Cast Iron

Reference Materials and Setting-up Samples

LGC Standards

Excellence through measurement

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Industrial Analytical (Pty) Ltd
ISO 9001:2000
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Introduction

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Sample Grinder HK150

Manual pendulum grinder for fast grinding or iron and steel samples

Grinding Machine
HK150

- Compact desktop machine, dustproof, covered working place, halogen spot light
- Reproducible flat surface, easily operated pendulum arm in taper bearings
- Simple and reliable machine construction
- Specially suitable for hard materials, like white cast irons
- Adaptable to various qualities by special stome cup wheels
- Vertical moving of grinding head by handwheel with 0.1 mm scale
- Clean operation by attaching an external dust exhauster at rearside adapter

Technical Data and Accessory

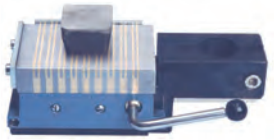
Technical Data

Grinder motor	3 x 400 V/50 Hz, 1.1 kW alt.: 1 x 220 V/60 Hz alt.: 3 x 220 V/60 Hz
Revolutions	2800 rpm/3440 rpm
Lighting	12 V/20 W halogen
Grinding stone	150 x 80 x 32 mm
Grinding height, min.	4 mm
Grinding height, max.	90 mm
Mass	approx. 100 kg
Dimensions	400 x 400 x 680 mm

Cup wheel, open corundum stone

Standard Accessory

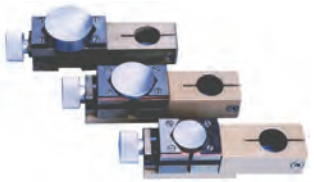
Vice for sample holding
Grinding stone, tool for stone change
Dressing bar for grinding stone
Transport handles



Magnetic plate with quick exchange arm

Optional Accessory

Magnetic vice with handle and quick exchange arm
Special vices – bigger vice for max. diam. 58 mm
Hardened vice jaws: 3 mm, 9 mm (regular) and 20 mm
Copper cooling blocks
corundum/silicon carbide cup wheels 150 x 80 x 32 mm
Spare parts kit: 2 bellows, safety glass, halogen lamp



Vices for different sample diameters

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Introduction

About LGC and LGC Standards

LGC Standards provides the widest range of reference materials from a single supplier. We work closely with the leading manufacturers to provide laboratories worldwide with improved access to reference materials, covering an increasingly large range of parameters. Our global network of offices combined with our extensive technical experience in reference materials allows LGC Standards to work in partnership with our customers to provide fast delivery, sound technical advice and deal with complex import and export regulations.

LGC Standards is part of LGC, an established leader in laboratory services, measurement standards, reference materials and proficiency testing. LGC's Science and Technology Division acts as the designated UK National Measurement Institute (NMI) for chemical and bioanalytical measurement, and has a long history in the development and validation of analytical methods and the production of reference materials.

LGC's Science and Technology Division is accredited to ISO Guide 34 (General requirements for the competence of reference materials producers) for the production of reference materials. In its role as the NMI, LGC serves on the International Organisation for Standardisation (ISO) Committee for Reference Materials (REMCO), which aims to carry out and encourage a broad international effort for the harmonization, production and application of certified reference materials (CRMs).

Breitländer GmbH has been a specialist company in reference materials since 1972 and was acquired by LGC Standards in 2007, joining forces to offer the most extensive range of certified reference materials and standards. Breitländer also brought high quality sample preparation equipment to the portfolio.

Industrial Analytical (Pty) Ltd. was formed in 1988 specifically to meet the ever-increasing demand in industry to supply Reference Materials for verifying analytical results and proving quality of characterization. Now the single largest supplier of Certified Reference Materials, not only in the Republic of South Africa, but also in the African continent as a whole, Industrial Analytical was acquired by LGC Standards in 2011.

This catalogue

This catalogue features certified reference materials and setting-up samples for the cast iron industry. It provides an updated and relevant listing of the available materials on the market. The products are listed in groups according to type and manufacturer. An index of all products is included in the back of the catalogue, listed by name and catalogue number.
The analytical data is given in mass percentage. They have to be considered as typical or pilot values, the proper values are to be found in the certificate only, supplied together with the sample. Values in brackets ( ) are not certified and listed for information only. Reference materials can only be produced in limited numbers, mostly due to homogeneity reasons, thus follow-up melts will differ slightly in composition and may differ in dimension between batches. In case you need an exact value or more information on manufacture, material property, methods, uncertainties, etc. prior to selection, do not hesitate to ask for more information.

Producers of reference materials

This catalogue brings together products from a wide variety of sources. These include certified reference materials from National Measurement Institutes and also reference materials and setting-up samples from many different producers. Most products are supplied with a certificate of analysis although the layout and format of the certificates will vary according to the producer. Setting-up samples come with an information sheet only.

The use of reference materials

Reference materials are instrumental in ensuring the reliability of analytical measurements and so ensuring the use of high quality data as the basis of decision making. When choosing a matrix reference material for a particular application the analyst should consider the following factors before selecting the material:

- Matrix match and potential interference
- Analytes
- Measurement range
- Measurement uncertainties
- Certification procedures used by the producer
- Documentation supplied with the material (e.g. certification or report)

Certified Reference Material (CRM)

Reference material, accompanied by a certificate, one or more of whose property values are certified by a procedure which establishes its traceability to an accurate realization of the unit in which the property values are expressed., and for which each certified value is accompanied by an uncertainty at a stated level of confidence. The CRMs are certified by a recognized certifying organization using approved certification procedures of certification as instructed in ISO Guide 35:2006 “Reference Materials – General and statistical principles for certification”. A CRM is the highest order to which an analytical reference material can be elevated because of the traceability to SI units and because of the attributed confidence in the company or organization which produced the material.

Reference Material (RM)

A material or substance one or more of whose property values are sufficiently homogeneous and well established to be used for calibration of an apparatus, the assessment of a measurement method or for assigning values to materials. The RMs usually have been through interlaboratory testing using many analysts and are supplied with a certificate of analysis but do not strictly follow all procedures of certification as indicated in ISO Guide 35.

Setting-Up Samples (SUS)

Materials of minimum inhomogeneity to be used for monitoring or adjustment of the analytical signal of the instruments. These materials are assigned values during calibration with CRMs and RMs, thus they do not have a certified analysis, but a guiding one only. Such standards are also referred to as “re-calibration samples”, “drift control samples” and “monitor samples”.

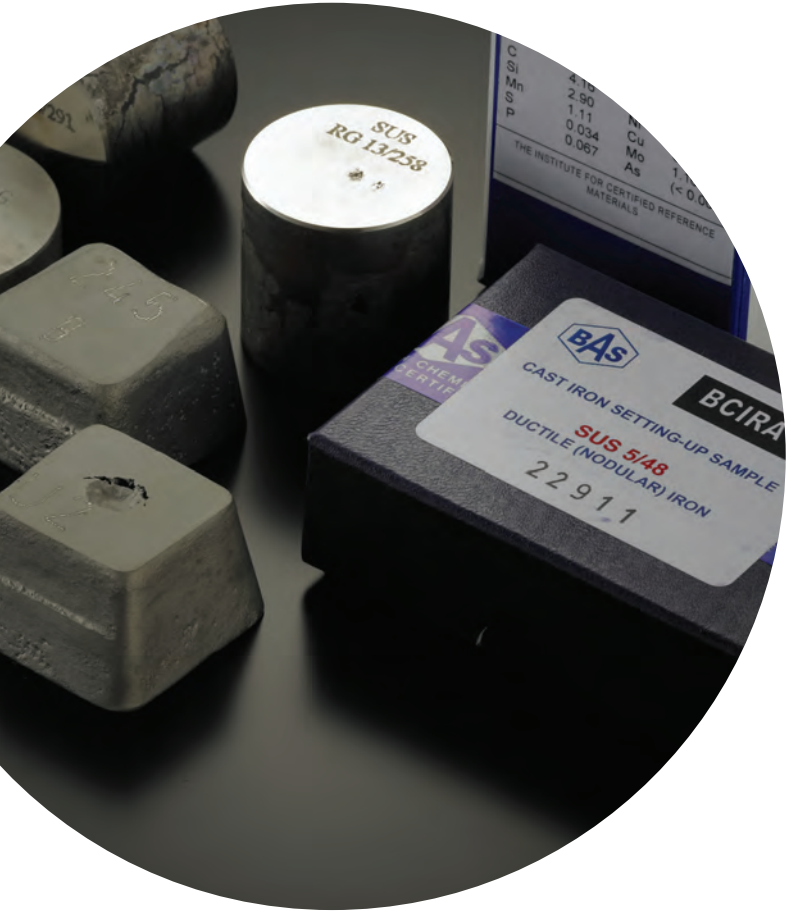
General ordering information

Prices and delivery procedures are available from your local LGC Standards sales office.
Unless otherwise agreed in advance and in writing, orders are accepted only against LGC Standards standard terms and conditions of sale.
LGC Standards technical staff are available to advice on the use and suitability of a particular product. Customers requiring assistance with the use or application of a particular material should contact their local LGC Standards office, contact details are provided on the back of this catalogue.
For any additional information please visit www.lgcstandards.com or www.breitlander.com.

More catalogues

LGC Standards will be releasing additional catalogues during 2012 to cover the rest of our extensive range of reference materials and standards including:

- Copper base
- Aluminum base
- Geological
- Industrial
- Non-ferrous base
- Precious metals
- Steel
- XRF Glass
- Mechanical testing
- Combustion and wet chemistry analysis



Certified Reference Materials
Solid Discs and Blocks

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Proficiency Testing

LGC Standards Proficiency Testing (PT) is an international provider of proficiency schemes, accredited to ISO/IEC 17043.

The company operates 39 proficiency testing schemes serving over 7,000 laboratories in more than 140 countries worldwide, helping our customers to achieve excellence through measurement.

Benefits of participation

- A truly independent assessment of measurement quality, which enables laboratories to compare their analytical capabilities with peer laboratories
- Rapid round cycle – from despatch to report in 4 weeks
- The results obtained in proficiency testing are recognised as a demonstration of laboratory quality by a range of 'third parties', customers, regulators and accreditation bodies

The industry leading schemes

AQUACHECK – Water chemistry
Wide range of real, synthetic and simulated samples for the analysis of organic, inorganic and water quality parameters, samples for the analysis of ecotoxicological and radiochemical parameters

CONTEST – Contaminated land
Comprehensive range of standard solutions, soil extracts and soil materials for the analysis of organic and inorganic parameters

STACKS – Stack emissions
Stack (impinger) solutions containing a range of analytes at routinely determined concentrations and filter samples for elements specified in EN 14385

UKAS PROFICIENCY TESTING
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Cast Iron, Universal Set

Code	Product			Unit
SPL-CZ02033-1A	(a)	CRM	Cast Iron, ø40x18mm	disc
SPL-CZ02033-2B	(b)	CRM	Cast Iron, ø40x18mm	disc
SPL-CZ02033-3A	(c)	CRM	Cast Iron, ø40x18mm	disc
SPL-CZ02033-4A	(d)	CRM	Cast Iron, ø40x18mm	disc
SPL-CZ02033-5A	(e)	CRM	Cast Iron, ø40x18mm	disc
SPL-CZ02033-6A	(f)	CRM	Cast Iron, ø40x18mm	disc
SPL-CZ02033-7A	(g)	CRM	Cast Iron, ø40x18mm	disc
SPL-CZ02033-8A	(h)	CRM	Cast Iron, ø40x18mm	disc

Two certified layers extending 6 mm upwards from either working surface

	Al	B	Bi	C	Ce	Co	Cr	Cu	Mg	Mn	Mo	Ni	P	Pb	S	Sb
(a)	0.048	0.0004	0.005	3.26	0.018		0.018	0.015	0.052	0.858	0.119	0.233	0.044		0.011	
(b)	0.026	0.0100		3.54	(0.03)	0.023	0.051	0.69	0.030	0.098	0.008	0.634	0.049		(0.01)	0.017
(c)	0.025	0.0053	0.008	3.72	0.013	0.007	0.205	0.406	0.013	0.333	0.514	0.050	0.022	0.007	0.011	
(d)	0.015			4.18		0.002	0.040	0.081		0.236	0.002	0.056	0.053	0.006	0.034	
(e)	0.060			2.30			0.054	0.014		0.804	0.100	0.096	0.035		0.100	
(f)	0.022			3.14			1.40	0.225		1.22	0.005	0.023	0.077		0.032	0.056
(g)	0.029			3.11		0.044	0.479	0.022		0.321	1.07	1.29	0.043		0.019	
(h)	0.015		0.017	3.49			0.126	0.116		0.408	0.026	0.094	0.169	0.006	0.073	0.001

	Si	Sn	Ti	V	W	Zn
(a)	2.33	0.035	0.039	0.018	0.016	0.001
(b)	1.28	0.021	0.099	0.059	(0.003)	0.013
(c)	2.30	0.008	0.006	0.010		
(d)	0.71	0.007	0.015	0.004		0.007
(e)	1.26		0.008	0.005		
(f)	3.37	0.119	0.066	0.300		
(g)	1.83		0.027	0.005	0.022	
(h)	2.20	0.040	0.027	0.034	0.011	

Cast Iron, Top sellers

Code	Product			Unit
CKD-241B	(a)	CRM	Cast Iron, complex alloyed, 38x38x23 mm	block
CKD-242A	(b)	CRM	Cast Iron, complex alloyed, 38x38x23 mm	block
CKD-242B	(c)	CRM	Cast Iron, complex alloyed, 38x38x23 mm	block
CKD-244C	(d)	CRM	Cast Iron, complex alloyed, 38x38x23 mm	block
CKD-245A	(e)	CRM	Cast Iron, complex alloyed, 38x38x23 mm	block
CKD-245B	(f)	CRM	Cast Iron, complex alloyed, 38x38x23 mm	block
CKD-246B	(g)	CRM	Cast Iron, complex alloyed, 38x38x23 mm	block

	Al	As	B	Bi	C	Ce	Co	Cr	Cu	Fe	La	Mg	Mn	Mo	N	Nb	Ni
(a)	0.003	0.002	0.001		1.84		0.004	0.683	0.011	(93.2)			0.06	0.61	0.0053	0.003	0.021
(b)	0.036	0.015	0.008	(0.015)	1.84		0.002	0.029	0.055	(92.9)			0.06	1.13		0.013	0.039
(c)	0.042	0.009	0.005	0.02	2.06		0.004	0.031	0.04	(92.6)			0.189	1.21	0.0092	0.009	0.022
(d)	0.071	0.043	0.086		2.57	0.017	0.05	0.248	0.301	(92.9)	0.008	0.031	0.715	0.059		0.006	0.344
(e)	0.019	0.002	0.007	0.008	2.94		0.003	0.166	0.076	(92.7)		0.003	1.38	0.114		(0.001)	0.161
(f)	0.038	0.006	0.003	0.009	2.95		0.007	0.197	0.081	(92.5)		0.003	1.38	0.115		0.029	0.194
(g)	0.101	0.003		(0.001)	2.73	0.007	0.012	1.16	1.39	(92.6)	0.003	0.016	0.354	0.009		(0.001)	0.065

	P	Pb	S	Sb	Se	Si	Sn	Te	Ti	V	W	Zn	Zr
(a)	0.007	0.001	0.123	0.139		3.15	(0.003)		0.001	0.08	0.001		
(b)	0.039	(0.012)	0.036	0.007		3.06	0.01	(0.08)	0.19	0.37	(0.007)		
(c)	0.044	0.027	0.028	0.005	(0.002)	2.81	0.01	(0.031)	0.28	0.46	(0.002)		
(d)	0.027	0.003	0.012	0.004		2.15	0.175		0.034	0.002	0.052	0.027	0.037
(e)	0.41	0.015	0.039	0.05	(0.036)	1.58	0.076	(0.018)	0.087	0.073	0.021		0.003
(f)	0.42	0.020	0.035	0.052	(0.029)	1.59	0.076	(0.017)	0.110	0.055	0.020		0.004
(g)	0.66	(0.002)	0.02	0.004		0.76	0.002		0.014	0.013	(0.011)		

Code	Product			Unit
BAS-SCRM 651/4	(a)	CRM	Malleable Irons, 48x42x12 mm	block
BAS-SCRM 652/4	(b)	CRM	Malleable Irons, 48x42x12 mm	block
BAS-SCRM 653/4	(c)	CRM	Malleable Irons, 48x42x12 mm	block
BAS-SCRM 654/4	(d)	CRM	Malleable Irons, 48x42x12 mm	block
BAS-SCRM 655/4	(e)	CRM	Malleable Irons, 48x42x12 mm	block

	C	Cr	Mn	P	S	Si
(a)	2.66	(1)	0.92	0.249	0.1	0.541
(b)	2.34	(1)	1.19	0.071	0.129	0.878
(c)	3.1	(1)	0.11	0.023	0.05	1.22
(d)	2.28	(1)	0.74	0.13	0.17	1.635
(e)	1.9	(1)	0.44	0.18	0.076	2.11

BAS-SCRM 656/8	(a)	CRM	Low Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 657/8	(b)	CRM	Low Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 658/10	(c)	CRM	Low Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 659/8	(d)	CRM	Low Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 660/9	(e)	CRM	Low Phosphorus Engineering Irons, 48x42x12 mm	block

	C	Cr	Mn	P	S	Si
(a)	2.61	(1)	0.823	0.062	0.107	2.59
(b)	2.93	(1)	0.062	0.1	0.024	3.02
(c)	3.338	(1)	0.532	0.187	0.074	1.943
(d)	3.96	(1)	1	0.025	0.039	1.4
(e)	3.461		0.406	0.153	0.105	1.699

BAS-SCRM 661/4	(a)	CRM	High Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 662/4	(b)	CRM	High Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 663/4	(c)	CRM	High Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 664/4	(d)	CRM	High Phosphorus Engineering Irons, 48x42x12 mm	block
BAS-SCRM 665/4	(e)	CRM	High Phosphorus Engineering Irons, 48x42x12 mm	block

	C	Cr	Mn	P	S	Si
(a)	2.56	(1)	0.3	0.84	0.068	2.96
(b)	2.95	(1)	0.76	0.3	0.087	2.33
(c)	3.28	(1)	1.04	0.13	0.024	1.97
(d)	2.84	(1)	0.57	0.44	0.112	2.71
(e)	3.25	(1)	0.24	1.09	0.053	1.66

Cast Iron, Top sellers

Code	Product			Unit
BAS-SCRM 666/11	(a)	CRM	Ductile (Nodular) Irons, 48x42x12 mm	block
BAS-SCRM 667/12	(b)	CRM	Ductile (Nodular) Irons, 48x42x12 mm	block
BAS-SCRM 668/12	(c)	CRM	Ductile (Nodular) Irons, 48x42x12 mm	block
BAS-SCRM 669/12	(d)	CRM	Ductile (Nodular) Irons, 48x42x12 mm	block
BAS-SCRM 669/13	(e)	CRM	Ductile (Nodular) Iron, 48x42x12 mm	block
BAS-SCRM 670/15	(f)	CRM	Ductile (Nodular) Irons, 48x42x12 mm	block

	C	Ce	Cr	Cu	Mg	Mn	Mo	Ni	Si	Ti	V
(a)	3.371	0.0035	0.129	0.0506	0.073	0.065	0.107	1.648	1.77	0.086	0.0549
(b)	3.06	0.081	0.298	0.55	0.04	0.236	0.0063	1.298	2.966	0.0029	0.096
(c)	3.740	0.023	0.999	0.655	0.0093	0.701	0.0206	0.105	1.426	0.0817	0.193
(d)	3.009	0.0415	0.203	0.235	0.0203	0.563	0.061	0.445	2.634	0.0555	0.505
(e)	3.17	0.052	0.205	0.2141	0.0267	0.584	0.0586	0.509	2.523	0.0549	0.502
(f)	3.711	0.0085	0.497	0.923	0.041	0.354		0.889	2.155	0.1096	0.0249

Cast Iron, Low Alloyed and Unalloyed

Code	Product			Unit
SEI-KTC-12/1-01	(a)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-02	(b)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-03	(c)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-04	(d)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-05	(e)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-06	(f)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-07	(g)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-08	(h)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-09	(i)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-12/1-10	(j)	CRM	Plain Cast Iron ø34x5mm (Set of 10 only)	disc

	Al	B	Bi	C	Ca	Ce	Cr	Cu	Mn	Mo	Ni	P	Pb	S	Sb	Si	Sn
(a)	0.001	0.089		3.96			0.10	0.50	0.80	0.30		0.002		0.034	0.15	0.40	
(b)	0.013	0.077	0.010	3.87			0.21	0.42	0.63	0.24		0.009		0.018	0.10	0.84	
(c)	0.018	0.052	0.013	3.73			0.28	0.27	0.05	0.11		0.017		0.076	0.048	1.18	
(d)	0.033	0.029	0.004	3.52			0.43	0.20	0.50	0.42	0.02	0.30		0.061	0.008	1.59	
(e)	0.054	0.008	0.001	3.40		0.001	0.26	0.11	0.41	0.047	0.54	0.11	0.007	0.047	0.004	2.11	0.001
(f)	0.029	0.001	0.001	3.35	0.0008	0.015	0.35	0.01	0.35	0.002	0.42	0.076	0.006	0.026		2.22	0.41
(g)	0.052			3.30	0.0013	0.11	0.03		0.32		0.28	0.050	0.002	0.016		2.45	0.30
(h)	0.059			3.04	0.0017	0.067			0.26		0.20	0.030	0.016	0.010		2.71	0.20
(i)	0.068			2.92	0.0028	0.011			0.21		0.10	0.52	0.045	0.005		2.95	0.11
(j)	0.097			2.50	0.0052	0.028		0.52	0.10		0.01	0.68	0.031	0.0027		3.09	0.045

	Ti	V	Zn
(a)			0.005
(b)			0.002
(c)			0.010
(d)		0.020	0.024
(e)		0.14	0.034
(f)	0.013	0.048	
(g)	0.095	0.10	
(h)	0.059	0.20	
(i)	0.17	0.31	
(j)	0.22	0.004	

Cast Iron, Low Alloyed and Unalloyed

Code	Product			Unit
VASKUT-120	(a)	CRM	Cast Iron, 30x30x13 mm	block
VASKUT-121	(b)	CRM	Cast Iron, 30x30x13 mm	block
VASKUT-122	(c)	CRM	Cast Iron, 30x30x13 mm	block
VASKUT-123	(d)	CRM	Cast Iron, 30x30x13 mm	block
VASKUT-124	(e)	CRM	Cast Iron, 30x30x13 mm	block
VASKUT-125	(f)	CRM	Cast Iron, 30x30x13 mm	block
VASKUT-126	(g)	CRM	Cast Iron, 30x30x13 mm	block
VASKUT-127	(h)	CRM	Cast Iron, 30x30x13 mm	block

	C	Mn	P	S	Si
(a)	3.34	0.59	0.059	0.18	1.84
(b)	3.32	0.61	0.135	0.17	(1.86)
(c)	3.31	0.61	0.22	0.2	1.72
(d)	3.3	0.69	0.31	0.074	(1.87)
(e)	2.97	0.62	0.5	0.051	1.63
(f)	3.2	0.73	0.7	0.019	(1.87)
(g)	3.16	0.81	1.41	0.016	1.9
(h)	3.14	0.79	1.55	0.014	1.81

VASKUT-201	(a)	CRM	Cast Iron, low alloyed, 30x30x13 mm	block
VASKUT-202	(b)	CRM	Cast Iron, low alloyed, 30x30x13 mm	block
VASKUT-203	(c)	CRM	Cast Iron, low alloyed, 30x30x13 mm	block
VASKUT-204	(d)	CRM	Cast Iron, low alloyed, 30x30x13 mm	block
VASKUT-205	(e)	CRM	Cast Iron, low alloyed, 30x30x13 mm	block
VASKUT-206	(f)	CRM	Cast Iron, low alloyed, 30x30x13 mm	block

	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	Sn
(a)	2.77	2.9	0.1	0.74	0.13	2.47	0.024	(0.009)	1.71	(0.31)
(b)	3.16	2.36	0.24	0.81	0.44	2.07	0.024	(0.01)	1.77	(0.21)
(c)	3.14	1.79	0.43	0.79	0.91	1.63	0.024	(0.009)	1.78	(0.16)
(d)	3.15	1.22	0.64	0.8	1.38	1.09	0.023	(0.009)	1.79	(0.215)
(e)	3.32	0.64	0.81	0.8	1.79	0.61	0.025	(0.01)	1.88	(0.035)
(f)	3.32	0.12	1.01	0.75	2.14	0.21	0.027	(0.01)	1.84	(0.107)

Code	Product			Unit
CTIF-FPA1	(a)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO4	(b)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO5	(c)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO6	(d)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO7	(e)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO8	(f)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO9	(g)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO10	(h)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc

	As	C	Co	Cr	Cu	Mn	Mo	N	Ni	P	S	Si	Sn	Ti	V
(a)	0.0109	3.09	0.0097	0.071	0.0622	0.1	0.0109	0.0125	0.045	0.0022	0.0009	0.03		0.001	0.001
(b)		2.81		0.17	0.31	0.64	0.095		0.32	0.58	0.009	1.51	0.013	0.075	0.049
(c)		3.2		0.3	0.12	0.2	0.41		0.172	1.3	0.027	0.7	0.109	0.04	0.14
(d)		3.49		0.45	0.12	0.715	0.202		0.128	0.87	0.106	0.55	0.039	0.08	0.11
(e)		2.45		0.455	0.125	0.7	0.26		0.15	0.84	0.085	0.675		0.065	0.13
(f)		3.6		0.3	0.215	0.37	0.005		0.3	0.107	0.021	1.04	0.05	0.055	0.014
(g)		2.7		0.18	0.31	0.7	0.13		0.355	0.02	0.015	1.5	0.144	0.017	0.022
(h)		3.5		0.38	0.114	1.05	0.2		0.118	0.2	0.101	0.67		0.1	0.08

Code	Product			Unit
CTIF-FO11	(a)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO12	(b)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO17	(c)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO18	(d)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FO19	(e)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc

	Al	C	Co	Cr	Cu	Mn	Mo	Ni	P	S	Si	Sn	Te	Ti	V
(a)		3.45	(0.013)	0.34	0.211	0.685	0.225	0.235	0.052	0.103	1.57	0.066		0.078	0.113
(b)	0.008	3.71			0.77	0.44			0.038	0.004	1.86	0.011			
(c)		3.01	0.032	(0.016)	(0.006)	0.475		0.021	0.47	0.168	2.48	0.024		0.032	0.018
(d)		3.25		0.087	0.09	0.52	0.16	0.19	1.11	0.132	1.33	0.15		0.17	0.17
(e)		4.04				1.05			0.032	0.057	1.05		0.0005		

Code	Product			Unit
CTIF-FL1	(a)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FL3	(b)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FL4	(c)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FL5	(d)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FL6	(e)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FL10	(f)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc

	Al	As	B	B (sol.)	Bi	C	Co	Cr	Cu	Mn	Mo	N	Nb	Ni	P	Pb	S
(a)						2.1	(0.022)	0.06	0.0195	0.8	0.038			0.245	0.118	0.0765	
(b)						2.3		0.107	0.102	0.27	0.106	0.008		0.553	0.729	(0.013)	
(c)		(0.05)			(0.003)	2.6		0.45	0.0168	0.5	0.09	0.007		0.061	0.288	0.137	
(d)			(0.002)		(0.0005)	2.8	0.01	0.35	0.5	0.4	0.01			0.05	0.02	(0.005)	
(e)			0.008			3.1	0.028	0.167	0.079	0.6	0.5			1.03	0.012	0.18	
(f)	(0.03)	(0.022)		(0.012)	(0.004)	3.1		(0.07)	0.104	0.85	0.0335		(0.018)	0.1	0.323	(0.002)	0.066

	Sb	Si	Sn	Te	Ti	V	W	Zn
(a)		3.2	0.305		0.02	0.015		
(b)		2.1	0.111		0.05	0.049		
(c)		2.91	0.011		0.0296	0.116		
(d)		2.3	0.07		0.01	0.01		
(e)		1.4	0.005		0.15	0.033		
(f)	(0.032)	1.3	0.028	(0.001)	0.045	0.048	(0.02)	(0.029)

Code	Product			Unit
CTIF-FT1	(a)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FT2-1	(b)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FT3	(c)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc
CTIF-FAL1	(d)	RM	Cast Iron, low alloyed, ø43x5 (x2) mm	disc

	Al	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	Sn	Ti	V
(a)		2.9	0.057	0.012	0.71		0.11	0.12	0.025	2.12	0.067	0.19	0.525
(b)		3.39	0.03	0.01	0.78		0.07	0.045	0.095	1.415		0.1	0.405
(c)		3.2	0.685	0.015	0.345		0.092	0.063	0.051	1.55		0.2	0.016
(d)	2.1	3	0.04	0.2	0.2	0.015	0.06	0.04	<0.001	1		0.01	

Code	Product			Unit
SEI-KTC-15 N-1	(a)	CRM	N for cal. curve ø35x20mm	disc
SEI-KTC-15 N-2	(b)	CRM	N for cal. curve ø35x20mm	disc
SEI-KTC-15 N-3	(c)	CRM	N for cal. curve ø35x20mm	disc
SEI-KTC-15 N-4	(d)	CRM	N for cal. curve ø35x20mm	disc
SEI-KTC-15 N-5	(e)	CRM	N for cal. curve ø35x20mm	disc

	Al	C	Cr	Mn	N (insol.)	N (sol.)	P	S	Si
(a)	0.050	0.015	0.21	0.10	0.0001	0.0012	0.002	0.003	0.10
(b)	0.048	0.014	0.29	0.10	0.0002	0.0048	0.002	0.003	0.10
(c)	0.048	0.012	0.19	0.10	0.0003	0.0076	0.002	0.003	0.10
(d)	0.048	0.012	0.20	0.10	0.0002	0.0110	0.003	0.004	0.10
(e)	0.050	0.012	0.41	0.11	0.0008	0.0194	0.003	0.004	0.10

Code	Product			Unit
MBH-11X C1 P	(a)	CRM	Low Alloy Iron, ø40x17 mm	disc
MBH-11X C2 S	(b)	CRM	Low Alloy Iron, ø40x17 mm	disc
MBH-11X C3 Z	(c)	CRM	Low Alloy Iron, ø40x~17 mm	disc
MBH-11X C4 Q	(d)	CRM	Low Alloy Iron, ø40x17 mm	disc
MBH-11X C5 U	(e)	CRM	Low Alloy Iron, ø40x17 mm	disc
MBH-11X C6 V	(f)	CRM	Low Alloy Iron, ø40x17 mm	disc
MBH-11X C7 N	(g)	CRM	Low Alloy Iron, ø40x15 mm	disc
MBH-11X C8 T	(h)	CRM	Low Alloy Iron, ø40x17 mm	disc
MBH-11X C9 B	(i)	CRM	Low Alloy Iron, ø40x17 mm	disc
MBH-11X C10 B	(j)	CRM	Low Alloy Iron, ø40x15 mm	disc

	Al	As	B	Bi	C	Cd	Co	Cr	Cu	Mn	Mo	N	Nb	Ni	P	Pb	S
(a)	0.0193	0.018	0.052	0.006	2.85		0.082	0.538	0.164	1.262	0.075	0.0044	0.17	0.696	0.105	0.011	0.0383
(b)	0.049	0.029	0.0072	0.007	3.54		0.113	0.794	0.133	0.961	0.096	0.0057	0.084	1.006	0.2	0.015	0.086
(c)	(0.015)	0.12	(0.0028)	(0.002)	3.27		0.376	2.43	0.431	0.797	0.235		0.186	4.14	0.387	(0.008)	0.152
(d)	0.032	0.0103	0.018	0.005	1.89	0.0014	0.0175	1.5	0.342	0.651	0.114		0.072	2.41	0.111	0.0155	0.138
(e)	0.006	0.0225	0.0172	0.006	2.49		0.105	1.15	2.71	0.791	0.497		(0.088)	2.05	0.097	0.023	0.103
(f)	(0.018)	0.0499	0.0053	0.005	3.76		0.094	0.606	0.89	1.088	1.561	0.0152	0.023	0.06	0.069	0.006	0.0567
(g)	0.0127	0.0159	0.0097	0.0137	2.51		0.0335	0.507	0.075	1.942	0.071	0.025	0.051	0.0303	0.0266	0.0106	0.0101
(h)	0.016	0.077	0.0409	0.041	3.03		0.174	0.501	0.317	0.486	0.158	0.0075	(0.082)	0.32	0.843	0.023	0.189
(i)	0.005	0.046	0.0058	(0.011)	2.82		0.132	1.31	0.299	1.88	0.158		0.062	2.58	0.032	0.0044	0.0306
(j)	0.034	0.0163			3.53	(0.001)		0.285	0.614	0.672	0.318	0.009		0.263	0.092	(0.002)	0.096

	Sb	Se	Si	Sn	Te	Ti	V	W	Zn	Zr
(a)	0.064	0.01	1.483	0.032		(0.14)	0.101		0.0208	0.005
(b)	0.068	(0.009)	1.281	0.065		0.042	0.29	0.098	0.002	
(c)	0.264	0.0026	0.944	0.236	0.0024	0.071	0.796	(0.054)	0.0111	
(d)	0.011	(0.003)	3.02	0.0207	0.001	0.091	0.0233	0.122	0.0112	0.006
(e)	0.037	0.0046	1.78	0.021	0.005	0.079	0.0537	(0.083)	0.011	(0.004)
(f)	0.037	0.007	0.487	0.0585		0.049	0.0608		0.025	0.005
(g)	0.025		0.829	0.0114		0.022	0.036	0.066	0.0226	(0.003)
(h)	0.068	(0.073)	1.61	0.091	0.0043	0.115	0.0637	0.0175	0.007	
(i)	0.152	0.0091	1.19	0.052	0.015	0.054	0.475	0.286	0.01	
(j)	0.0112		1.98	0.034		0.0191	0.0107	0.349		

Code	Product			Unit
MBH-11X CC21A	(a)	CRM	Low Alloy Iron, Double Chill Cast, ø45x6 mm	disc
MBH-11X CC22A	(b)	CRM	Low Alloy Iron, Double Chill Cast, ø45x6 mm	disc

	Al	As	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	Sn	Ti	V
(a)	0.0024	0.0101	3.12	0.351	0.153	0.785	0.0357	0.107	0.0246	0.083	2.19	0.0078	0.0259	0.0083
(b)	(0.002)	0.009	3.7	0.319	0.712	0.69	0.021	0.06	0.033	0.08	1.82	0.012	0.029	0.0087

Code	Product			Unit
NCS HS11711A-1	(a)	CRM	Low Alloy Cast Iron ø30x20mm (Set of 7 only)	disc
NCS HS11711A-2	(b)	CRM	Low Alloy Cast Iron ø30x20mm (Set of 7 only)	disc
NCS HS11711A-3	(c)	CRM	Low Alloy Cast Iron ø30x20mm (Set of 7 only)	disc
NCS HS11711A-4	(d)	CRM	Low Alloy Cast Iron ø30x20mm (Set of 7 only)	disc
NCS HS11711A-5	(e)	CRM	Low Alloy Cast Iron ø30x20mm (Set of 7 only)	disc
NCS HS11711A-6	(f)	CRM	Low Alloy Cast Iron ø30x20mm (Set of 7 only)	disc
NCS HS11711A-7	(g)	CRM	Low Alloy Cast Iron ø30x20mm (Set of 7 only)	disc

	B	**C**	**Ce**	**Cr**	**Cu**	**La**	**Mg**	**Mn**	**Mo**	**Ni**	**P**	**S**	**Si**	**Sn**	**Ti**	**V**	**W**
(a)	0.524	3.31		2.02	0.571		0.00033	0.317	0.811	0.063	0.051	0.029	0.930	0.282	0.223	0.329	0.323
(b)	0.261	3.18	0.034	1.62	1.12	0.015	0.038	0.715	0.559	1.01	0.447	0.0061	2.28	0.107	0.478	0.201	0.172
(c)	0.096	3.72	(0.0002)	1.61	0.846	0.0060	0.014	1.12	0.467	0.528	0.251	0.038	1.50	0.289	0.388	0.133	0.049
(d)	0.021	4.03	(<0.00005)	0.476	0.148	(<0.00005)	0.0015	0.987	0.018	0.054	0.727	0.098	0.246	0.0035	0.031	0.317	0.0073
(e)	0.0025	3.00	0.0033	0.784	0.536	0.096	0.077	1.27	0.384	0.940	0.140	0.0034	2.65	0.038	0.078	0.043	0.284
(f)	0.524	2.69	0.0088	1.31	0.338	0.0057	0.034	1.70	0.224	0.247	0.395	0.021	3.68	0.102	0.129	0.250	0.444
(g)	0.018	1.81	0.122	0.212	1.73	0.023	0.0010	1.99	0.152	1.09	0.091	0.0082	3.35	0.0064	0.131	0.057	0.972

Code	Product			Unit
BAS-LARM 1	(a)	RM	Low Alloy Cast Irons, 40x37x10 mm	block
BAS-LARM 2	(b)	RM	Low Alloy Cast Irons, 40x37x10 mm	block
BAS-LARM 3	(c)	RM	Low Alloy Cast Irons, 40x37x10 mm	block
BAS-LARM 4	(d)	RM	Low Alloy Cast Irons, 40x37x10 mm	block
BAS-LARM 5	(e)	RM	Low Alloy Cast Irons, 40x37x10 mm	block

	Al	As	B	Bi	C	Ce	Cr	Cu	Mn	Mo	Ni	P	Pb	S	Si	Sn	Ti
(a)			0.006	0.011	(3)	0.005	0.5	2.49	(0.3)		0.49	(0.05)		(<0.01)	(2)	0.14	
(b)	0.066	0.044			(3)	0.008	2.5		(0.3)	0.22		(0.05)	0.007	(<0.01)	(2)	0.22	0.33
(c)	0.042	0.092	0.003	0.022	(3)			1.2	(0.3)		1.8	(0.05)		(<0.01)	(2)		
(d)	0.014				(3)	0.008	1.19	0.26	(0.3)	1		(0.05)	0.018	(<0.01)	(2)	0.11	0.17
(e)		0.018	0.0012	0.001	(3)				(0.3)	0.62	2.46	(0.05)	0.0005	(<0.01)	(2)	0.025	

	V
(a)	0.11
(c)	0.55
(e)	0.24

BAS-SCRM 671	(a)	CRM	Blast Furnace Irons, 40x37x10 mm	block
BAS-SCRM 672	(b)	CRM	Blast Furnace Irons, 40x37x10 mm	block
BAS-SCRM 673	(c)	CRM	Blast Furnace Irons, 40x37x10 mm	block
BAS-SCRM 674	(d)	CRM	Blast Furnace Irons, 40x37x10 mm	block
BAS-SCRM 675	(e)	CRM	Blast Furnace Irons, 40x37x10 mm	block

	Al	As	C	Co	Cr	Cu	Mn	Mo	Ni	P	S	Si	Sn	Ti	V	Zn
(a)	0.038	0.022	2.86	0.097	0.059	0.047	0.837	0.018	0.056	0.106	0.049	0.98	0.007	0.09	0.01	0.0004
(b)	0.008	0.004	4.08	0.158	0.024	0.068	0.491	0.099	0.082	0.242	0.037	0.18	0.0018	0.039	0.109	0.0144
(c)	0.028	0.044	2.47	0.053	0.037	0.023	0.133	0.006	0.147	0.328	0.006	1.72	0.0191	0.072	0.059	0.0004
(d)	0.004	0.028	3.32	0.014	0.021	0.101	1.48	0.048	0.144	0.011	0.081	0.48	0.014	0.023	0.024	0.0187
(e)	0.007	0.035	1.92	0.023	0.08	0.012	1.81	0.034	0.21	0.045	0.072	1.29	0.0062	0.007	0.178	0.0006

Code	Product			Unit
BS-1B	(a)	RM	Cast Iron, ø32x17 mm	disc
BS-4C	(b)	RM	Chill-cast Iron, ø32x17 mm	disc
NIST-C1145A	(c)	CRM	White Cast Iron, ø32x19mm	disc
NIST-C1291	(d)	CRM	High Alloy (Ni-Hard, Type I), ø32x19mm	disc

	Al	As	B	Bi	C	Ca	Ce	Co	Cr	Cu	La	Mg	Mn	Mo	N	Nb	Ni
(a)	0.015	0.004	0.012		2.5		0.01	0.2	0.79	0.013			1.89	0.175		0.021	2.12
(b)	0.003	0.007	0.0002		3.82	0.0013	0.01	0.014	0.111	0.014	0.002	0.0002	0.21	0.105	0.008	(0.0005)	0.068
(c)	(0.04)	(0.03)	(0.02)	(<0.01)	2.92			0.058	0.63	0.46			0.187	0.48		0.62	
(d)					2.67				2.78	0.26			1.14	0.32		4.34	

	P	Pb	S	Sb	Si	Sn	Te	Ti	V	W	Zr
(a)	0.026	(0.001)	0.035	(0.001)	1.85	0.01	0.021	0.057	0.113	0.1	(0.002)
(b)	0.003	(0.0004)	0.001	0.0012	0.52	(0.0004)	0.0011	0.002	0.0005	(0.006)	0.01
(c)	0.215	0.0012	0.191	(0.04)	0.271	(0.1)		0.012	0.112		(0.002)
(d)	0.028		0.032		1.34				0.031		

Cast Iron, Alloyed

Code	Product										Unit
CTIF-NH1	(a)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH2	(b)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH3	(c)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH4	(d)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH5	(e)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH6	(f)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH7	(g)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH8	(h)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
CTIF-NH9	(i)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm								disc
		C	**Cr**	**Cu**	**Mn**	**Mo**	**Ni**	**P**	**S**	**Si**	
	(a)	2.98	0.83	1.99	0.9	1.45	1.38	0.06	0.105	1.35	
	(b)	2.5	1.26	1.02	1.04	1.01	1.78	0.047	0.058	1.81	
	(c)	3.47	1.76	0.031	0.175	0.73	2.53	0.36	0.024	0.85	
	(d)	2.84	2.46	0.09	0.28	0.3	3.6	0.12	0.022	0.49	
	(e)	2.31	2.85	0.035	0.24	0.017	4.9	0.115	0.04	0.31	
	(f)	2.7	6.6	0.115	0.355	0.11	7.06	0.066	0.036	2.28	
	(g)	3.43	9.02	0.105	0.63		5.53	0.035	0.022	0.95	
	(h)	2.98	5.03	0.065	0.57	0.125	8.16	0.052	0.076	0.8	
	(i)	3.13	11.7	0.203	0.65	0.059	4.11	0.087	0.029	1.24	
CTIF-FCR1	(a)	RM	Cast Iron, Cr-alloyed, ø43x5 (x2) mm								disc
CTIF-FCR2	(b)	RM	Cast Iron, Cr-alloyed, ø43x5 (x2) mm								disc
CTIF-FCR3	(c)	RM	Cast Iron, Cr-alloyed, ø43x5 (x2) mm								disc
CTIF-FCR4	(d)	RM	Cast Iron, Cr-alloyed, ø43x5 (2x) mm								disc
CTIF-FCR5	(e)	RM	Cast Iron, Cr-alloyed, ø43x5 (x2) mm								disc
CTIF-FCR6	(f)	RM	Cast Iron, Cr-alloyed, ø43x5 (x2) mm								disc
CTIF-FCR7	(g)	RM	Cast Iron, Cr-alloyed, ø43x5 (x2) mm								disc
		C	**Cr**	**Cu**	**Mn**	**Mo**	**Ni**	**P**	**S**	**Si**	
	(a)	2.46	18.71	0.031	0.63	1.41	1.3	0.019	0.007	0.45	
	(b)	2.86	11.8	0.135	0.74	3.88	1.87	0.137	0.055	1.07	
	(c)	2.08	14.85	0.0485	1.02	0.91	0.652	0.034	0.035	0.25	
	(d)	2.47	24.2	1.32	2.05	2.16	0.571	0.097	0.066	1.4	
	(e)	3.43	28.5	1.02	0.62	3.27	2.69	0.052	0.0175	0.35	
	(f)	1.44	30.84	0.48	1.47	0.455	0.188	0.201	0.086	0.76	
	(g)	3.59	33.65	0.704	0.365	2.62	0.947	0.099	0.0427	1.07	

Code	Product			Unit
CTIF-FCRNI1	(a)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm	disc
CTIF-FCRNI2	(b)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm	disc
CTIF-FCRNI3	(c)	RM	Cast Iron, high alloyed, ø43x5 (x2) mm	disc

	C	Cr	Cu	Mn	Ni	P	S	Si
(a)	1.27	26.2	0.02	0.71	16.5	0.41	0.06	1.63
(b)	2.02	29		0.61	13.05	0.185	0.024	1.5
(c)	2.74	31.65		0.47	11.05	0.036	0.011	0.69

MBH-11X HPC1 G	(a)	CRM	High P Cast Iron, ø40x15 mm	disc
MBH-11X HPC2 K	(b)	CRM	High P Cast Iron, ø40x~17 mm	disc
MBH-11X HPC3 H	(c)	CRM	High P Cast Iron, ø40x15 mm	disc
MBH-11X HPC4 P	(d)	CRM	High P Cast Iron, ø40x~17 mm	disc
MBH-11X HPC5 A	(e)	CRM	High P Cast Iron, ø40x17 mm	disc

	C	Cr	Mn	P	S	Si
(a)	3.22		0.499	0.75	0.0311	2.6
(b)	2.85	2.05	0.775	1.55	0.066	2.19
(c)	3.77		1.316	1.96	0.0513	1.58
(d)	3.15	1.57	0.804	2.03	0.094	1.08
(e)	3.68	1.42	1.028	0.246	0.223	1.175

Code	Product			Unit
CTIF-3601B	(a)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-4497	(b)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-4500	(c)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-5037	(d)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-5781	(e)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-5783	(f)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-6134	(g)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-6135	(h)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-6736	(i)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-7160	(j)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-8018	(k)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc
CTIF-8532	(l)	RM	Magnesium treated cast iron, ø43x5 (x2) mm	disc

Each unit of these reference materials is unique and the individual Mg value can therefore not be listed.
In order to receive samples with a fitting range of Mg values please let us know your requirements.

	Al	As	C	Ce	Co	Cr	Cu	Mn	Ni	P	Pb	S	Sb	Si	Sn	Ti	V
(a)			3	<0.01		0.029	0.019	0.35	1.08	0.037	(<0.002)	(0.005)		2.1		0.016	(0.005)
(b)			3.16			0.04	0.048	0.6	1.2	0.043		(0.0025)		2.66	0.094	0.03	0.44
(c)	0.033		3.38	0.023	0.065	0.014		0.6	1.45	0.059		(0.002)		1.97			
(d)			3.04			0.014		0.76	0.64	0.043		(0.0025)		3.4		0.029	
(e)			3.35			0.04	<0.01	0.26	0.83	0.03		(0.0025)		2.5			
(f)		0.0015	2.55		0.0074	0.054	0.11	0.195	1.23	0.027		(0.0025)		2.31		0.016	0.013
(g)			3.7	<0.03		0.04	0.02	0.25	2	0.03		<0.01		1.6			
(h)	(0.006)		3.6		0.037	0.04	0.0219	0.38	1.98	0.013		(0.003)		0.9		0.007	0.0155
(i)			2.8			0.03	0.0258	0.65	1.7	0.012		(0.002)		1.6		0.008	(0.03)
(j)	(0.02)	0.009	3.1	0.02	0.09	(0.1)	0.08	0.57	1	0.05		(0.001)		2.4		0.013	0.018
(k)	0.02		3	(<0.02)		0.09	0.08	0.7	0.127	0.07		(0.0015)	(0.01)	3	0.07	0.06	0.39
(l)			3.7	<0.025		0.04	0.0443	0.288	0.888	0.05				2.6	0.0303	0.02	0.07

	Zn
(a)	<0.05

Code	Product			Unit
NCS HS11712A-1	(a)	CRM	Nitrogen Cast Iron ø30x28mm (Set of 7 only)	disc
NCS HS11712A-2	(b)	CRM	Nitrogen Cast Iron ø30x28mm (Set of 7 only)	disc
NCS HS11712A-3	(c)	CRM	Nitrogen Cast Iron ø30x28mm (Set of 7 only)	disc
NCS HS11712A-4	(d)	CRM	Nitrogen Cast Iron ø30x28mm (Set of 7 only)	disc
NCS HS11712A-5	(e)	CRM	Nitrogen Cast Iron ø30x28mm (Set of 7 only)	disc
NCS HS11712A-6	(f)	CRM	Nitrogen Cast Iron ø30x28mm (Set of 7 only)	disc
NCS HS11712A-7	(g)	CRM	Nitrogen Cast Iron ø30x28mm (Set of 7 only)	disc

	Al	C	Ce	Cr	Cu	La	Mg	Mn	Mo	N	Ni	P	S	Si	Sn	Ti	V
(a)	0.248	1.75	(<0.0001)	2.48	0.025	(<0.0001)	0.00006	0.080	0.031	0.015	0.030	0.580	0.119	3.40	0.0031	0.038	0.021
(b)	0.060	2.22	0.0010	2.13	0.458	0.010	0.0085	0.301	0.087	0.024	0.341	0.043	0.058	2.44	0.044	0.065	0.055
(c)	0.034	2.55	0.027	0.417	0.641	0.0061	0.024	0.878	0.354	0.024	0.519	0.071	0.045	1.50	0.021	0.027	0.085
(d)	0.0073	3.16	(<0.0001)	1.40	0.921	(<0.0001)	0.025	0.462	0.428	0.0073	0.778	0.396	0.017	1.96	0.024	0.065	0.166
(e)		3.52	(<0.0001)	2.48	0.389	(<0.0001)	0.021	0.311	0.629	0.0047	1.03	0.420	0.019	1.17	0.013	0.161	0.324
(f)	0.019	4.02	(<0.0001)	0.112	1.83	(<0.0001)	0.104	1.41	0.726	0.013	1.89	0.021	0.026	0.163	0.057	0.238	0.509
(g)	0.214	3.94	(<0.0001)	1.05	1.10	(<0.0001)	0.056	1.38	0.168	0.0063	1.37	0.085	0.0048	0.918	0.134	0.114	0.390

NIST-C1290	(a)	CRM	High Alloy (HC-250 + V), ø32x19mm	disc

	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
(a)	3.04	30.5	0.065	0.66	(0.041)	0.917	0.03	0.013	0.971	0.442

Cast Iron, Alloyed

Code	Product			Unit
SEI-KTC-9 B1	(a)	CRM	Alloy Cast Iron ø34x5mm (Set of 6 only)	disc
SEI-KTC-9 B2	(b)	CRM	Alloy Cast Iron ø34x5mm (Set of 6 only)	disc
SEI-KTC-9 B3	(c)	CRM	Alloy Cast Iron ø34x5mm (Set of 6 only)	disc
SEI-KTC-9 B4	(d)	CRM	Alloy Cast Iron ø34x5mm (Set of 6 only)	disc
SEI-KTC-9 B5	(e)	CRM	Alloy Cast Iron ø34x5mm (Set of 6 only)	disc
SEI-KTC-9 B6	(f)	CRM	Alloy Cast Iron ø34x5mm (Set of 6 only)	disc

	C	Cr	Cu	Mn	Mo	Ni	P	S	Si
(a)	2.4	1.0	0.05	0.05	0.05	1.0	0.005	0.10	3.0
(b)	2.6	0.8	0.2	0.2	0.2	0.8	0.025	0.09	2.8
(c)	3.0	0.6	0.4	0.4	0.4	0.6	0.05	0.06	2.2
(d)	3.3	0.4	0.6	0.6	0.6	0.4	0.07	0.04	1.8
(e)	3.7	0.2	0.8	0.8	0.8	0.2	0.09	0.02	1.4
(f)	4.0	0.05	1.0	1.0	1.0	0.05	0.12	0.003	1.0

				Unit
BAS-SIMO 1/3	(a)	RM	Silicon Molybdenum Irons, 48x42x12 mm	block
BAS-SIMO 2/2	(b)	RM	Silicon Molybdenum Irons, 48x42x12 mm	block

	Al	As	C	Ce	Co	Cr	Cu	Mg	Mn	Mo	Ni	P	S	Si	Sn	Ti	V
(a)	0.026	0.047	2.70		0.013	0.899	0.028	0.036	0.333	0.776	0.030	0.040	0.007	4.07	0.048	0.007	0.007
(b)	0.013	0.039	2.14	0.006	0.0029	0.856	0.010	0.026	0.434	0.484	0.0189	0.025	0.007	4.75	0.038	0.005	0.009

				Unit
CTIF-SIMO-1	(a)	RM	Cast Iron, ø43x5 (x2) mm	disc
CTIF-SIMO-2	(b)	RM	Cast Iron, ø43x5 (x2) mm	disc
CTIF-SIMO-3	(c)	RM	Cast Iron, ø43x5 (x2) mm	disc
CTIF-SIMO-4	(d)	RM	Cast Iron, ø43x5 (x2) mm	disc
CTIF-SIMO-5	(e)	RM	Cast Iron, ø43x5 (x2) mm	disc

	Al	C	Co	Cr	Cu	Mg	Mn	Mo	Ni	P	S	Si	Ti	V
(a)		2.98	(0.03)	0.036	0.035	0.019	0.365	0.752	0.065	0.013	(0.0015)	4.03	(0.018)	(0.018)
(b)	1.51	(2.85)	(0.03)	0.038	0.036	0.072	0.335	1.04	(0.061)	0.026	(0.001)	3.85	(0.016)	(0.017)
(c)	1.15	3.18	0.0296	0.11	0.0325	0.03	0.61	0.604	0.066	0.053	(0.0006)	4.02	0.0176	0.0171
(d)	(0.038)	2.7	(0.015)	0.0845	0.0657	0.1	0.28	0.4	(0.029)	0.0211	(0.0015)	4.35	0.0171	0.0133
(e)		2.94	(0.013)	0.032	0.0121		0.439	0.841	0.194	0.0282		4.31	0.01	(0.0095)

				Unit
CTIF-NIMO-1	(a)	RM	Cast Iron, ø43x5 (x2) mm	disc

	C	Co	Cr	Cu	Mg	Mn	Mo	Ni	P	S	Si	Sn	Ti	V
(a)	3.22	0.0205	0.0353	0.376	0.003	0.2	0.457	2.165	0.059	(0.003)	2.585	0.002	0.019	0.0169

Code	Product			Unit
BAS-NIRM 1	(a)	RM	Austenitic (Ni-Resist) Irons, 40x37x10 mm	Each
BAS-NIRM 2	(b)	RM	Austenitic (Ni-Resist) Irons, 40x37x10 mm	Each
BAS-NIRM 3	(c)	RM	Austenitic (Ni-Resist) Irons, 40x37x10 mm	Each
BAS-NIRM 4	(d)	RM	Austenitic (Ni-Resist) Irons, 40x37x10 mm	Each
BAS-NIRM 5	(e)	RM	Austenitic (Ni-Resist) Irons, 40x37x10 mm	Each
BAS-NIRM 6	(f)	RM	Austenitic (Ni-Resist) Irons, 40x37x10 mm	Each
BAS-NIRM 7	(g)	RM	Austenitic (Ni-Resist) Irons, 40x37x10 mm	Each
BAS-NIRM 8/1	(h)	RM	Austenitic (Ni-Resist) Irons, 48x42x12 mm	Each

	C	Ce	Cr	Cu	Mg	Mn	Mo	Nb	Ni	P	S	Si
(a)	2.05	0.018	0.246	0.2	0.021	6.72			11.8	0.055	0.005	3.15
(b)	2.91	0.017	1.49	5.86	0.037	2.01			13.88	0.1	0.011	1.53
(c)	2.51	0.007	2.43	1		0.51		0.09	17.8	0.208	0.096	2.21
(d)	1.97	0.011	3.56	0.52	0.014	2.37		0.37	20.2	0.051	0.008	3.03
(e)	2.93	0.001	0.5	0.22	0.04	1.09		0.2	22.1	0.126	0.004	1.73
(f)	2.44	0.003	1.7	0.1		3.97	0.45		26.7	0.217	0.062	2.43
(g)	2.04	0.005	3.53	0.52	0.019	0.71	0.99		32.9	0.058	0.02	3.05
(h)	1.34	0.013	2.34	0.23	0.043	1.6	0.75		35.2	0.109	0.01	5.42

CTIF-NR1S	(a)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc
CTIF-NR2S	(b)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc
CTIF-NR3S	(c)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc
CTIF-NR4S	(d)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc
CTIF-NR5S	(e)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc
CTIF-NR6S	(f)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc
CTIF-NR8S	(g)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc
CTIF-NR4G	(h)	RM	Cast Iron, Ni resist with Mg, ø43x5 (x2) mm	disc

These reference materials all contain Magnesium at levels between 0.003% and 0.25% but the values cannot be given up front.
Please let us know your requirements.

	C	Cr	Cu	Mn	Ni	P	S	Si
(a)	2.58	2	0.11	1.54	20.6	0.19	0.0015	3.02
(b)	2.32	0.51	0.21	0.53	36.3	0.062		1.43
(c)	2.92	3.05	0.33	0.77	24.63	0.024		2.91
(d)	2.47	1.5	0.63	1.71	18.3	0.145		4.87
(e)	1.67	0.24	0.5	1.23	27.05	0.035		1.97
(f)	1.82	1.06	0.03	0.99	30.75	0.019		2.44
(g)	3.05	0.191	0.071	4.39	14.2	0.124		1.41
(h)	2.3	1.4	0.64	1.72	21.3	0.11		5.6

Cast Iron, Alloyed

Code	Product			Unit
CTIF-NR1L	(a)	RM	Cast Iron, Ni resist, ø43x5 (x2) mm	disc
CTIF-NR3L	(b)	RM	Cast Iron, Ni resist, ø43x5 (x2) mm	disc
CTIF-NR4L	(c)	RM	Cast Iron, Ni resist, ø43x5 (x2) mm	disc
CTIF-NR5L	(d)	RM	Cast Iron, Ni resist, ø43x5 (x2) mm	disc
CTIF-NR6L	(e)	RM	Cast Iron, Ni resist, ø43x5 (x2) mm	disc
CTIF-NR8L	(f)	RM	Cast Iron, Ni resist, ø43x5 (x2) mm	disc

	C	Cr	Cu	Mn	Ni	P	S	Si
(a)	2.5	1.74	0.49	1.34	25.87	0.125	0.1	3
(b)	2.99	2.97	0.26	0.72	21.58	0.088	0.052	3.05
(c)	2.41	1.403	0.758	1.495	15.9	0.155	0.01	5.89
(d)	1.77	0.27	0.48	1.207	33.89	0.037	0.083	2.99
(e)	1.76	3.49	0.02	0.7	30.37	0.031	0.063	2.07
(f)	2.89	0.165	0.075	5.19	13.33	0.054	0.03	1.7

				Unit
CTIF-NRCU1-1B	(a)	RM	Cast Iron, aust., Ni-resist, ø43x5 (x2) mm	disc
CTIF-NRCU2	(b)	RM	Cast Iron, aust., Ni-resist, ø43x5 (x2) mm	disc
CTIF-NRCU3	(c)	RM	Cast Iron, aust., Ni-resist, ø43x5 (x2) mm	disc

	Al	C	Cr	Cu	Mn	Ni	P	S	Si
(a)	(0.095)	3.12	0.994	4.95	1.465	18.02	0.172	0.09	0.99
(b)		2.5	2.05	6.5	1.07	15.9	0.115	0.049	2.07
(c)		1.94	3.5	8.05	0.6	13.3	0.046	0.016	3.12

				Unit
BAS-NCRM 1	(a)	RM	Nickel Chromium Irons, 40x37x10 mm	block
BAS-NCRM 2	(b)	RM	Nickel Chromium Irons, 40x37x10 mm	block
BAS-NCRM 3	(c)	RM	Nickel Chromium Irons, 40x37x10 mm	block
BAS-NCRM 4	(d)	RM	Nickel Chromium Irons, 40x37x10 mm	block
BAS-NCRM 5	(e)	RM	Nickel Chromium Irons, 40x37x10 mm	block

	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
(a)	3.05	0.55	2.17	1.22	1.02	0.57	0.3	0.156	0.95	0.03
(b)	2.97	1.99	1.67	0.95	0.36	2.1	0.068	0.119	1.82	0.16
(c)	3.24	3.95	1.21	0.67	0.78	3.64	0.125	0.09	0.29	0.02
(d)	2.66	7.94	0.68	0.4	0.57	5.34	0.203	0.012	2.13	0.11
(e)	3.7	10.44	0.204	0.27	0.1	6.74	0.025	0.015	1.15	0.06

Code	Product			Unit
NCS HS11716-1	(a)	CRM	High Cr Cast Iron ø33x20mm (Set of 6 only)	disc
NCS HS11716-2	(b)	CRM	High Cr Cast Iron ø33x20mm (Set of 6 only)	disc
NCS HS11716-3	(c)	CRM	High Cr Cast Iron ø33x20mm (Set of 6 only)	disc
NCS HS11716-4	(d)	CRM	High Cr Cast Iron ø33x20mm (Set of 6 only)	disc
NCS HS11716-5	(e)	CRM	High Cr Cast Iron ø33x20mm (Set of 6 only)	disc
NCS HS11716-6	(f)	CRM	High Cr Cast Iron ø33x20mm (Set of 6 only)	disc

	C	Cr	Cu	Mn	Mo	Nb	Ni	P	S	Si	Ti	V
(a)	1.63	33.9	0.223	0.722	0.332	0.161	0.366	0.041	0.076	1.76	0.055	0.417
(b)	1.76	10.43	1.52	1.08	1.49	0.686	1.34	0.093	0.031	0.559	0.018	0.059
(c)	2.11	29.82	0.416	0.522	0.465	0.11	0.415	0.042	0.022	1.11	0.045	0.255
(d)	2.37	12.08	1.13	0.735	0.846	0.215	0.541	0.05	0.021	0.823	0.023	0.149
(e)	2.95	15.93	0.651	0.927	2.17	0.377	0.881	0.133	0.043	0.746	0.089	0.107
(f)	3.4	19.09	0.745	1.95	3.53	0.389	2	0.247	0.107	1.37	0.136	0.617

BAS-CRRM1/1	(a)	RM	High Chromium Irons, 40x37x10 mm	block
BAS-CRRM2/1	(b)	RM	High Chromium Irons, 40x37x10 mm	block
BAS-CRRM3/1	(c)	RM	High Chromium Irons, 40x37x10 mm	block
BAS-CRRM4/1	(d)	RM	High Chromium Irons, 40x37x10 mm	block
BAS-CRRM5/1	(e)	RM	High Chromium Irons, 40x37x10 mm	block

	Al	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	Ti	V
(a)	0.117	1.83	11.18	2.01	1.45	3.05	2.03	0.132	0.099	1.53	0.096	0.04
(b)	0.054	1.92	14.13	1.59	1.11	2.44	1.61	0.097	0.079	1.18	0.07	0.063
(c)	0.084	2.42	17.48	1.21	0.85	1.65	1.28	0.068	0.059	0.82	0.021	0.022
(d)	<0.005	3	22.42	0.58	0.6	1.19	0.62	0.044	0.039	0.56	0.027	0.092
(e)	0.17	3.46	29.09	0.23	0.32	0.54	0.29	0.029	0.019	0.25	0.026	0.063

VS-CHG1-5	(a)	CRM	Cast Iron (Chill cast; white structure) approx. ø40x40mm	disc
VS-CHG4-5	(b)	CRM	Cast Iron (Chill cast; white structure) approx. ø40x40mm	disc
VS-CHG5-6	(c)	CRM	Cast Iron (Chill cast; white structure) approx. ø40x40mm	disc

	As	C	Cr	Cu	Mn	P	S	Si	Ti	V
(a)	(0.002)	3.38	(0.08)	(0.04)	1.09	0.16	0.029	1.04	0.005	0.05
(b)	(0.002)	4.06	0.14	0.025	1.37	0.02	0.015	0.26	0.056	0.112
(c)	0.044	3.12	0.227		0.7	0.066	0.022	0.63	0.029	0.46

Code	Product			Unit
VS-CHG24	(a)	CRM	Cast Iron (Chill cast; white structure) approx. 30x35x25mm	disc
VS-CHG25	(b)	CRM	Cast Iron (Chill cast; white structure) approx. 30x35x25mm	disc
VS-CHG26	(c)	CRM	Cast Iron (Chill cast; white structure) approx. 30x35x25mm	disc
VS-CHG27	(d)	CRM	Cast Iron (Chill cast; white structure) approx. 30x35x25mm	disc
VS-CHG28	(e)	CRM	Cast Iron (Chill cast; white structure) approx. 30x35x25mm	disc

	Al	C	Cr	Cu	Mg	Mn	Mo	Ni	P	S	Sb	Si	Sn	Ti	V
(a)	0.007	3.05	0.031	0.1	0.015	0.245	0.031	0.87	0.26	0.0048	0.009	2.5	0.077	0.06	0.0067
(b)	0.009	3.74	0.25	0.79	0.037	0.68	0.253	0.38	0.009	0.0035	0.052	1.46	0.017	0.017	0.086
(c)	0.038		0.05	0.014	0.044	0.126	0.075	1.52	0.123	0.0041		2.98	0.031	0.0026	0.04
(d)	0.008	3.53	0.162	0.348		1.21	0.147	0.022	0.044	0.029	0.029	1.82	0.115	0.056	0.16
(e)	0.015	3.29	0.127	1.29	0.01	0.414	0.0024	0.166	0.025	0.015	0.015	2.22	0.0017	0.0041	0.002

Code	Product			Unit
VS-CHG35	(a)	CRM	Cast Iron (Chill cast; white structure) approx. ø35x40mm	disc
VS-CHG36	(b)	CRM	Cast Iron (Chill cast; white structure) approx. ø35x40mm	disc
VS-CHG37	(c)	CRM	Cast Iron (Chill cast; white structure) approx. ø35x40mm	disc
VS-CHG38	(d)	CRM	Cast Iron (Chill cast; white structure) approx. ø35x40mm	disc
VS-CHG39	(e)	CRM	Cast Iron (Chill cast; white structure) approx. ø35x40mm	disc
VS-CHG40	(f)	CRM	Cast Iron (Chill cast; white structure) approx. ø35x40mm	disc

	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	Ti	V
(a)	3.34	0.233	0.09	1.23	0.027	2.15	0.102	0.021	0.617	0.022	0.043
(b)	2.94	0.476	0.7	0.454	0.406	0.542	0.232	0.036	1.5	0.027	0.086
(c)	2.49	0.82	0.512	0.92	0.55	0.9	0.038	0.046	2.03	0.092	0.227
(d)	2.43	1.98	1.2	0.302	0.046	0.162	0.386	0.084	2.3	0.105	0.119
(e)	3.01	1.08	0.414	0.82	0.113	1.09	0.304	0.088	1.45	0.168	0.274
(f)	2.59	1.47	0.98	1.56	0.229	1.61	0.059	0.019	1.6	0.18	0.325

Code	Product			Unit
BS-285	(a)	CRM	Cast Iron, ø28x28 mm	disc

	B	C	Co	Cr	Cu	Mg	Mn	Mo	N	Ni	P	Pb	S	Sb	Si	Sn	Ti
(a)	0.0048	3.21	0.0099	1.09	0.302	0.043	0.706	0.227	0.0025	1.33	0.044	0.0121	0.009	0.184	1.98	0.025	0.053

	V	W
(a)	0.129	0.066

Code	Product			Unit
MBH-11X 0331.1 H	(a)	CRM	Corrosion Resistant Iron, ø40x13 mm	disc
MBH-11X 0331.3 F	(b)	CRM	Corrosion Resistant Iron, ø40x13 mm	disc
MBH-11X 0331.5 C	(c)	CRM	Corrosion Resistant Iron, ø40x13 mm	disc
MBH-11X 0331.6 A	(d)	CRM	Corrosion Resistant Iron, ø35x6 mm	disc

	Al	C	Co	Cr	Cu	Mn	Mo	Ni	P	Pb	S	Si	Sn	Ti	V	Zr
(a)	(0.03)	2.831	0.154	2.022	7.68	1.353	0.111	13.75	0.111	0.03	0.137	2.1	0.048	0.094		
(b)	0.055	2.1		2.57	6.49	1.08	0.061	18.03	0.04	0.0112	0.061	2.46	0.0091			
(c)	0.018	2.73		0.582	7.74	0.893	0.117	14.52	0.164	0.0056	0.217	2.93	0.121			
(d)		2.71		1.13	6.57	1.144	0.011	14.03	0.0473	(0.0006)	0.0197	2.05	(0.002)	0.025	0.0106	<0.005

Code	Product			Unit
MBH-11X 15294 T	(a)	CRM	Iron with Chrome, ø40x17 mm	disc
MBH-11X 15295 P	(b)	CRM	Iron with Chrome, ø40x17 mm	disc
MBH-11X 15309 R	(c)	RM	Iron with Chrome, ø40x15 mm	disc
MBH-11X 20001 J	(d)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X 20002 J	(e)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X 20003 K	(f)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X AR5 J	(g)	CRM	Abrasion Resistant Iron, ø40x15 mm	disc

	Al	C	Co	Cr	Cu	Mn	Mo	Nb	Ni	P	Pb	S	Si	Sn	Ti	V	W
(a)		2.25	0.179	29.32	0.126	0.551	0.63		1.84	0.1	0.0067	0.05	0.409	0.07		0.124	0.45
(b)		2.285	0.542	24.87	0.238	1.01	0.518		0.35	0.085	(0.01)	0.094	1.057	(0.045)		0.144	(0.2)
(c)		3.273	0.068	23.3	1.142	1.196	0.982		2.05	0.034		0.011	0.562			0.096	(0.057)
(d)		2.9		1.5	0.01	0.58			21.4	0.005		0.143	1.01				
(e)		2.67		2.03	0.3	1.06			20	0.06		0.045	2.04				
(f)		2.91		2.53	0.52	1.53			17.8	0.174		0.007	3.03				
(g)	(0.018)	3.1		9.73	0.032	0.57	0.12	0.03	5.16	0.0299	(0.003)	0.0316	1.7		0.0147	0.0586	

Code	Product			Unit
MBH-11X S/2 CR1 E	(a)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X S/2 CR2 D	(b)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X S/2 CR4 D	(c)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X S/2 CR5 D	(d)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X S/2 CR6 D	(e)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X S/3 CR1 D	(f)	RM	Corrosion Resistant Iron, ø40x15 mm	disc
MBH-11X S/3 CR3 B	(g)	RM	Corrosion Resistant Iron, ø40x15 mm	disc

	C	Cr	Cu	Mn	Ni	P	S	Si
(a)	2.83	2.48	0.02	1.68	16.5	0.31	0.011	2.85
(b)	3.03	2.35	0.23	0.53	18	0.14	0.046	1.23
(c)	2.82	1.1	0.24	0.97	20.7	0.049	0.01	2.59
(d)	3.01	3.99	0.24	0.83	19.5	0.14	0.042	2.51
(e)	2.65	4.39	0.27	0.81	18	0.254	0.009	3.59
(f)	2.61	0.15	0.19	0.7	31.7	0.046	0.011	2.52
(g)	2.49	4.06	0.23	0.66	29.4	0.053	0.05	2.44

Cast Iron, Nodular

Code	Product			Unit
CKD-251	(a)	CRM	Cast Iron, aust., nod., 38x38x23 mm	block
CKD-253	(b)	CRM	Cast Iron, aust., nod., 38x38x23 mm	block
CKD-254	(c)	CRM	Cast Iron, aust., nod., 38x38x23 mm	block

	Al	C	Ce	Co	Cr	Cu	Mg	Mn	Mo	Nb	Ni	P	Pb	S	Si	Sn	Ti
(a)	(0.02)	2.25	0.017	0.09	1.07	0.38	0.022	1.97	0.12	0.1	19.7	0.015	(0.009)	0.015	1.14	(0.01)	(0.005)
(b)	(0.035)	2.45	0.018	0.105	2.95	0.29	0.038	0.74	0.01		23.6	0.059		0.008	2.28	(0.005)	(0.005)
(c)	(0.05)	2.78	0.039	0.06	0.24	0.11	0.058	4.5	0.41	0.26	14.3	0.043	(0.012)	0.018	2.6	(0.02)	(0.005)

	V
(a)	(0.02)
(b)	(0.02)
(c)	(0.005)

Code	Product			Unit
SEI-KTC-10 M-1	(a)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 5 only)	disc
SEI-KTC-10 M-2	(b)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 5 only)	disc
SEI-KTC-10 M-3	(c)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 5 only)	disc
SEI-KTC-10 M-4	(d)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 5 only)	disc
SEI-KTC-10 M-5	(e)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 5 only)	disc

	C	Mg	Mn	P	S	Si
(a)	3.4	0.05	0.1	0.015	0.002	2.5
(b)	3.4	0.04	0.1	0.015	0.002	2.5
(c)	3.4	0.03	0.1	0.015	0.002	2.5
(d)	3.4	0.02	0.1	0.015	0.002	2.5
(e)	3.4	0.01	0.1	0.015	0.002	2.5

Cast Iron, Nodular

Code	Product			Unit
SEI-KTC-11 D-1A	(a)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-2A	(b)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-3A	(c)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-4A	(d)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-5A	(e)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-6A	(f)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-7A	(g)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-8A	(h)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-9A	(i)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc
SEI-KTC-11 D-10A	(j)	CRM	Ductile Cast Iron, Ø34x5mm (Set of 10 only)	disc

	Al	B	Bi	C	Ca	Ce	Cr	Cu	Mg	Mn	Mo	Ni	P	Pb	S	Sb	Si
(a)	0.087	0.028		3.20		0.035		0.19	0.046	0.13	0.11		0.028	0.001	0.005	0.062	3.31
(b)	0.074	0.055		3.47		0.011		0.04	0.053	0.50	0.22	0.41	0.016		0.001	0.094	2.99
(c)	0.012	0.010		3.60					0.022	0.42	0.45	0.31	0.033		0.017	0.024	2.22
(d)	0.053	0.12		3.19	0.0018	0.008	0.21		0.048	0.71	0.021	0.34	0.020	0.004	0.006	0.009	2.71
(e)	0.013	0.001	0.001	3.78	0.0005		0.02		0.020	0.24	0.32		0.044	0.007	0.014	0.16	2.47
(f)	0.007		0.005	3.93	0.0005		0.31	0.31	0.015	0.37		0.10	0.071	0.016	0.033	1.64	
(g)	0.014		0.011	3.99				0.11	0.013	0.29	0.062	0.21	0.060	0.009	0.021	2.02	
(h)	0.11		0.005	2.98		0.064	0.29	0.52	0.021	0.20	0.008	0.01	0.050	0.009	0.037	0.21	2.87
(i)	0.10			3.20	0.0030	0.092	0.11	0.01	0.007	0.84	0.004		0.004	0.037	0.014	2.48	
(j)	0.029	0.087	0.003	2.79	0.0035		0.40	0.40	0.003	0.02			0.008	0.026	0.011	2.40	

	Sn	Ti	V	Zn
(a)			0.10	0.009
(b)	0.004	0.010	0.20	0.002
(c)	0.014	0.24		0.018
(d)	0.44		0.25	
(e)		0.18		0.029
(f)	0.054	0.047	0.15	
(g)		0.12	0.055	(0.051)
(h)	0.30		0.009	
(i)	0.20		0.37	
(j)	0.089		0.003	

Code	Product			Unit
NIST-C1137A	(b)	CRM	White Cast Iron, ø32x19mm	disc
NIST-C2423A	(c)	CRM	Ductile Iron B, ø32x19mm	disc
NIST-C2424	(d)	CRM	Ductile Iron C, ø32x19mm	disc

	Al	B	C	Ce	Co	Cr	Cu	La	Mg	Mn	Mo	Nb	Ni	P	S	Sb
(b)	(0.007)		2.86	0.016		0.643	0.192		0.032	0.52	0.86		2.17	0.087	0.017	1.15
(c)	(0.08)	(0.01)	3.66	0.031	(0.02)	0.322	1.61	0.0042	0.076	0.91	0.159		0.147	0.246	(<0.001)	1.59
(d)	(<0.01)	(0.002)	2.68	0.0046	(0.05)	0.13	0.125	0.0011	0.006	0.268	0.019		0.061	0.041	0.024	3.37

	Sn	Te	Ti	V
(b)			(0.04)	0.019
(c)			0.1	0.043
(d)			0.05	0.083

Cast Iron, Complex Alloyed

Code	Product			Unit
BS-CC9	(a)	RM	Cast Iron, complex alloyed, ø33x19 mm	disc
BS-CC10	(b)	RM	Cast Iron, complex alloyed, ø33x19 mm	disc
BS-CC11	(c)	RM	Cast Iron, complex alloyed, ø33x19 mm	disc
BS-CC13	(d)	RM	Cast Iron, complex alloyed, ø33x19 mm	disc
BS-CC14	(e)	RM	Cast Iron, complex alloyed, ø33x19 mm	disc
BS-CC16	(f)	RM	Cast Iron, complex alloyed, ø33x19 mm	disc

	Al	As	B	Bi	C	Ca	Ce	Co	Cr	Cu	La	Mg	Mn	Mo	Ni	P	Pb
(a)	0.027	0.056	0.025	(0.002)	2.97	0.0003	(0.0003)	0.086	0.095	1.21	0.0012	0.0005	2.04	0.21	0.34	0.028	0.0011
(b)	0.033	0.007	0.011	(0.0002)	2.96	0.0001	(0.0003)	0.059	0.113	0.23	(0.0002)	0.0006	1.76	0.46	0.52	0.023	0.0007
(c)	0.029	0.006	0.0012	(<0.0005)	3	0.0002	(0.001)	0.021	0.06	0.14	(0.001)	(0.013)	1.18	0.011	0.064	0.022	0.0007
(d)	0.089	(0.002)	(0.0004)	0.009	(3.82)	(0.0008)	0.0018	0.033	0.57	0.088	(0.0007)	0.016	0.16	1.19	1.6	0.019	0.0002
(e)	0.006	(<0.001)	(0.0003)	(<0.0005)	(4.04)	0.0011	(0.002)	0.036	0.031	0.021	(0.0007)	(0.024)	(0.01)	(0.003)	0.074	0.016	0.0002
(f)	(0.004)	(0.005)	0.0005	(0.007)	(2.67)	(0.0001)	(0.0004)	0.017	0.91	0.11	(0.0001)	(0.0004)	0.39	1.33	1.94	0.1	0.0002

	S	Sb	Si	Sn	Te	Ti	V	W	Zr
(a)	0.068	0.14	2.29	0.094	(0.004)	(0.11)	0.31	(0.008)	0.004
(b)	0.074	0.152	2.02	0.013	(0.002)	0.15	0.047	(0.006)	(0.003)
(c)	(0.024)	0.14	1.92	0.045	(0.002)	0.011	0.016	(0.002)	(0.002)
(d)	0.006	(0.0006)	1.05	0.03	0.004	0.014	0.023	(0.006)	(0.001)
(e)	0.003	(0.001)	0.64	0.002	0.005	0.004	0.021	(0.003)	(0.002)
(f)	0.045	(0.001)	3.57	0.005	0.006	0.017	0.014	(0.004)	(0.002)

Code	Product			Unit
BS-CC21	(a)	CRM	Cast Iron, complex alloyed, ø32x17 mm	disc
BS-CC22	(b)	RM	Cast Iron, complex alloyed, ø32x17 mm	disc
BS-CC23	(c)	RM	Cast Iron, complex alloyed, ø32x17 mm	disc

	Al	As	B	C	Ce	Co	Cr	Cu	La	Mg	Mn	Mo	N	Nb	Ni	P	Pb
(a)	0.032	0.045	0.02	2.66	<0.002	0.012	2.68	0.013	<0.002	0.0005	1.37	0.13	(0.0013)	(0.001)	0.026	0.85	0.004
(b)	0.006	0.091	0.044	2.88	<0.002	0.01	0.98	0.34	<0.002	<0.001	1.84	0.022	(0.012)	0.013	0.151	0.274	0.001
(c)	0.059	0.017	0.066	2.96	<0.002	0.09	0.47	0.31	<0.002	<0.001	0.74	0.265	(0.008)	<0.003	0.56	0.53	0.008

	S	Sb	Si	Sn	Te	Ti	V	W	Zr
(a)	0.006	(0.004)	2.32	0.006	(0.009)	0.085	0.051	<0.002	0.025
(b)	0.16	0.059	0.74	0.079	0.034	0.012	0.25	0.012	0.026
(c)	0.082	0.17	0.43	0.052	0.033	0.091	0.197	<0.01	0.06

Cast Iron, Gray Iron

Code	Product			Unit
BS-20A	(a)	RM	Cast Iron - Gray, ø38x12 mm	disc
BS-20B	(b)	RM	Cast Iron - Gray, ø40x10 mm	disc
BS-20E	(c)	RM	Cast Iron - Gray, ø47x13 mm	disc
BS-20G	(d)	RM	Cast Iron - Gray, ø47x13 mm	disc
BS-20K	(e)	RM	Cast Iron - Gray, ø50x13 mm	disc
BS-20P	(f)	RM	Cast Iron - Gray, ø44x13 mm	disc
BS-20R	(g)	RM	Cast Iron - Gray, ø47x13 mm	disc
BS-20W	(h)	RM	Cast Iron - Gray, ø47x13 mm	disc

These samples contain free graphite. Extended preburn time may be needed to normalize analysis for optical emission (arc/spark) users.

	Al	As	C	Co	Cr	Cu	Mn	Mo	Ni	P	S	Si	Sn	Ti	V
(a)			3.33		0.034	0.54	0.75	0.18	0.06	0.04	0.029	2.8	0.1	0.033	
(b)			2.98		0.075	0.1	0.84	0.031	0.22	0.08	0.029	1.79	<0.005	0.042	
(c)	0.006	(0.003)	3.24	0.006	0.088	0.23	0.8	0.042	0.156	0.042	0.044	2.29	0.093	0.017	0.007
(d)	0.008	0.004	3.33	0.022	0.086	0.54	0.58	0.19	0.38	0.028	0.029	3.02	0.12	0.012	0.018
(e)	0.004	0.004	3.21	0.013	0.117	0.56	0.68	0.21	0.28	0.06	0.025	2.47	0.058	0.019	0.013
(f)	0.008	(0.004)	3.22	0.018	0.079	0.067	0.63	0.033	0.14	0.032	0.044	2.62	0.099	0.018	0.017
(g)	0.005	0.004	3.25	0.006	0.094	0.35	0.62	0.053	0.096	0.047	0.034	2.72	0.104	0.015	0.007
(h)	0.04	0.004	3.27	0.005	0.092	0.29	0.62	0.054	0.082	0.045	0.036	2.64	0.086	0.015	0.007

We constantly add new products to our range, so please contact us to find out about new products and services and to make sure you are automatically kept up to date by subscribing to our free newsletter.

Just send an e-mail to: askus@lgcstandards.com

Setting-up Samples
Solid Discs and Blocks

LGC Standards

Excellence through measurement

Sample Grinder HK150EXS

Manual pendulum grinder with steel cabinet and integrated spark trap and dust exhauster

Grinding Machine
HK150EXS

- Clean, powerful sample grinding system with stone – ready to go
- Floor standing machine, dustproof, covered working place, halogen spotlight
- Steel cabinet with switch board, dust trap, exhauster and drawer
- Reproducible flat surface, easily operated pendulum arm in taper bearings
- Simple and reliable machine construction
- Specially suitable for hard materials, like white cast irons
- Adaptable to various qualities by special stone cup wheels
- Vertical moving of grinding head by handwheel with 0.1 mm scale

Technical Data and Accessory

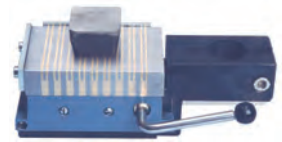
Technical Data

Grinder motor	3 x 400 V/50 Hz, 1.1 kW
	alt.: 1 x 220 V/60 Hz
	alt.: 3 x 220 V/60 Hz
Revolutions	2800 rpm/3440 rpm
Lighting	12 V/20 W halogen
Grinding stone	150 x 80 x 32 mm
Grinding height, min.	4 mm
Grinding height, max.	90 mm
Mass (grinder)	approx. 100 kg
Mass (cabinet)	approx. 50 kg
Dimensions (grinder)	400 x 400 x 680 mm
Dimensions (cabinet)	600 x 600 x 870 mm

Cup wheel, open corundum stone

Standard Accessory

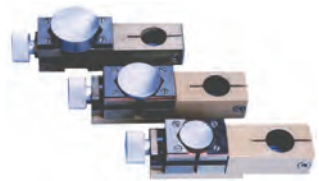
Vice for sample holding
Grinding stone, tool for stone change
Dressing bar for grinding stone
Transport handles



Magnetic plate with quick exchange arm

Optional Accessory

Magnetic vice with handle and quick exchange arm
Special vices – bigger vice for max. diam. 58 mm
Hardened vice jaws: 3 mm, 9 mm (regular) and 20 mm
Copper cooling blocks
Corundum/silicon carbide cup wheels 150 x 80 x 32 mm
Filter bags/exhauster motor protection filter
Spare parts kit: 2 bellows, safety glass, halogen lamp



Vices for different sample diameters

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LGC Standards
Excellence through measurement

Cast Iron, Setting-Up Samples

Code	Product			Unit
SUS-CFE5+	(a)	SUS	Pig Iron, Check Sample, ø35-40x30 mm	disc
SUS-CFE6+	(b)	SUS	Cast Iron, grey, Check Sample, ø40x50 mm	disc
SUS-CFE7+	(c)	SUS	Grey Cast Iron, Check Sample, ø40x50mm	disc
SUS-CFE8+	(d)	SUS	Cast Iron, Check Sample, ø37-40x30 mm	disc
SUS-RG13+	(e)	SUS	Cast Iron without Mg, ø38x40 mm	disc
SUS-RG14+	(f)	SUS	Cast Iron with Mg, ø38x40 mm	disc
SUS-RG15+	(g)	SUS	Cast Iron without Mg, ø38x40 mm	disc
SUS-RG16+	(h)	SUS	Cast Iron with Mg, ø36x36 mm	disc

	Al	As	B	C	Ce	Co	Cr	Cu	La	Mg	Mn	Mo	Nb	Ni	P	Pb	S
(a)	0.05			4.1			0.1	0.01			0.2	0.03	<0.002	0.02	0.05	0.04	
(b)	0.004			(3.3)			0.03	0.8			0.7	<0.01		0.03	0.04	0.03	
(c)	0.015			(3.7)			0.03	0.14			0.07	<0.01		0.05	0.015	<0.001	0.005
(d)	0.03	0.002	0.02	3.2		0.009	0.05	0.06			0.4	0.01	0.001	0.03	0.02	0.02	
(e)	0.03			3		0.01	1	0.5			1	0.3	<0.01	0.6	0.5	<0.001	0.05
(f)	0.03		0.02	3.5	0.03		1	0.07	<0.01	0.04	0.2			0.8	0.05	<0.01	
(g)	0.03			2.2			0.6	0.02			0.8	0.8		0.5	0.3	0.11	
(h)	0.03		0.02	3.7	0.02		1	0.1	<0.01	0.05	0.2			0.8	0.2	0.006	

	Si	Sn	Te	Ti	V	W	Zr
(a)	0.6	<0.003		0.04	0.2		
(b)	2.6	0.002		0.02	0.007		
(c)	3.1	0.003		0.01	0.018		
(d)	1.1	0.003	0.02	0.01	0.01	0.009	0.0002
(e)	2	0.2		0.04	0.3	0.01	
(f)	2.3	0.2		0.04	0.16		
(g)	3.8	0.1					
(h)	2.4	0.2	0.004	0.05	0.18		

Code	Product			Unit
SEI-KTC-13 A	(a)	SUS	Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-13 B	(b)	SUS	Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-13 C	(c)	SUS	Cast Iron ø35x20mm (Set of 10 only)	disc

This set consists of 4 pcs of A, 4 pcs of B and 2 pcs of C.

	Al	B	Bi	C	Ca	Cr	Cu	Mg	Mn	Mo	Ni	P	Pb	S	Sb	Si	Sn
(a)				3.5				0.055	0.1			(<0.02)		(<0.01)		2.5	
(b)	(<0.01)	0.1	(<0.01)	2.1	(<0.001)	0.5	0.55		0.05	0.3	0.01	0.7	0.01	0.06	0.2	3.0	0.3
(c)	0.1	(<0.01)	0.02	0.2	0.003	0.01	0.01		0.8	(<0.01)	0.5	(<0.01)	0.05	(<0.01)	0.01	0.5	(<0.01)

	Ti	V	Zn
(a)	(<0.01)		
(b)		(<0.01)	(<0.01)
(c)	0.3	0.3	0.06

Code	Product			Unit
SEI-KTC-14 D	(a)	SUS	Alloy Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-14 E	(b)	SUS	Alloy Cast Iron ø34x5mm (Set of 10 only)	disc
SEI-KTC-14 F	(c)	SUS	Alloy Cast Iron ø34x5mm (Set of 10 only)	disc

This set consists of 2 pcs of D, 4 pcs of E and 4 pcs of F.

	C	Cr	Cu	Mg	Mn	Mo	Ni	P	S	Si
(a)	3.4			0.05	0.1			0.015		2.5
(b)	2.4	1.0	0.05	(<0.01)	0.05	0.05	1.0	0.005	0.10	3.0
(c)	4.0	0.05	1.0		1.0	1.0	0.05	0.12	0.005	1.0

Code	Product			Unit
SEI-KTC-16 A-20	(a)	SUS	N for standardization ø35x20mm (Set of 4 only)	disc
SEI-KTC-16 B-20	(b)	SUS	N for standardization ø35x20mm (Set of 4 only)	disc

This set consists of 2 pcs of A and 2 pcs of B.

	C	Cr	Cu	Mn	Mo	N	Ni	P	S	Si
(a)	0.05	3.80	0.01	0.01	0.01	0.033	0.01	0.002	0.002	0.03
(b)	0.01	0.01	0.01	0.01	0.01	0.0015	0.01	0.001	0.002	0.01

Code	Product			Unit
BS-SUCCC+	(a)	SUS	Cast Iron, SUS, ø33-35x17 mm	disc
BS-SUCCD+	(b)	SUS	Cast Iron, SUS, ø33-35x17 mm	disc

	Al	As	C	Ca	Co	Cr	Cu	Mg	Mn	Mo	Ni	P	S	Si	Sn	Ti	V
(a)	0.013	0.001	3.47	0.002	0.021	0.032	0.024	0.03	0.071	0.006	0.03	0.029	0.01	1.79	0.003	0.003	0.007
(b)	0.015	0.001	3.28	0.0027	0.009	0.03	0.05	0.032	0.59	0.002	0.02	0.02	0.008	2.53	0.002	0.006	0.014

Code	Product			Unit
NCS AH11345	(a)	SUS	Cast Iron, SUS, ø28x20 mm	disc
NCS AH11346	(b)	SUS	Cast Iron, SUS, ø28x20 mm	disc
NCS AH11347	(c)	SUS	Cast Iron, SUS, ø28x20 mm	disc
NCS AH11348	(d)	SUS	Cast Iron, SUS, ø28x20 mm	disc
NCS AH11349	(e)	SUS	Cast Iron, SUS, ø28x20 mm	disc
NCS AH11350	(f)	SUS	Cast Iron, SUS, ø28x20 mm	disc
NCS AH93301	(g)	SUS	Cast Iron, SUS, ø30x30 mm	disc

	Al	As	B	C	Co	Cr	Cu	Mn	Mo	Nb	Ni	P	Pb	S	Sb	Si	Sn
(a)	0.017	0.037	0.008	2.06	0.006	0.159	0.322	1.2	0.097	0.147	0.151	0.041	0.006	0.041	0.064	2.94	0.066
(b)	0.028	0.023	0.019	2.53	0.008	1.06	1.5	0.85	0.223	0.067	0.255	0.17	0.007	0.033	0.025	2.48	0.027
(c)	0.011	0.014	0.049	3.01	0.012	0.276	0.83	0.681	0.319	0.11	0.592	0.37	0.004	0.064	0.065	1.98	0.06
(d)	0.004	0.009	0.024	3.28	0.009	0.462	1.13	0.873	0.245	0.119	0.451	0.074	0.0005	0.078	0.031	1.6	0.049
(e)	0.012	0.027	0.077	3.66	0.009	0.488	0.63	0.465	0.99	0.103	1.31	0.56	0.002	0.064	0.038	1.2	0.096
(f)	0.02	0.002	0.041	4.3	0.01	2.19	0.49	0.241	0.428	0.08	1.02	0.044	0.003	0.13	0.13	1.2	0.021
(g)			0.0039	1.89		3	1.96	2.13	0.017	0.499	0.074	0.043		0.1	0.0021	3.5	

	Ti	V	W
(a)	0.032	0.058	0.279
(b)	0.161	0.136	0.188
(c)	0.111	0.3	0.44
(d)	0.094	0.15	0.11
(e)	0.22	0.049	0.055
(f)	0.154	0.579	0.72
(g)	0.247	0.027	0.044

Code	Product			Unit
BAS-SUS1	(a)	SUS	Low Phosphorus Iron, 60x35x18 mm	block
BAS-SUS2	(b)	SUS	Medium Phosphorus Iron, 60x35x18 mm	block
BAS-SUS3	(c)	SUS	High Phosphorus Iron, 60x35x18 mm	block
BAS-SUS4	(d)	SUS	Ductile (Nodular) Iron, 60x35x18 mm	block
BAS-SUS5	(e)	SUS	Ductile (Nodular) Iron, 60x35x18 mm	block
BAS-SUS6	(f)	SUS	Malleable Iron, 60x35x18 mm	block
BAS-SUS7	(g)	SUS	Malleable Iron, 60x35x18 mm	block

	Al	As	B	Bi	C	Ce	Cr	Cu	Mg	Mn	Mo	Ni	P	S	Sb	Si	Sn
(a)	0.02				3.1		0.48	0.47		0.4	0.32	0.2	0.05	0.06		2.5	0.05
(b)	<0.005				3.6		0.07	0.2		0.72	0.1	0.48	0.19	0.14		1.7	0.1
(c)	<0.005				3.3		0.26	0.03		0.92	<0.005	0.03	1	0.1		2.2	<0.005
(d)	0.01	0.07			3.3		0.09	0.74	0.02	0.12		0.09		0.01	<0.005	2.6	<0.005
(e)	0.04	0.005			3.9	0.03	0.03	<0.005	0.09	0.66		1		0.008	0.04	2	0.07
(f)	<0.005		<0.001	0.01	2.5		0.1	0.02		0.65			0.05	0.12		1.8	0.05
(g)	0.02		0.004	<0.001	2.8		0.07	0.21		0.29			0.09	0.18		0.94	<0.01

	Ti	V
(a)	<0.005	0.04
(b)	0.06	0.51
(c)	0.12	0.3
(d)	0.06	0.51
(e)	<0.005	0.5
(f)	0.02	0.02
(g)		0.06

Code	Product			Unit
CKD-T+	(a)	SUS	Cast Iron, SUS, 40x40x21 mm	block
CKD-U2+	(b)	SUS	Cast Iron, SUS, 40x40x21 mm	block

	Al	As	B	Bi	C	Co	Cr	Cu	Mn	Mo	Nb	Ni	P	Pb	S	Sb	Se
(a)		0.03			2.8	0.05	0.1	0.3	1.3	0.2		0.2	0.15		0.18	0.1	
(b)	0.025	0.03	0.008	0.01	3.41	0.012	0.69	0.49	1.16	1.15	0.014	0.57	0.42	0.011	0.099	0.022	0.014

	Si	Sn	Te	Ti	V	W	Zn	Zr
(a)	1.6	0.04	0.02	0.05	0.05			0.01
(b)	2.18	0.052	0.017	0.052	0.21	0.002	0.016	

Code	Product			Unit
IARM-215A+	(a)	SUS	Cast Iron, SUS, ø31x18.75 mm	disc
IARM-216A+	(b)	SUS	Cast Iron, SUS, QA22, ø31x18.75 mm	disc

	Al	As	B	Bi	C	Co	Cr	Cu	Mg	Mn	Mo	Nb	Ni	P	Pb	S	Sb
(a)	0.037				3.5		0.6	0.6		1.3	0.5		0.9	0.3		0.13	
(b)	0.06	0.03	0.037	0.004	3	0.6	1.5	0.08	0.08	0.3	0.004	0.3	2	0.026	0.005	0.001	0.06

	Si	Sn	Ti	V	W	Zn	Zr
(a)	2.1	0.17	0.07	0.5			
(b)	3	0.04	0.007	0.03	0.043	0.01	0.05

Chips and powders

LGC Standards

Excellence through measurement

Moulds for Iron and Non-Ferrous Metal Samples

BREITLÄNDER
Part of LGC Standards

Casting of your own samples for spectrometric analysis requires different moulds, depending on alloy type and further handling. There are different moulds that have been tested under practical working conditions.
Our product range comprises one special mould for cast iron, a modification for pig iron samples releasing robot compatible samples and a number of various classical copper moulds for different metals.

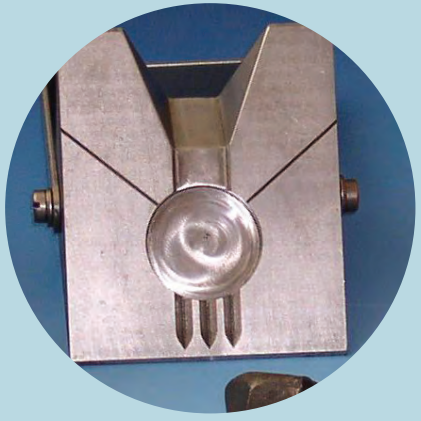
Special Mould for Grey and Nodular Cast Iron BR 150

Mould with 45º casting angle in combined steel/copper construction

- Mould form from steel, casting on copper block ensures unidirectional chill cast solidification on the analytical side of the sample only
- Spectro sample and pins for analysis of C + S simultaneously from same sample cast
- Pin samples of about 0.4 g each to be broken off easily and ready for analysis
- Most simple mounting for tight joining by putting mould form on copper block, no mechanism, no moving parts, self locking
- Copper block designed as flat surface block, enabling easy resurfacing and thus giving extended life time of mould
- Standard size of sample: Ø 34-36 x 5 mm

Special Mould for Pig Iron BR 150/RE

This special mould, intended for casting pig iron samples directly after the blast furnace, is made completely from copper. Pig iron coming from the blast furnace is hotter than regular cast iron, this mould enables rapid cooling for white structure and avoids semi-welding of sample at the regular steel mould form. The big handle is support for the casting ladle and the robust construction is designed to be fixed on a solid steel beam for protection in rough working environment. The sample dimension is: 34 mm diameter with side wall 10 mm high for robot grip tongs.



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Cast Iron, Chips

Code	Product			Unit
AR-300	(a)	CRM	Cast Iron	150 g
AR-301	(b)	CRM	Cast Iron	150 g
AR-302	(c)	CRM	Gray Iron	150 g
AR-304	(d)	CRM	Ductile Iron	150 g
AR-305	(e)	CRM	Malleable Iron	150 g
AR-309	(f)	CRM	Nodular Iron	150 g
AR-310	(g)	CRM	Cast Iron	150 g
AR-315	(h)	CRM	Cast Iron, shot	150 g
AR-318	(i)	CRM	Cast Iron	150 g
AR-319	(j)	CRM	Cast Iron	150 g
AR-322	(k)	CRM	Cast Iron	250 g
AR-323	(l)	CRM	Pig Iron	250 g
		C	**S**	
	(a)	3.32	0.014	
	(b)	2.07	0.010	
	(c)	3.29	0.046	
	(d)	4.23		
	(e)	2.75	0.015	
	(f)	3.71	0.021	
	(g)	3.38	0.086	
	(h)	3.09	0.111	
	(i)	3.08	0.037	
	(j)	3.28	0.055	
	(k)	3.37	0.046	
	(l)	3.84	0.064	

Cast Iron, Chips

Code	Product			Unit
NCS HC11003	(a)	CRM	Cast Iron	100 g
NCS HC11003A	(b)	CRM	Cast Iron	100 g
NCS HC11003B	(c)	CRM	Cast Iron	100 g
NCS HC11004	(d)	CRM	Cast Iron	100 g
NCS HC11005	(e)	CRM	Cast Iron	100 g
NCS HC11006	(f)	CRM	Cast Iron	100 g
NCS HC11007	(g)	CRM	Pig Iron	100 g
NCS HC11008	(h)	CRM	Pig Iron	100 g
NCS HC11009	(i)	CRM	Pig Iron	100 g
NCS HC11010	(j)	CRM	Pig Iron	100 g

	C	Cr	Cu	Mn	P	S	Si	Ti	V
(a)	3.77			0.659	0.23	0.129	1.47		
(b)	3.36			0.561	0.166	0.176	1.39		
(c)	3.36			0.386	0.135	0.154	1.82		
(d)	2.72			0.359	0.124	0.115	2.56		
(e)	2.19			0.219	0.047	0.048	3.07		
(f)	3.11			0.85	0.27	0.13	1.37		
(g)	2.7	0.589	0.031	1.66	0.201	0.102	1.72	0.014	0.0067
(h)	1.9	0.766	0.041	1.96	0.06	0.097	2.72	0.013	0.0075
(i)	3.26	0.373	0.02	1.98	0.385	0.081	1.18	0.024	0.0074
(j)	3.41	0.17	0.017	0.46	0.569	0.067	0.716	0.015	0.0039

Code	Product			Unit
NCS HC11015	(a)	CRM	Rare Earth Magnesium Cast Iron	80 g

	Al (sol.)	As	C	Ce	Co	Cr	Cu	La	Mg	Mn	Mo	N	Ni	P	REE	S	Sb
(a)	0.021	0.011	2.74	0.019	0.011	0.04	0.031	0.013	0.012	0.473	0.0016	0.0047	0.627	0.022	0.036	0.0009	(0.0005)

	Si	Sn	Ti	V
(a)	2.32	0.0037	0.015	0.031

Code	Product			Unit
NCS HC13004	(a)	CRM	High Cr Cast Iron	150 g
NCS HC13005	(b)	CRM	High Cr Cast Iron	150 g
NCS HC13006	(c)	CRM	High Cr Cast Iron	150 g

	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	Ti	V
(a)	2.46	12.95	0.73	1.63	0.76	1.2	0.383	0.013	0.32	0.0089	0.026
(b)	2.86	22.52	0.42	1.07	1.14	0.25	0.058	0.028	0.36	0.005	0.039
(c)	2.31	26.5	0.36	0.83	2.71	0.49	0.064	0.043	0.59	0.0051	0.039

Code	Product												Unit
NCS HC13007	(a)	CRM	Alloy Cast Iron										150 g
NCS HC13008	(b)	CRM	Alloy Cast Iron										150 g
NCS HC13009	(c)	CRM	Alloy Cast Iron										150 g
NCS HC13010	(d)	CRM	Alloy Cast Iron										150 g
NCS HC13011	(e)	CRM	Alloy Cast Iron										150 g
		C	**Cr**	**Cu**	**Mn**	**Mo**	**Ni**	**P**	**S**	**Si**	**Ti**	**V**	
	(a)	3.95	4.31	0.011	0.27	0.36	0.029	0.13	0.233	1.3	0.016	0.012	
	(b)	3.46	0.202	0.263	1.05	0.047	0.132	0.252	0.062	3.15	0.047	0.007	
	(c)	3.06	0.045	0.016	1.08	0.0036	0.0069	0.162	0.112	2.17	0.035	0.0053	
	(d)	3.35	0.96	0.018	0.699	2.39	0.3	0.147	0.045	2.44			
	(e)	3.23	1.36	0.243	1.2	0.639	0.919	0.31	0.045	4.3			
NCS HC13014	(a)	CRM	Pig Iron										150 g
NCS HC13015	(b)	CRM	Pig Iron										150 g
NCS HC13016	(c)	CRM	Pig Iron										150 g
NCS HC13020	(d)	CRM	Pig Iron										100 g
NCS HC13021	(e)	CRM	Pig Iron										100 g
NCS HC13022	(f)	CRM	Pig Iron										100 g
NCS HC13023	(g)	CRM	Pig Iron										100 g
NCS HC13024	(h)	CRM	Pig Iron										100 g
NCS HC13025	(i)	CRM	Pig Iron										100 g
NCS HC13026	(j)	CRM	Cast Iron										100 g
NCS HC13027	(k)	CRM	Cast Iron										100 g
NCS HC13028	(l)	CRM	Cast Iron										100 g
		C	**Cr**	**Cu**	**Mn**	**Mo**	**Ni**	**P**	**S**	**Si**	**Ti**	**V**	
	(a)	3.71			0.796			0.826	0.03	0.42			
	(b)	2.51			0.62			0.104	0.02	4.08			
	(c)	2.99			1.3			0.278	0.1	1.29			
	(d)	2.72			0.508			0.105	0.024	1.32			
	(e)	2.52			1.46			0.273	0.060	1.41			
	(f)	2.85			0.821			0.071	0.027	3.02			
	(g)	2.36			2.10			0.124	0.038	1.45			
	(h)	1.88			0.472			0.160	0.034	4.13			
	(i)	2.51			0.301			0.087	0.081	2.28			
	(j)	1.28	21.12	0.044	0.741	0.335	1.12	0.0285	0.0054	0.644	0.060	0.287	
	(k)	1.34	22.40	0.028	0.969	0.546	1.60	0.0310	0.0035	0.843	0.106	0.035	
	(l)	1.58	24.73	0.0290	1.37	0.842	2.07	0.032	0.0038	1.11	0.184	0.032	

Cast Iron, Chips

Code	Product							Unit
NCS HC14003	(a)	CRM	Pig Iron (NIM-GBW07219A)					150 g
NCS HC14004	(b)	CRM	Pig Iron (NIM-GBW07220)					150 g
NCS HC15011	(c)	CRM	Pig Iron					150 g
		C	**Cu**	**Mn**	**P**	**S**	**Si**	
	(a)	2.03	0.085	0.402	0.077	0.042	1.5	
	(b)	2.78	0.028	0.9	0.064	0.047	0.419	
	(c)	2.58		1	0.087	0.068	2.76	
NCS HC16001B	(a)	CRM	Pig Iron					100 g
NCS HC16002B	(b)	CRM	Pig Iron					100 g
NCS HC16003B	(c)	CRM	Pig Iron					100 g
NCS HC16004B	(d)	CRM	Pig Iron					100 g
NCS HC16005	(e)	CRM	Pig Iron (NIM-GBW01105A)					100 g
NCS HC16005B	(f)	CRM	Pig Iron (NIM-GBW01105B)					100 g
NCS HC16006	(g)	CRM	Pig Iron (NIM-GBW01106A)					100 g
NCS HC16006B	(h)	CRM	Pig Iron (NIM-GBW01106B)					100 g
NCS HC16008B	(i)	CRM	Pig Iron (NIM-GBW01108B)					100 g
NCS HC16009B	(j)	CRM	Pig Iron (NIM-GBW01109B)					100 g
		C	**Cu**	**Mn**	**P**	**S**	**Si**	**Ti**
	(a)	3.04	0.025	1.22	0.072	0.052	1.34	0.008
	(b)	2.38	0.026	0.7	0.082	0.034	0.48	0.006
	(c)	3.53	0.258	1.1	0.066	0.048	1.83	0.025
	(d)	3.39	0.202	0.94	0.113	0.016	2.41	0.058
	(e)	3.41	0.109	0.463	0.193	0.0081	3.82	0.151
	(f)	3.27	0.123	0.42	0.219	0.0046	3.87	0.107
	(g)	2.809	0.045	1.48	0.039	0.062	0.856	0.0118
	(h)	2.71	0.036	0.98	0.077	0.089	1.14	0.007
	(i)	3.45	0.015	1.84	0.046	0.018	1.44	0.019
	(j)	2.31	0.038	0.509	0.025	0.1	0.28	0.03

Code	Product			Unit
NCS HC16010B	(a)	CRM	Pig Iron	100 g
NCS HC16012	(b)	CRM	Pig Iron	150 g
NCS HC16016	(c)	CRM	Pig Iron	150 g
NCS HC16022	(d)	CRM	Pig Iron	100 g
NCS HC16023	(e)	CRM	Pig Iron	150 g
NCS HC16024	(f)	CRM	Pig Iron	150 g
NCS HC16025	(g)	CRM	Pig Iron	150 g
NCS HC16026	(h)	CRM	Pig Iron	150 g
NCS HC16027	(i)	CRM	Pig Iron	150 g
NCS HC16028	(j)	CRM	Pig Iron	150 g

	As	Bi	C	Cr	Cu	Mn	Mo	Ni	P	Pb	S	Sb	Si	Sn	Ti	V	Zn
(a)			3.9		0.01	0.414			0.044		0.044		0.93		0.024		
(b)	0.001	<0.00005	3.89	0.0081	0.0029	0.65	0.0066	0.0058	0.058	<0.0002	0.028	0.00016	1.58	0.00015	0.042		
(c)			3.04			0.646			0.032		0.102		0.85				
(d)			2.83			0.721			0.094		0.067		2.19				
(e)			3.8			0.929			0.171		0.016		1.42				
(f)			3.59			0.514			0.315		0.033		1.96				
(g)			3.46			0.67			0.081		0.058		2.61				
(h)			3.22			0.726			0.085		0.059		2.25				
(i)	0.0011	<0.00005	4.06	0.01	0.0023	0.094	0.0027	0.0023	0.038	<0.0002	0.029	0.00013	0.725	0.00014	0.026	0.0064	(0.0003)
(j)	0.0012	<0.00005	4	0.036	0.0051	0.634	0.0089	0.0045	0.046	<0.0002	0.0073	0.00016	1.55	0.00018	0.084	0.018	(0.0002)

Cast Iron, Chips

Code	Product			Unit
NCS HC18001	(a)	CRM	Cast Iron	150 g
NCS HC18002	(b)	CRM	Cast Iron	150 g
NCS HC18003	(c)	CRM	Pig Iron	100 g
NCS HC18004	(d)	CRM	Pig Iron	100 g
NCS HC18005	(e)	CRM	Pig Iron	100 g
NCS HC18006	(f)	CRM	Pig Iron	100 g
NCS HC18007	(g)	CRM	Pig Iron	100 g
NCS HC18008	(h)	CRM	Pig Iron	100 g
NCS HC18009	(i)	CRM	Pig Iron	100 g

	As	C	Mg	Mn	P	REE	S	Si
(a)		2.54		1.82	0.11		0.054	1.74
(b)		2.67		1.36	0.051		0.031	2.94
(c)	0.064	3.18		0.0732	0.243		0.049	1.43
(d)	0.095	4.00		0.26	0.11		0.023	0.796
(e)	0.091	2.89		0.733	0.108		0.0058	2.01
(f)	0.092	2.65		0.75	0.114		0.0057	1.99
(g)	0.017	4.17		0.348	0.078		0.0233	1.03
(h)	0.016	4.13		0.348	0.078		0.023	1.02
(i)	0.025	3.83		0.74	0.186		0.023	1.88

NCS HC18010	(a)	CRM	Pig Iron	100 g
NCS HC18011	(b)	CRM	Pig Iron	100 g
NCS HC18012	(c)	CRM	Pig Iron	100 g
NCS HC18013	(d)	CRM	Pig Iron	100 g
NCS HC18014	(e)	CRM	Pig Iron	100 g
NCS HC18015	(f)	CRM	Pig Iron	100 g
NCS HC18016	(g)	CRM	Pig Iron	100 g
NCS HC18018	(h)	CRM	Pig Iron	100 g

	As	C	Mg	Mn	P	REE	S	Si
(a)	0.036	3.66	0.030	0.59	0.145	0.024	0.041	2.40
(b)	0.036	3.43		0.729	0.079		0.0082	1.93
(c)	0.037	3.23		0.74	0.079		0.0080	1.93
(d)	0.013	3.40		0.79	0.049		0.0087	2.12
(e)	0.012	3.36		0.792	0.049		0.0087	2.136
(f)	0.039	4.01		0.908	0.136		0.046	1.09
(g)	0.092	3.20		0.42	0.104		0.0092	2.91
(h)	0.027	4.02		0.856	0.056		0.036	1.73

Code	Product			Unit
NCS HC19002	(a)	CRM	V Ti Pig Iron (NIM-GBW07225)	100 g
NCS HC19004	(b)	CRM	V Ti Pig Iron (NIM-GBW07226A)	100 g
NCS HC19007	(c)	CRM	Nodular Cast Iron	100 g
NCS HC19008	(d)	CRM	Nodular Cast Iron	100 g
NCS HC19010	(e)	CRM	V Ti RE Spherulitic Iron	100 g
NCS HC19016	(f)	CRM	V Ti Pig Iron	100 g
NCS HC19017	(g)	CRM	V Ti Pig Iron	100 g
NCS HC19018	(h)	CRM	V Ti Pig Iron	100 g

	C	Co	Cr	Cu	Ga	Mg	Mn	Mo	Ni	P	REE	S	Si	Ti	Tl	V
(a)	3	0.033	0.033	0.066	0.0077		0.869		0.027	0.048		0.145	1.42		0.254	0.29
(b)	2.38	0.034	0.03	0.07	0.0073		1.28		0.028	0.069		0.077	2.12		0.314	0.4
(c)	2.855	0.036	0.0466	0.046		0.036	0.977		0.032	0.05	0.04	0.021	2.615	0.106		0.536
(d)	3.486	0.035	0.0425	0.044		0.0106	0.734		0.03	0.08	0.0185	0.015	2.529	0.096		0.394
(e)	2.69		0.227	0.042		0.028	0.79	0.0016	0.025	0.029	0.04	0.023	2.92	0.109		0.236
(f)	2.21	0.037	0.04	0.047		0.099	0.42		0.032	0.014	0.099	0.012	3.78	0.066		0.31
(g)	2.77	0.037	0.042	0.046		0.07	0.57		0.031	0.015	0.07	0.014	2.52	0.072		0.356
(h)	2.7	0.035	0.043	0.049		0.083	0.625		0.031	0.024	0.083	0.011	3.1	0.125		0.405

NCS HC28007	(a)	CRM	Cast Iron	150 g
NCS HC28009	(b)	CRM	Cast Iron	150 g
NCS HC28010	(c)	CRM	Cast Iron	150 g
NCS HC28011	(d)	CRM	Cast Iron	150 g
NCS HC28012	(e)	CRM	Cast Iron	150 g
NCS HC28013	(f)	CRM	Cast Iron	150 g
NCS HC28014	(g)	CRM	Cast Iron	150 g
NCS HC28015	(h)	CRM	Cast Iron	150 g
NCS HC28017	(i)	CRM	Cast Iron	150 g

	As	C	Co	Cr	Cu	Mn	Mo	Ni	P	Pb	S	Sb	Si	Sn	Ti	V
(a)	0.006	3.06		0.033	0.068	0.77		0.042	0.069	0.000022	0.094	0.00089	1.36	0.0019	0.032	
(b)	0.007	3.24		0.025	0.077	0.38		0.018	0.352	0.000018	0.159	0.00085	1.89	0.0023	0.055	
(c)	0.0099	2.65		0.041	0.086	0.575		0.067	0.446	0.00002	0.097	0.0018	2.29	0.0042	0.041	
(d)	0.045	3.05		0.022	0.194	0.57		0.018	0.298	0.000029	0.079	0.0044	2.67	0.0023	0.079	
(e)		3.06		0.0325	0.068	0.77		0.0415	0.071		0.094		1.36		0.032	
(f)		2.65		0.041	0.086	0.575		0.0675	0.45		0.098		2.29		0.041	
(g)		3.05		0.022	0.194	0.57		0.018	0.3		0.079		2.67			
(h)		3.58		0.0075	0.091	0.97		0.0125	0.08		0.014		3.02			
(i)	0.016	3.08	0.011	0.035	0.1	0.665	0.0029	0.023	0.106	0.000021	0.122	0.00255	1.49	0.0028	0.043	0.02

Code	Product			Unit
NCS HC28023	(a)	CRM	High P Cast Iron	150 g
NCS HC28025	(b)	CRM	High P Cast Iron	150 g
NCS HC28026	(c)	CRM	High P Cast Iron	150 g
NCS HC28028	(d)	CRM	Alloy Cast Iron	150 g
NCS HC28029	(e)	CRM	Alloy Cast Iron	150 g
NCS HC28030	(f)	CRM	Alloy Cast Iron	150 g
NCS HC28031	(g)	CRM	Alloy Cast Iron	150 g
NCS HC28032	(h)	CRM	Alloy Cast Iron	150 g

	C	Cr	Cu	Mn	Mo	P	S	Si	Ti	V
(a)	3.08	0.094	0.294	0.704		0.847	0.13	1.61		
(b)	2.98	0.081	0.201	0.698		1.8	0.087	1.8		
(c)	2.9	0.086	0.245	0.702		1.91	0.124	1.81		
(d)	3.11	0.28	1.03	0.605		0.25	0.088	1.71	0.0494	0.023
(e)	2.85	0.316	0.865	0.85		0.086	0.0995	1.91	0.033	0.017
(f)	3.23	0.12	0.12	0.736		0.109	0.124	1.28		
(g)	2.95	0.23	0.642	0.595	0.155	0.065	0.107	1.75	0.03	
(h)	3.19	0.54	0.745	0.955	0.303	0.107	0.108	1.295	0.04	

NCS HC28034	(a)	CRM	Alloy Cast Iron	150 g
NCS HC28035	(b)	CRM	Alloy Cast Iron	150 g
NCS HC28040	(c)	CRM	Rare Earth Cast Iron	150 g
NCS HC28041	(d)	CRM	Rare Earth Cast Iron	150 g
NCS HC28043	(e)	CRM	RE-Mg Spherulitic Iron	85 g
NCS HC28051	(f)	CRM	Pig Iron	150 g
NCS HC28054	(g)	CRM	Alloy Cast Iron	150 g

	C	Co	Cr	Cu	Mg	Mn	Mo	Nb	Ni	P	REE	S	Si	Ti	V
(a)	3.15		0.464	1.04		0.795	0.515			0.321		0.082	1.67	0.053	
(b)	3.15			0.915		0.685				0.49		0.076	1.44		
(c)		0.0049	0.03	0.024		0.77	0.0026		0.013	0.058	0.058		3.04	0.076	0.011
(d)	1.59		0.052	0.024		0.44				0.067	0.019	0.004	2.13		
(e)	3.67	0.0065	0.0115	0.033	0.023	0.497	0.0013		0.011	0.084	0.0187	0.0053	2.673	0.068	0.0205
(f)	3.94		0.0086	0.052		0.513			0.014	0.067		0.029	1.3	0.088	0.052
(g)	3.01		0.619		0.047	0.645	0.355	0.095	1.19	0.188		0.011	2.03		

Code	Product			Unit
NCS HC30001	(a)	CRM	Cast Iron	100 g
NCS HC30002	(b)	CRM	Cast Iron	100 g
NCS HC30003	(c)	CRM	Cast Iron	100 g

	C	Cu	Mn	P	S	Si
(a)	2.26	1.01	1.28	0.178	0.025	2.21
(b)	3.12	0.29	0.687	0.1	0.023	0.96
(c)	2.62	0.52	1.68	0.12	0.032	1.64

NCS HC37001	(a)	CRM	High Cr Cast Iron	80 g
NCS HC37002	(b)	CRM	High Cr Cast Iron	80 g
NCS HC37003	(c)	CRM	High Cr Cast Iron	80 g

	C	Cr	Cu	Mn	Mo	Ni	P	S	Si
(a)	3.4	13.54	1.22	0.99	1.03	0.63	0.06	0.054	1.35
(b)	3.42	8.93	0.9	0.71	1.74	0.23	0.058	0.064	1.05
(c)	2.95	15.39	1.06	1.72	1.12	1.05	0.062	0.034	1.32

NCS HC37004	(a)	CRM	RE-Mg Spherulitic Iron	100 g
NCS HC37005	(b)	CRM	RE-Mg Spherulitic Iron	100 g
NCS HC37006	(c)	CRM	RE-Mg Spherulitic Iron	100 g
NCS HC37007	(d)	CRM	RE-Mg Spherulitic Iron	100 g
NCS HC37008	(e)	CRM	RE-Mg Spherulitic Iron	100 g

	C	Cu	Mg	Mn	Mo	P	REE	S	Si
(a)	2.1	0.451	0.036	0.704	0.205	0.055	0.034	0.015	2.74
(b)	1.92	0.181	0.073	0.955	0.128	0.041	0.059	0.0064	3.36
(c)	2.12	0.617	0.056	0.531	2.295	0.036	0.08	0.0062	2.23
(d)	2.95	0.783	0.015	0.238	0.405	0.041	0.01	0.012	2.06
(e)	2.59	0.288	0.014	0.373	0.514	0.042	0.011	0.012	3.08

Cast Iron, Chips

Code	Product			Unit
NCS HC37010	(a)	CRM	Cast Iron	100 g
NCS HC37011	(b)	CRM	Cast Iron	100 g
NCS HC37012	(c)	CRM	Cast Iron	100 g
NCS HC37013	(d)	CRM	Wrought Iron	100 g
NCS HC37014	(e)	CRM	Wrought Iron	100 g
NCS HC37015	(f)	CRM	High Cr Cast Iron	80 g
NCS HC37016	(g)	CRM	High Cr Cast Iron	80 g
NCS HC37017	(h)	CRM	High Cr Cast Iron	80 g

	Bi	C	Cr	Cu	Mn	Mo	Ni	P	S	Si
(a)		3.63			0.762			0.187	0.07	2.82
(b)		3.73			0.565			0.117	0.067	2.58
(c)		3.75			0.73			0.152	0.068	2.15
(d)	0.0025	2.11	0.119		0.353			0.167	0.139	1.7
(e)	0.00093	2.25	0.163		0.537			0.241	0.088	1.03
(f)		3.4	13.45	1.22	0.89	1.03	0.63	0.06	0.054	1.35
(g)		3.42	8.93	0.9	0.71	1.74	0.23	0.058	0.064	1.05
(h)		2.95	15.39	1.06	1.72	1.12	1.05	0.062	0.034	1.32

NCS HC37018	(a)	CRM	Manganese Spherulitic Iron	100 g
NCS HC37019	(b)	CRM	Manganese Spherulitic Iron	100 g
NCS HC37020	(c)	CRM	Manganese Spherulitic Iron	100 g
NCS HC37021	(d)	CRM	Manganese Spherulitic Iron	100 g

	C	Mg	Mn	P	REE	S	Si
(a)	2.78	0.049	6.8	0.12	0.041	0.0027	5.96
(b)	3.06	0.054	6.72	0.11	0.049	0.0041	5.8
(c)	2.88	0.068	6.4	0.11	0.047	0.0035	3.75
(d)	2.79	0.028	8.77	0.1	0.045	0.006	6.58

Code	Product			Unit
NCS HC37028	(a)	CRM	Pig Iron	100 g
NCS HC37029	(b)	CRM	Pig Iron	100 g
NCS HC37030	(c)	CRM	Pig Iron	100 g
NCS HC37031	(d)	CRM	Pig Iron	100 g
NCS HC37032	(e)	CRM	Pig Iron	100 g
NCS HC37034	(f)	CRM	Pig Iron	100 g
NCS HC37035	(g)	CRM	Pig Iron	100 g

	C	Cr	Cu	Mn	P	S	Si
(a)	2.04	0.197	0.642	1.34	0.479	0.038	3.37
(b)	2.15	0.221	0.752	1.08	0.451	0.068	2.69
(c)	2.22	0.142	0.501	0.869	0.339	0.101	2.2
(d)	2.04	0.054	0.176	1.67	0.226	0.103	1.86
(e)	2.28	0.028	0.041	0.358	0.086	0.161	1.34
(f)	3.73			0.565	0.117	0.067	2.58
(g)	3.75			0.73	0.152	0.068	2.15

NCS HC37036	(a)	CRM	Cast Iron	100 g
NCS HC37037	(b)	CRM	Cast Iron	100 g
NCS HC37038	(c)	CRM	Cast Iron	100 g
NCS HC37039	(d)	CRM	Cast Iron	100 g
NCS HC37040	(e)	CRM	Cast Iron	100 g
NCS HC37041	(f)	CRM	Cast Iron	100 g
NCS HC37042	(g)	CRM	Cast Iron	100 g
NCS HC37043	(h)	CRM	Cast Iron	100 g

	Bi	C	Cr	Cu	Mn	P	S	Si
(a)	0.0034	1.67	0.055		1.05	0.085	0.024	1.9
(b)	0.0038	1.9	0.025		0.78	0.11	0.055	2.34
(c)	0.0015	2.01	0.113		0.677	0.057	0.115	1.44
(d)		2.04	0.197	0.642	1.34	0.479	0.038	3.37
(e)		2.15	0.221	0.752	1.08	0.451	0.068	2.69
(f)		2.22	0.142	0.501	0.869	0.339	0.101	2.2
(g)		2.04	0.054	0.176	0.67	0.226	0.103	1.86
(h)		2.28	0.028	0.041	0.358	0.086	0.161	1.34

Cast Iron, Chips

Code	Product			Unit
NCS HC39001	(a)	CRM	Cast Iron	100 g
NCS HC39002	(b)	CRM	Cast Iron	100 g
NCS HC39003	(c)	CRM	Cast Iron	100 g
NCS HC39004	(d)	CRM	Cast Iron	100 g
NCS HC39005	(e)	CRM	Cast Iron	100 g
NCS HC39008	(f)	CRM	Cast Iron	100 g
NCS HC39009	(g)	CRM	Cast Iron	100 g
NCS HC39010	(h)	CRM	Cast Iron	100 g

	C	Mn	P	S	Si
(a)	2.85	0.38	0.081	0.096	2.48
(b)	2.81	0.57	0.062	0.134	1.71
(c)	2.95	0.26	0.142	0.085	1.49
(d)	2.78	0.78	0.066	0.082	2.17
(e)	3.18	0.76	0.122	0.073	1.57
(f)	2.59	0.859	0.187	0.093	2.17
(g)	2.47	1.56	0.318	0.057	3.33
(h)	2.65	0.331	0.113	0.134	1.29

Code	Product			Unit
NCS HC39011	(a)	CRM	Boron Cast Iron	100 g
NCS HC39012	(b)	CRM	Boron Cast Iron	100 g
NCS HC39013	(c)	CRM	Boron Cast Iron	100 g
NCS HC39014	(d)	CRM	Boron Cast Iron	100 g

	B	C	Mn	P	S	Si
(a)	0.061	2.96	0.57	0.082	0.058	1.67
(b)	0.125	3.03	0.68	0.128	0.064	2.08
(c)	0.0101	2.86	0.56	0.106	0.052	2.35
(d)	0.049	3.03	0.36	0.1	0.054	1.95

NCS HC41001	(a)	CRM	Pure Iron Used in Industry	150 g
NCS HC41002	(b)	CRM	DT4	150 g
NCS HC41010	(c)	CRM	Cast Iron	150 g
NCS HC41011	(d)	CRM	Cast Iron	150 g
NCS HC41012	(e)	CRM	Cast Iron	150 g
NCS HC41013	(f)	CRM	Cast Iron	150 g

	Al	As	C	Cr	Cu	Mn	Mo	Ni	P	Pb	S	Sb	Si	Sn	Ti	V
(a)		0.0024	0.021	0.022	0.027	0.204	0.0060	0.003	0.0115		0.0092		0.074	0.014		0.0003
(b)	0.309		0.023			0.178			0.016		0.009		0.075			
(c)			2.64	0.086	0.056	0.54	0.021	0.03	0.086		0.029		1.49		0.024	0.011
(d)			2.64	0.151	0.146	0.725	0.105	0.035	0.177		0.033		2.23		0.031	0.014
(e)	0.017		2.52	0.115	0.114	1.24		0.037	0.635	0.0008	0.032	0.0011	3.86		0.071	0.033
(f)	0.026		2.46	0.105	0.132	0.93		0.036	0.41	0.0008	0.041	0.0011	2.66		0.061	0.024

Cast Iron, Chips

Code	Product			Unit
NCS HC93001	(a)	CRM	Pig Iron	100 g
NCS HC93002	(b)	CRM	Alloy Cast Iron	100 g
NCS HC93003	(c)	CRM	Alloy Cast Iron	100 g
NCS HC93004	(d)	CRM	Alloy Cast Iron	100 g
NCS HC93005	(e)	CRM	Alloy Cast Iron	100 g
NCS HC93006	(f)	CRM	Alloy Cast Iron	100 g
NCS HC93007	(g)	CRM	Alloy Cast Iron	100 g

	C	Cr	Cu	Mn	Mo	Ni	P	REE	S	Si	Ti	V
(a)	4.01			1.15			0.097		0.069	1.49		
(b)	1.82	0.6	0.24	1.84	0.16	0.95	0.027	0.024	0.097	3.54	0.46	0.2
(c)	2.4	0.97	2.18	1.19	0.11	0.23	0.072	0.025	0.084	2.47	0.13	0.16
(d)	3.28	0.21	0.82	0.48	1.1	0.33	0.34	0.01	0.018	2	0.035	0.06
(e)	2.76	0.39	1.36	0.69	0.65	0.59	0.14	0.007	0.058	1.37	0.15	0.3
(f)	2.64	1.92	0.35	0.29	0.25	2.65	0.43	0.044	0.079	1.21	0.029	0.02
(g)	3.94	0.14	0.49	0.14	0.42	1.56	0.058	0.027	0.028	0.82	0.08	0.58

ECRM-D 428-2	(a)	CRM	Cast iron GG 25, powdered material produced by atomization of the melt - powder	100 g
ECRM-D 476-3	(b)	CRM	Pig iron - powder	100 g
ECRM-D 478-2	(c)	CRM	Hematite pig iron - powder	100 g
ECRM-D 479-1	(d)	CRM	Alloyed cast iron - powder	100 g
ECRM-D 480-1	(e)	CRM	Nodular iron - powder	100 g

	Al	As	B	C	Cr	Cu	Mg	Mn	Mo	N	Ni	P	S	Si	Ti	V
(a)		0.0156		2.747	0.0366	0.0996		0.75			0.0358	0.0691	0.1105	1.751	0.0311	0.012
(b)		0.0145		3.39	0.0648	0.2445		0.987		0.0038	0.0549	0.0908	0.0493	1.813	0.0222	0.0115
(c)		(0.0018)	0.0006	4.003	0.251	0.1276		0.321		0.0023	0.151	0.201	0.046	2.411	0.0328	0.0113
(d)	0.0143			2.86	1.001	(0.0065)		0.136	0.1959		1.0123	0.0764	0.0893	2.018		
(e)	0.0163			3.029		(0.0052)	0.0172	0.1514			0.4826	0.0021	0.0086	2.407		

Code	Product			Unit
ECRM-B 451-2	(a)	CRM	Austenitic cast iron - chips (BAS-BCS-CRM 263/3)	100 g
ECRM-B 453-1	(b)	CRM	High Si and P iron - chips (BAS-BCS-CRM 206/3)	100 g
ECRM-B 454-1	(c)	CRM	Hematite iron - chips	100 g
ECRM-B 481-1	(d)	CRM	Nodular iron - chips	100 g
ECRM-B 482-2	(e)	CRM	Low alloyed cast iron - chips	100 g
ECRM-B 483-1	(f)	CRM	High duty iron - chips	100 g
ECRM-B 484-1	(g)	CRM	Whiteheart malleable iron - chips	100 g
ECRM-B 486-1	(h)	CRM	Foundry iron - chips	100 g
ECRM-B 489-1	(i)	CRM	White cast iron - chips	100 g

	Al	As	C	C (graph)	Cr	Cu	Mg	Mn	Mo	N	Ni	P	S	Si	Sn	Tl	V
(a)			2.059		1.097	6.2613		1.0790			14.0131	0.0593	0.0315	2.0916			
(b)		0.019	(2.44)	(2.37)	0.053	0.1		0.72			0.068	1.63	0.049	3.17		(0.04)	0.05
(c)		(0.025)	(2.53)	(1.96)		(0.07)		1.16			(0.21)	0.046	0.068	2		0.052	
(d)	0.023	0.01	3.91		0.063	0.15	0.051	0.448	0.011		1.19	0.019	0.004	2.29			
(e)			2.599		0.675	1.231		0.728	0.454		2.284	0.0974	0.0491	1.815			
(f)			2.46	1.65	0.039			0.596				0.615	0.103	1.75	0.13		
(g)			3.2		0.155			0.395				0.121	0.23	0.717			
(h)			2.21		0.104	0.548		0.841			0.057	1	0.023	2.43	0.074	0.02	
(i)			2.86			0.274		(0.51)		(0.0056)		0.815	0.155	1.524			

Code	Product			Unit
ECRM-F 485-2	(a)	CRM	Cast iron - chips	100 g
ECRM-F 487-1	(b)	CRM	Cast iron - chips	100 g
ECRM-F 487-2	(c)	CRM	Cast iron - chips	100 g
ECRM-F 488-2	(d)	CRM	Low alloyed white cast iron - chips	100 g
ECRM-F 492-1	(e)	CRM	Cast iron, for C/S/N-determination - chips	100 g

	Al	As	C	Co	Cr	Cu	Mn	N	Ni	P	S	Si	Sn	Te	Ti	V	Zn
(a)			3.308		0.0845	0.0303	0.19	0.0058	0.0742	0.61	0.165	0.508					
(b)		0.011	3.27	0.0088	0.063		0.094	0.0042	0.04	0.002	0.0007	0.006					
(c)	0.079	0.0063	3.573	0.0151	0.0248	0.0136	0.0491	0.004	0.0219	0.0065	0.0031	0.0898	0.0045	0.0064	0.0022	0.0117	0.0012
(d)			3.956		0.303	0.0256	0.201	0.0052	0.1247	0.0111	0.1173	0.374	0.0013		0.0636	0.0545	
(e)			3.258					0.0048			0.0854						

Cast Iron, Chips

Code	Product			Unit
CTIF-FA10	(a)	CRM	Cast Iron	100 g
CTIF-FA20	(b)	CRM	Cast Iron	100 g
CTIF-FB20	(c)	CRM	Cast Iron	100 g
CTIF-FB20-1	(d)	CRM	Cast Iron	100 g
CTIF-FB20-2	(e)	CRM	Cast Iron	100 g
CTIF-FG10	(f)	CRM	Cast Iron	100 g
CTIF-FG20	(g)	CRM	Cast Iron	100 g

	C	**Cr**	**Cu**	**Mn**	**Ni**	**P**	**S**	**Si**
(a)	1.976	1.986	0.492	1.063	20.05	0.045		1.48
(b)	0.643	28.3		0.368		0.045		1.519
(c)	2.114	0.035		0.464		0.039	0.128	1.012
(d)	3.552	(0.1)		(0.39)		(0.07)	0.059	(0.935)
(e)	3.557	(0.1)		(0.39)		(0.07)	0.0614	(0.935)
(f)	2.322			1.098		0.111	0.016	2.467
(g)	2.487			0.571		1.44	0.109	1.726

Code	Product			Unit
MBH-C11X 152940 S	(a)	RM	Pure Iron with Chromium	100 g
CKD-228	(b)	CRM	Cast Iron	200 g
CKD-230/100	(c)	CRM	Cast Iron	100 g
DH-SE25-12	(d)	RM	Cast iron	50 g
IPT-37B	(e)	CRM	Cast Iron, gray	80 g
IPT-49	(f)	CRM	Cast Iron, white	80 g
IPT-69	(g)	CRM	Cast Iron	80 g
IPT-75A	(h)	CRM	Cast Iron, gray (Ni-Cr-Mo-Cu)	80 g
SEI-102-8	(i)	CRM	Pig Iron for steel making	150 g
SEI-110-12	(j)	CRM	Pig Iron for Casting	100 g
SEI-120-1	(k)	CRM	Cast Iron - 3C	150 g
NM 73	(l)	CRM	Cast Iron	100 g

	Al (sol.)	As	B	Bi	C	C (graph)	Ce	Co	Cr	Cu	La	Mg	Mn	Mo	N	Nb	Ni
(a)					2.15			1.05	31.02	0.174			0.52	0.278		4.2	
(b)	0.01	0.035	0.005	0.005	1.95			0.015	0.31	0.56			1.27	1		0.31	
(c)	0.01	0.005		(0.001)	2.55		0.01	0.01	0.09	1.05	(0.005)	0.04	0.31	0.05		1.11	
(d)	0.054	0.012			4.738			0.016	0.08	0.106			0.758	0.002		<0.002	0.026
(e)					3.37	2.85			0.088	0.052			0.737			0.074	
(f)					2.11				0.02	0.04			0.272			0.021	
(g)					3.34	2.5			0.353	0.47			0.715	(0.004)		0.272	
(h)					3.4	2.7			0.487	0.433			0.722	0.438		0.425	
(i)					4.71								0.326		0.003		
(j)		0.0022			4.18				0.0162	0.003			0.392		0.0044	0.0117	
(k)					2.85				0.28	0.29			0.7	(0.007)	0.0058	0.12	
(l)					3.07	2.55							0.82				

	P	Pb	S	Sb	Se	Si	Sn	Te	Ti	Tl	V	W	Zr
(a)	0.081	0.023	0.072			0.49	0.072				0.024	0.301	
(b)	0.3	0.005	0.145	0.02	(0.02)	2.51	0.05	(0.01)	0.03		0.005	0.04	0.015
(c)	0.049		0.024	0.006		1.04	0.01		0.01		0.02		
(d)	0.081		0.103			1.865			0.036		0.015		
(e)	0.148		0.069			1.66				0.034			
(f)	0.012		0.019			0.78							
(g)	0.267		0.018			2.07				0.019			
(h)	0.25		0.033			1.98			0.022		0.03		
(i)	0.103		0.0353			0.257			0.0255				
(j)	0.0902		0.0251			1.7			0.0324		0.01		
(k)	0.053		0.0095			1.32			0.006		0.007		
(l)	0.22		0.014			1.21							

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Notes

Custom Standards

Certified reference materials, standards and quality control samples

Are you looking for quality control standards to perfectly meet your needs? Breitländer, part of LGC Standards, offers customised standards to meet your specified requirements.

Benefits

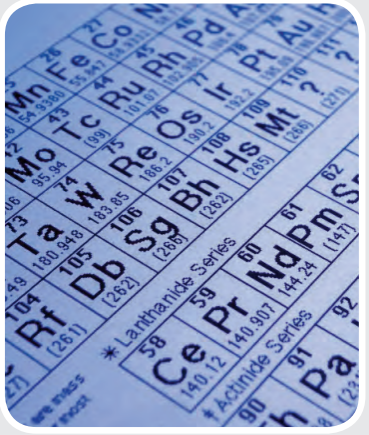
The benefits of using high-quality customized reference materials and standards are many and dependent on the application:

- Save time and money
- Save raw materials
- Avoid errors
- Avoid internal testing and re-testing to meet QC standards
- Available as required
- Supplied with Certificates of Analysis
- You specify the composition

Applications

We have supported our customers for their custom material needs for many years, developing expertise and knowledge to help them make the most of the options. Working closely with our partners we are able to offer customised:

- Metal Setting-Up Samples for OES
- Glass Setting-Up Samples for XRF
- Plastics for ROHS analysis
- Water-based standards for XRF, ICP and AAS
- Oil-based standards for XRF, ICP and AAS
- Layer thickness samples for (micro-) XRF
- Metal Certified Reference Materials and Reference Materials



We also offer custom Borate mixtures in combination with several additives for fusion equipment.

Breitländer offers a comprehensive range of certified reference materials and setting-up samples, working in close cooperation with some of the world's major manufacturers. This puts us in a unique position to make sure your company has the right materials for your quality assurance work. Our expert technical support staff can help you find the products best suited to your needs, applicable to standards such as ISO, EN, ASTM, JIS and DIN where available.

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