STRUMENTATIONE)
17.130	Characterisation of Pressure Casting Slips Testing the pressure casting slip on an pressure casting equipment (DGA80-DORST) with characterisation of the technological behaviour including assessment of it's body formation

18. Tests on Fine Ceramics

18.10	Edge Impact Strength following operating instruction 42 790
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18.20	Thermal Shock Resistance following operating instruction 18 877 (Harkort-Test)
18.30	Dishwasher Safety of decorated table porcelain following ,pre' DIN 50275-1 <ul style="list-style-type: none"> • dishwasher type G 540 with a capacity of 30 plates 24cm and 15 plates 19cm • number of rinse cycles is specified by client
18.40	Acid Resistance/ Pollutant Emission following DIN EN 1388 <ul style="list-style-type: none"> • Lead and Cadmium determinaton • cold acidification, per article • hot extraction, per article <p>The test of pollutant emission follows different foreign standards is possible by arrangement.</p>
18.50	Resistance to Scratching according to MOHS following DIN EN 101
18.60	Determination of Crazing Safety of dishes after hydrothermal treatment

19. Tests on Refractories

19.10	Water Absorption, Open Porosity and True Porosity following DIN EN 993-1
19.20	Determination of Cold Compression Strength in accordance with DIN EN 993-5
19.30.	Determination of the Bending Strength at room temperature in accordance with DIN EN 993-6
19.40	Determination of Bending Strength at elevated temperatures in accordance with DIN EN 993-7
19.50	Determination of Pressure Flow according to DIN EN 993-9
19.60	Abrasive Wear Test according to BOEHME following DIN 52 108
19.70	Thermal Shock Resistance of fire-resistant bricks according to DIN 51068-1 (water quenching method) and DIN EN 993-11, respectively
19.80	Determination of Post Shrinkage/ Secondary Expansion in accordance with DIN 51066 and DIN EN 993-10, respectively
19.90	Determination of the Bulk Density of Granular Material according to the mercury displacement technique following DIN EN 993-17

19.100	Oxidation Resistance according to ASTM C 863 –83 <ul style="list-style-type: none"> • max. testing temperature: 1200°C • steam atmosphere • 10 samples
19.110	Determination of Si₃N₄ – phases in SiC , quantitatively by means X-ray diffraction (XRD)
19.120	Determination of Silicon and Quartz in SiC , quantitatively, using X-ray diffraction analysis

20. Other Testing Methods

20.10	Thermal Conductivity <ul style="list-style-type: none"> • plate method • ceramics
20.20	Determination of the Calorific an Heating Value following DIN 51 900, 1+2
20.30	Determination of Bacterial Counts in ceramic masses (anaerobic/ aerobic)

21. Laser Treatment of Ceramics

21.10	<ul style="list-style-type: none"> • lettering • engraving • surface treatment
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22. Testing of Mineral Seals used in Landfill Construction

22.10	Water Content following DIN 18121-1
22.20	State Limits (limits of consistency → yield strength limit, plastic limit, limit of shrinkage) following DIN 18122-1/ 2
22.30	Grain Size Distribution following DIN 18123
22.40	PROCTOR Density following DIN 18127
22.50	Loss of Ignition following DIN 18128
22.60	Lime Content analogous to DIN 18129
22.70	Coefficient of Water Permeability following DIN 18130
22.80	Shear Stability following DIN 18137
22.90	Soil Classification following DIN 18196