



Referenzmaterialien – Kohle

Reference materials – Coal

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Katalog Nr. 5 - Kohle

Material

Kohlen

Graphit und Anodenkohlen

Pech

Koks

Torf und Bioheizstoffe

Mahlbarkeitsstandards HGI

Catalogue No. 5 - Coal

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Coals

5.1.1 ff

Graphite and Anode Coals

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Pitch

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Coke

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Peat and Biofuels

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Grindability Standards HGI

5.2.4

CRM	Kohle	250 g		
AS 013-10A	Asche (Ash)		9.81	± 0.09
	flüchtige Teile (Volatile matter)		19.71	± 0.18
	Kohlenstoff, ges. (Total carbon)		79.7	± 0.32
	Wasserstoff (Hydrogen)		4.42	± 0.08
	Stickstoff (Nitrogen)		1.75	± 0.06
	Schwefel, ges. (Sulfur)		0.585	± 0.014
	Schwefel (Sulfur), pyrit.		0.046	± 0.020
	Schwefel (Sulfur), sulf.		0.009	± 0.002
	Kohlenstoff, karbonisiert (Carbonate carbon)		0.032	± 0.007
	Chlor (Chlorine)		0.053	± 0.007
	Phosphor (Phosphorus)		0.036	± 0.003
	Spezif. Energie, ges. (Gross specific energy)		32.4972	± 0.072 MJ/kg
	relative Dichte (Relative density)		1.368	± 0.03125

CRM Elektrodenkohle (Electrode carbon)

AS 003-2	Spezifikation	Stahlwerkselektrodenkohle	1500g	Zertifikat wird auf Anfrage zur Verfügung gestellt; Certificate on request
	Feuchtigkeit (Moisture)	<1%		Korngrößenverteilung (Size analysis)
	Asche (Ash)	<5%		+212µm <5%
	flüchtige Teile (Volatile matter)	<1.5%		-212µm + 125µm <26%
	rel. Dichte (Rel. density)	2.20-2.25		-125µm + 63µm 10% bis 40%

CRM	C	H	S	N	Ash	Volat. Matter	Calorific Value (MJ/kg)	True Specific Gravity (20°)	50 g
CI FC28001g	77.40	4.15	0.49	1.21	9.04	25.50	31.30	1.43	Bitumit/Bitumite Kohle
CI FC28002f	51.97	3.59	1.39	0.98	34.97	26.50	21.92	1.64	Bitumit/Bitumite Coal
CI FC28003d	77.47	0.95	0.28	0.23	16.69	6.70	26.22	1.95	Antrazit/Anthracite
CI FC28004c	80.90	2.76	0.98	0.96	11.85	6.51	30.79	1.56	Antrazit/Anthracite
CI FC28005b	74.83	2.13	1.78	0.66	16.89	9.92	27.48	1.72	Antrazit/Anthracite
CI FC28006e	76.84	4.72	0.90	1.42	8.11	33.12	31.55	1.39	Bitumit/Bitumite
CI FC28007c	76.37	4.80	1.83	1.32	10.43	32.18	31.74	1.38	Bitumit/Bitumite
CI FC28008c	74.10	4.76	2.92	1.28	12.92	31.95	31.23	1.40	Bitumit/Bitumite
CI FC28009d	58.76	1.42	4.24	0.36	31.24	13.34	20.84	2.03	Bitumit/Bitumite
CI FC28010b	68.57	4.16	1.40	1.19	17.39	28.71	27.94	1.48	Bitumit/Bitumite
CI FC28011b	69.71	2.73	2.16	0.86	21.12	10.75	26.92	1.64	Antrazit/Anthracite
CI FC28012b	65.91	2.55	3.23	0.82	24.61	10.02	19.30	1.70	Antrazit/Anthracite

CRM	C	H	S	N	P	Ash	Volat. Matter	150 g
IN CMT001	-	-	0.50	-	-	14.50	24.50	Kohle + Koks
IN CMT002	-	-	0.64	-	-	7.05	32.26	Coal + Coke
IN CMT003	67.35	3.83	0.93	1.64	0.120	17.51	28.02	
IN CMT004	68.59	2.48	1.32	1.71	0.080	23.98	8.13	
IN CMT005	72.72	4.46	0.81	1.87	0.070	10.94	32.02	
IN CMT006	71.63	3.82	0.89	1.90	0.031	13.50	26.67	
IN CMT007	73.13	4.04	0.54	1.77	0.100	13.24	26.75	
IN CMT008	84.46	2.62	0.85	1.75	0.025	8.90	5.11	
IN CMT009	73.60	3.91	0.70	1.76	0.114	13.48	25.21	
IN CMT010	72.74	4.32	0.84	1.91	0.070	11.50	32.41	
IN CMT011	77.20	3.45	1.60	2.17	0.029	13.72	11.73	
IN CMT012	64.75	3.30	0.80	1.49	0.051	20.05	24.04	
IN CMT013	73.83	4.64	0.70	1.93	0.005	10.90	32.48	
IN CMT014	74.11	3.83	0.93	1.68	0.017	12.35	22.00	
IN CMT015	72.02	3.56	0.33	1.62	0.051	14.41	23.34	

CRM	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	S	As	Ba	Be	Ce	Co	Cr	Cu	Cs
X 18	6.20	2.57	0.29	0.114	0.18	0.11	-	0.145	-	0.56	-	0.0078	0.00041	0.0022	0.00067	0.0016	0.00059	(0.0001)
X 19	15.00	8.01	1.75	0.341	1.39	0.20	0.29	0.24	-	1.49	0.0007	0.0304	0.00028	0.0056	0.00056	0.0050	0.0013	0.00014
X 20	17.66	11.27	1.17	0.63	1.87	0.43	0.27	0.14	0.14	0.51	0.00047	0.0372	0.00025	0.0087	0.00083	(0.0067)	0.0018	(0.0002)
	Hf	La	Mn	Ni	P	Rb	Sc	Sm	Sr	Th	U	V	Zn	Zr	B	Br	Cl	Eu
	0.00017	0.0010	0.0022	0.00108	0.0030	0.00081	0.00043	0.00020	0.0044	0.00034	0.00015	0.0023	0.00055	0.0067	(0.0030)	(0.0003)	-	(0.00003)
	0.00054	0.0027	0.0157	0.0016	0.0130	0.0009	0.00076	0.00049	0.0126	0.0012	0.0005	0.0035	0.0012	0.0351	(0.0090)	(0.0002)	(0.0032)	(0.00007)
	0.00048	0.0043	0.0080	0.0025	-	0.0010	0.0010	0.00063	0.0330	0.0018	0.0004	0.0047	0.0017	(0.0180)	(0.0090)	(0.0002)	-	(0.0001)
	Ga	Ge	Hg	Nb	Pb	Sb	Se	Sn	Ta	Tb	W	Y	LOI	120 g				
	(0.0008)	(0.0008)	(0.000004)	0.0006	(0.0005)	(0.00003)	-	(0.0001)	(0.00003)	(0.00003)	(0.0002)	(0.0012)	90.11	Kohle, bituminös; Coal, bituminous				
	0.0014	0.0013	(0.00002)	(0.0010)	0.0020	(0.00003)	(0.0001)	(0.0003)	(0.00008)	(0.00007)	(0.0002)	(0.0020)	71.28	Kohle, subbituminös; Coal, sub-bituminous				
	0.0016	-	0.000025	(0.0016)	0.0026	(0.00004)	0.00008	(0.0004)	0.00012	(0.00009)	(0.0003)	0.0029	64.66	Kohle, subbituminös; Coal, sub-bituminous				
CRM	Fe ₂ O ₃	CaO	Al ₂ O ₃	SiO ₂	S	Ash	ppm MgO	ppm Na ₂ O	ppm K ₂ O	ppm P ₂ O ₅	ppm TiO ₂	ppm Ba	ppm Ce	ppm Co	ppm Cr	ppm Ni	ppm Pb	ppm Rb
UG CLB-1	1.25	0.22	1.51	2.51	1.49	6.3	470	230	760	700	780	34	10	7.0	9.7	18	5.1	5.2
	ppm Sc	ppm V	ppm Zn	ppm As	ppm Cu	ppm Ga	ppm Hg	ppm La	ppm Li	ppm Mn	ppm Mo	ppm Nb	ppm Nd	ppm Sb	ppm Se	ppm Th	ppm U	50 g
	2.0	12	48	13	10	3	0.2	5	8	8	9	1	5	1.5	2	1.4	0.55	Kohle Coal
UG CLB-1	Kohle, bituminös; Coal, bituminous																	
CRM	C	H	N	Cl	Al	ppm As	ppm B	ppm Ba	ppm Br	ppm Cd	ppm Ce	ppm Co	ppm Cr	ppm Cu	ppm F	Fe	ppm Hg	K
3 1632c	77.45	5.11	1.54	0.1139	0.915	6.18	62	41.1	18.7	0.072	11.9	3.48	13.73	6.01	(70)	0.735	0.0938	0.1100
3 1635	-	-	-	-	(0.32)	0.42	-	-	-	0.03	(3.6)	(0.65)	2.5	3.6	25.9	0.239	0.0109	-
	ppm Mn	ppm Na	ppm Ni	ppm Pb	ppm Sc	ppm Se	ppm Th	ppm Ti	ppm V	ppm Zn	Ash	Volat. Matter	Calorific Value Mj/kg					
	13.04	298.8	9.32	3.79	12.905	1.3263	11.40	517	23.72	12.1	7.16	36.0	3210	50 g Kohle, bituminös; Coal, bituminous				
	21.4	(0.24)	1.74	1.9	(0.63)	0.9	0.62	(200)	5.2	4.7	-	-	-	75 g Kohle, unterbituminös, trocken				
CRM	S	ppm Hg	Ash	Calorific Value Mj/kg	50 g													
3 2682b	0.4871	108.8	6.32	25.66	Kohle, subbituminös; Coal sub-bituminous													
3 2683b	1.955	90.0	9.93	(30.62)	Kohle, bituminös; Coal, bituminous													
3 2684b	3.076	97.4	10.85	28.56														
3 2685b	4.730	146.2	15.94	26.94														
3 2692b	1.170	133.3	7.90	32.81														
CRM	S	125 g																
AS 012A	0.33	Kohle																
AS 012B	0.68	Coal																
AS 012C	1.04																	
AS 012D	5.37																	

CRM S 20 g/Ampulle mit Argon Atmosphäre; Ampoule with argon atmosphere

H 331	0.499	Dampfkohle; Steam Coal
H 332	0.961	Industriekohle, hoch flüchtig; High Volatile Steam Coal
H 333	1.344	Kokskohle; Coking Steam Coal
H 334	1.609	Anthracit; Anthracite
H 335	5.08	Flammkohle; Flame Coal
H 336	3.290	Dampfkohle, hoch flüchtig; High Volatile Steam Coal

CRM	C	H	N	Cl	ppm As	ppm Cd	ppm Co	ppm Cr	ppm Hg	ppm Mn	ppm Ni	ppm Pb	ppm Se	ppm V	ppm Zn	ppm Al	ppm B	ppm Ba
H 180	76.01	5.04	1.44	0.0593	4.23	0.212	(3.3)	(13.5)	0.123	34.3	(16)	17.5	1.32	19.3	27.4	(12.4)	(55)	(156)
H 181	84.89	5.40	1.78	0.138	27.2	0.057	(1.6)	(5)	0.138	(2.8)	(8.6)	2.59	1.15	12.0	8.4	(2.8)	(8.3)	-
H 182	73.29	(4.22)	1.636	0.370	(1.47)	-	(8.7)	(20)	0.040	195	(39)	(15.3)	0.68	24.3	33.3	(15.6)	(31.2)	-
	ppm Br	ppm Ce	ppm Cu	ppm Fe	ppm K	ppm La	ppm Na	ppm Rb	ppm Sc	ppm Th	ppm Ti	Ash	20 g					
	(7.3)	(14.1)	(9.1)	(11.7)	(1.2)	(6.5)	(448)	(8.3)	(2.7)	(2.2)	(0.7)	9.90	Gaskohle; Gas Coal					
	(34.9)	(4.8)	(12.3)	(3.6)	(0.146)	(2)	(87.6)	-	(0.9)	(0.5)	-	1.85	Kokskohle; Coking Coal					
	(36.5)	(17)	(12.3)	(7.3)	(4.3)	(8)	-	(22)	(3.8)	(2.3)	(0.6)	12.27	Dampfkohle; Steam Coal					

CRM ppm F ppm Cl 40 g

H 460 225 (59) Kohlepulver; Coal Powder

RM	Fe	Ni	Si	Ca	V	S	Ash	Real Density g/cm ³	100 g
CA AU	0.32	(0.004)	1.8	0.083	(0.004)	0.57	7.8	1.76	Anthrazit
CA DM	0.32	(0.003)	1.9	0.17	(0.004)	0.40	8.6	1.85	Anthracite

RM C S Ash Vol. Matter BTU 50 g

AR 1720	53.15	0.25	5.23	41.62	12.500	Kohle
AR 1721	47.71	0.50	7.14	45.15	11.755	Coal
AR 1722	75.18	0.80	6.23	18.59	14.646	
AR 1723	54.11	0.96	9.72	36.17	13.335	
AR 1724	54.36	1.50	13.61	32.03	11.861	
AR 1726	52.32	2.05	10.75	36.93	12.585	
AR 1727	51.86	2.49	12.03	36.11	12.816	
AR 1728	52.83	3.09	11.57	35.60	13.124	
AR 1729	49.63	3.33	12.16	38.20	12.588	
AR 1730	52.96	4.73	12.49	34.55	11.806	
AR 1731	45.02	5.50	17.09	37.89	11.602	
AR 1732	44.64	6.48	18.51	36.85	11.140	
AR 1733	43.07	1.25	12.52	44.41	10020	Braunkohle; Lignite

RM	C	S	Ash	Vol.Matter	BTU	50 g
IA HC20	Satz/set					
IA HC20025	43.10	0.249	5.60	51.30	12.300	Kohle, sub-bituminös
IA HC20075	59.50	0.760	6.30	34.30	14.000	Coal, sub-bituminous
IA HC20100	57.80	1.03	6.90	35.50	13.900	
IA HC20150	58.50	1.56	4.50	37.00	14.300	
IA HC20300	54.70	2.92	7.70	37.60	12.500	
IA HC20500	50.80	4.811	12.40	37.00	11.500	

CRM	S dried	S air dried	Ash dried	Ash air dried	Vol.Matter dried	Vol.Matter air dried	Moisture air dried	Quant.Heat/MJ/kg dried/high grade	Quant.Heat/MJ/kg air dried/high grade	20 g
CI FC62001	1.49	1.43	22.42	21.58	23.79	22.90	3.76	25.32	24.37	Kohle, bituminös, für Zement; Bituminous Coal for Cement
CI FC62002	0.22	0.21	26.15	25.18	6.03	5.81	3.70	23.22	22.36	Antrazitkohle für Zement; Anthracite Coal for Cement

RM	S	50 g
AR 1700	0.25	Kohle, nur S
AR 1701	0.48	Coal, S only
AR 1702	0.71	
AR 1703	0.80	
AR 1704	0.97	
AR 1705	1.51	
AR 1706	2.06	
AR 1707	2.47	
AR 1708	3.10	
AR 1709	3.30	
AR 1710	4.75	
AR 1711	5.53	
AR 1712	6.50	
AR 1713	1.25	Braunkohle; Lignite

RM	ppm Hg	ppm Cl	S	Ash	25 g
AR 3701	0.09	1562	1.04	7.22	Quecksilber in Kohle
AR 3702	0.10	1713	0.77	6.45	Mercury in Coal
AR 3703	0.12	165	0.45	7.64	
AR 3704	0.13	107	1.17	10.31	
AR 3705	0.19	239	4.71	11.80	

RM	C	H	N	25 g
AR 1905	71.24	5.10	1.56	C, H und N in Kohle
AR 1906	72.60	4.83	1.49	C, H and N in Coal
AR 1907	67.95	5.06	1.49	
AR 1908	70.80	5.16	1.06	

RM	Cl	25 g
AR 1910	0.05	Cl in Kohle 50 g
AR 1911	0.22	Cl in Coal
AR 1912	0.38	

CRM	ppm As	P	Cl	ppm F	50 g
CI FC82001	15	0.031	-	-	Kohle
CI FC82002	34	0.007	-	-	Coal
CI FC82003	51	0.092	-	-	
CI FC82004	-	-	0.010	-	
CI FC82005	-	-	0.057	-	
CI FC82006	-	-	0.110	-	
CI FC82007	-	-	-	248	
CI FC82008	-	-	-	864	
CI FC82009	-	-	-	1496	

RM	SiO ₂	Al ₂ O ₃	TiO ₂	Fe ₂ O ₃	CaO	MgO	K ₂ O	Na ₂ O	SO ₃	P ₂ O ₅	SrO	BaO	MnO	Ash	50 g
AR 2751	32.41	16.94	1.29	4.91	21.82	4.53	0.31	1.02	14.41	0.97	0.28	0.54	0.10	7.13	Kohle, mineral. Analyse Mineral Analysis for Coal
AR 2752	29.22	14.68	0.50	45.77	4.48	0.56	1.03	0.56	2.82	0.25	0.02	0.08	0.03	13.08	
AR 2753	50.15	29.93	1.69	9.85	2.15	0.72	1.89	0.63	2.56	0.17	0.15	0.11	0.00	7.56	
AR 2754	51.41	28.61	1.32	10.31	1.79	0.89	2.71	0.48	0.95	1.00	0.16	0.08	0.00	8.10	
AR 2755	33.92	14.29	0.73	46.55	0.54	0.53	1.43	0.17	0.53	0.11	0.01	0.00	0.29	8.21	
AR 2756	51.38	32.11	2.09	4.78	2.19	1.04	2.02	0.84	1.77	0.68	0.19	0.25	0.00	10.74	
AR 2758	37.99	17.90	0.75	23.54	8.87	0.77	1.79	0.66	7.10	0.50	0.05	0.04	0.04	12.20	
AR 2760	49.38	27.36	1.33	15.16	1.07	0.77	2.47	0.16	0.39	0.30	0.07	0.00	0.11	15.00	

RM	C	H	N	Cl	Ash	S (pyr)	S (sulf)	S (org)	S (tot)	P ₂ O ₅	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	TiO ₂	SO ₃	K ₂ O	Na ₂ O
AR 2771	88.16	0.06	1.17	0.03	11.36	0.10	0.01	0.60	0.71	0.38	49.94	21.98	21.98	1.10	1.61	2.12	0.95
AR 2772	88.10	0.25	1.38	0.00	9.33	0.01	0.00	0.84	0.85	0.36	46.12	18.98	25.80	1.22	1.49	1.49	0.52
AR 2773	68.71	4.75	0.92	0.03	7.14	0.08	0.00	0.42	0.50	0.98	32.51	4.90	16.93	1.32	13.99	0.33	1.02
AR 2775	77.16	4.89	1.45	0.03	6.47	0.05	0.00	0.61	0.66	0.90	62.70	2.27	28.21	1.48	0.46	1.41	0.28
AR 2776	76.17	4.83	1.46	0.34	7.57	0.37	0.00	0.57	0.94	0.16	50.35	9.85	29.73	1.71	2.52	1.88	0.67
AR 2778	83.44	2.11	0.92	0.03	10.76	0.06	0.00	0.57	0.63	0.68	51.24	4.78	32.06	2.09	1.77	2.00	0.84
AR 2779	67.02	4.33	1.46	0.00	11.17	0.27	0.05	1.66	1.98	0.20	49.77	20.28	23.35	1.14	0.52	1.21	0.18
AR 2780	70.87	5.05	1.58	0.00	8.23	0.83	0.04	2.71	3.58	0.11	33.71	46.35	14.40	0.73	0.53	1.43	0.17
AR 2781	73.85	5.23	1.38	0.00	8.75	1.68	0.26	1.43	3.37	0.36	38.11	26.25	19.27	0.88	6.07	1.37	1.16
AR 2782	67.61	4.82	1.39	0.00	0.00	3.42	0.91	1.49	5.82	0.26	29.12	45.87	14.67	0.51	2.82	1.05	0.54

CaO	MgO	SrO	BaO	MnO	Vol.Matter	BTU	50 g
2.59	1.00	0.75	0.92	0.00	2.02	12.236	Kohle/Coal "Ultimates" Informationen über Aschetemperatur im Zertifikat Information about ash temperature in certificate
2.74	0.80	0.12	0.18	0.18	1.76	12.211	
21.92	4.53	0.30	0.53	0.06	45.15	11.738	
0.96	0.38	0.30	0.06	0.00	37.14	13.513	
2.13	0.73	0.16	0.11	0.00	35.62	13.413	
2.17	1.04	0.19	0.25	0.00	6.31	12.905	
0.73	0.67	0.03	0.38	0.11	34.41	11.693	
0.54	0.53	0.01	0.00	0.29	39.05	12.748	
5.08	1.15	0.16	0.14	0.00	37.92	13.522	
4.50	0.54	0.01	0.09	0.02	39.06	12.236	

SUS	ppm B	ppm Ca	ppm Cu	ppm Fe	ppm Mg	ppm Si	ppm Ti	ppm V	Ø 40x5 mm - Pellet
BR RW1711	<0.01	<0.2	<0.08	0.2	0.01	0.5	<0.5	<0.2	Reingraphit; Pure Graphite

RM	ppm Al	ppm As	ppm Ca	ppm Co	ppm Cr	ppm Cu	ppm Fe	ppm Mg	ppm Mn	ppm Mo	ppm Ni	ppm Pb	ppm Sb	ppm Si	ppm Sr	ppm Ti	ppm V
CB KD1	12	(0.09)	74	(0.19)	3.2	0.97	428	(6.7)	56	(0.95)	6.0	(1.3)	(0.03)	(390)	(1.8)	(53)	(6.6)
CB KD2	35	(0.05)	98	(0.10)	1.3	1.0	180	(21)	23	(0.22)	3.9	(1.6)	(0.05)	(145)	(2.8)	(46)	(3.6)
CB KD3	15	(0.04)	62	(0.07)	0.69	0.81	111	(22)	13	(0.44)	4.2	(0.90)	(0.02)	(147)	(1.9)	(38)	(3.8)
CB LD4	33	(0.06)	128	(0.11)	3.4	1.3	149	(7.5)	3.5	(0.62)	5.5	(1.1)	(0.03)	(404)	(2.7)	(49)	(4.3)
CB PD5	7.7	(0.03)	18	(0.03)	0.74	0.53	36	(3.1)	0.34	(0.11)	1.2	(<1)	(0.02)	(53)	(0.6)	(20)	(2.0)
CB KD6	8.4	(0.04)	79	(0.03)	0.44	0.62	37	-	4.3	(0.39)	2.0	(1.2)	(0.03)	(66)	(1.9)	(51)	(4.9)
CB PD7	5.5	(0.03)	22	(0.03)	2.2	0.51	59	-	1.1	(0.25)	1.1	(1.0)	(0.02)	(50)	(1.3)	(29)	(2.0)

ppm Zn	ppm Zr	50 g
(2.3)	(7.5)	Synth. Graphitpulver, Spuren
(4.4)	(3.7)	Synth. Graphite Powder, traces
(1.2)	(4.5)	
(2.9)	(8.6)	
(0.8)	(2.4)	
(1.7)	(6.0)	
(0.9)	(4.5)	

RM	S	ppm V	ppm Ni	ppm Si	ppm Fe	ppm Al	ppm Na	ppm Ca	ppm Pb	50 g
RD C308	2.12	95	85	90	510	250	250	110	22	Anodenkohle
RD C309	1.06	35	100	50	300	100	120	60	10	Anode Coal
RD C310	0.45	25	30	220	500	110	210	220	6	
RD C311	1.21	40	100	30	190	95	160	80	7	
RD C312	0.95	25	440	330	2390	410	310	180	5	
RD C313	1.05	35	75	640	1270	3420	4200	550	23	
RD C323	2.43	320	163	-	280	-	-	34	-	
RD C324	-	-	-	-	-	-	-	40	-	
RD C344	-	-	-	-	-	-	-	-	197	
RD C345	-	-	-	-	-	-	-	-	136	
RD C351	2.40	312	160	-	-	13400	-	36	-	
RD C352	1.80	-	-	-	440	-	-	50	-	
RD C353	2.14	105	104	213	453	222	421	150	27	
RD C354	1.44	87	214	29	271	94	437	298	20	

RM	S	Fe	Zn	Mn	Ni	Si	Ca	Na	V	Pb	Ti	P	C	H	Ash	Coking Value
CA Pitch-02	0.53	0.032	0.0085	0.0004	0.0004	0.041	0.015	0.042	0.0002	0.0097	0.0018	-	-	-	0.37	61.9
CA Pitch-03	0.76	0.042	0.0100	0.0005	0.0004	0.066	0.017	0.021	0.0001	0.0120	0.0015	0.0027	-	-	0.42	-
CA Pitch-04	1.05	0.015	0.0470	0.0009	0.0003	0.075	0.008	0.011	0.0001	0.0360	0.0003	0.0066	-	-	0.40	-
CA Pitch-05	0.54	0.059	0.0155	0.0004	0.0004	0.154	0.007	0.002	0.0002	0.0267	0.0025	0.0030	-	-	0.62	-
CA Pitch-06	0.50	0.027	0.0074	0.0003	0.0003	0.082	0.004	0.013	0.0001	0.0081	0.0015	0.0003	-	-	0.35	-
CA Pitch-07	0.57	0.032	0.0740	0.0010	0.0004	0.008	0.008	0.011	0.00003	0.0505	0.0003	0.0018	-	-	0.32	-
CA Pitch-08	0.55	-	-	-	-	-	-	-	-	-	-	-	93.5	4.1	-	-

Quinoline Insoluble	Toluene Insoluble	Softening Point (°C)	100 g
14.2	28	112	Hartpech
-	-	102	Hard Pitch
-	-	103	
-	-	106	
-	-	106	
-	-	111	
-	-	-	

RM	S	ppm Al	ppm Ca	ppm Cl	ppm Cr	ppm Fe	ppm Mn	ppm Na	ppm Ni	ppm P	ppm Pb	ppm Si	ppm Ti	ppm V	ppm Zn	Ash	60 g
DT Pitch-A	0.49	245	91	118	0.87	200	2.7	257	2.5	10	91	358	18	1.2	88	0.27	Pech
DT Pitch-B	0.52	228	41	122	1.1	280	3.3	150	-	3	80	408	16	0.89	90	0.22	Pitch
DT Pitch-C	4.46	9	3	18	0.4	14	0.21	10	76	326	1	20	19	170	1	0.19	
DT Pitch-D	0.58	1.2	1.4	1.3	2.2	4	0.030	9	-	1	0.6	10	0.32	0.06	1	0.04	

RM	S	ppm Na	ppm Si	ppm P	ppm Cl	ppm Ca	ppm V	ppm Fe	ppm Zn	ppm Pb	ppm Ti	ppm Mn	ppm Cr	ppm Ni	ppm Al	Ash	100 g
DT Pitch-03	0.76	210	660	27	250	170	1	420	100	120	15	5	2	4	220	0.42	Pech
DT Pitch-04	1.05	110	750	66	150	76	1	150	470	360	3	9	1.5	3.4	37	0.40	Pitch
DT Pitch-05	0.54	20	1540	30	190	66	2	590	155	267	25	3.6	2.8	3.6	367	0.62	
DT Pitch-06	0.50	130	820	3	93	42	1	275	74	81	15	3.1	2.1	2.6	230	0.35	
DT Pitch-07	0.57	114	82	18	230	82	0.3	322	740	505	3.3	10.2	1.5	3.6	46	0.32	

CRM S 50 g

3 2775 0.5816 Hüttenkoks
 3 2776 0.825 Foundry Coke

CRM	S	ppm Al	ppm Ca	ppm Fe	ppm Ni	ppm V	Ash	Volat. Matter	Calorific Value (Mj/kg)	50 g
3 2718	4.7032	16.5	174	290	139.1	302	0.18	10.6	35.76	Petrolkoks, grün; Green Petroleum Coke
3 2719	0.8877	58.9	57.7	201.6	204	58.6	0.12	0.54	32.90	

CRM S Ash BTU 75 g

T PC1 6.96 6.63 12940 Petrolkoks
 T PC2 6.04 2.57 14737 Petroleum Coke
 T PC3 2.73 1.13 15400

CRM S P K₂O Na₂O Ash 50 g

VS P18 1.01 0.038 0.152 0.12 12.89 Koks; Coke

CRM S Ash P Volatile Cal./J/g 75 g

CI FC28013 0.58 13.05 0034 (1.00) 28470 Koks
 CI FC59001 0.47 7.22 - 1.39 - Coke
 CI FC59002 0.63 12.67 - 1.5 -
 CI FC28014 1.55 - - - -
 CI FC28015 1.69 - - - -
 CI FC28016 1.70 - - - -

RM S 50 g

AR 719 0.71 Koks, nur S
 AR 720 0.88 Coke, S only
 AR 723 0.45

RM C S Ash Volat. Matter BTU 50 g

AR 732 91.77 0.47 7.52 0.71 12.216 Koks
 AR 733 88.72 0.72 9.26 2.02 12.573 Coke
 AR 734 87.82 0.89 11.36 0.82 12.236

RM S 50 g

AR 2712 0.45 Petrolkoks
 AR 2714 0.90 Petroleum Coke
 AR 2715 1.63
 AR 2716 2.01
 AR 2717 2.35
 AR 2719 1.85
 AR 2720 5.25
 AR 2721 6.25
 AR 2722 2.85
 AR 2723 5.16

RM	C	S	H	N	Ni	Fe	V	Ca	Si	Ash	Volat. Matter	50 g
AR 742B	93.81	0.89	1.37	3.76	0.0068	0.0129	0.0022	0.0037	0.0081	0.09	9.67	Petrolkoks
AR 744	96.28	1.85	0.20	1.17	0.0145	0.1865	0.0187	0.0169	0.0255	0.50	0.45	Petroleum Coke
AR 747	89.02	4.54	3.83	1.32	0.0192	0.0101	0.0473	0.0045	0.0147	0.20	13.13	
AR 748	-	2.75	-	-	0.0122	0.0332	0.0310	0.0120	0.0315	0.33	0.51	
AR 756	87.63	6.23	1.19	1.78	0.0260	0.0623	0.1214	0.0040	0.0856	0.81	5.97	

RM	Fe	Ni	Si	Ca	V	S	100 g
CA CAB (CPC)	0.025	0.011	0.019	0.11	0.021	2.49	Petrolkoks, calciniert
CA BR (CPC)	-	-	0.011	-	(0.027)	2.06	Calcined Petroleumcoke
CA BS (CPC)	0.038	0.018	0.033	0.014	0.024	2.10	

RM	Fe	Mn	Ni	Si	Zn	Ca	V	S	Ti	Na	Ash	100 g
CA DF (GPC)	0.028	0.0003	0.050	0.022	0.006	0.028	0.040	1.58	-	-	-	Petrolkoks, ungebrannt
CA DG (GPC)	0.023	0.0002	0.038	0.014	0.0011	0.013	0.035	1.59	0.0007	-	-	Green Petroleum Coke
CA DH (GPC)	0.019	0.0001	0.021	0.006	0.0008	0.004	0.034	2.40	0.0004	-	-	
CA DI (GPC)	0.017	0.0001	0.004	0.013	0.0008	0.007	0.004	1.02	-	-	-	
CA DJ (GPC)	0.027	0.0005	0.003	0.12	0.0004	0.015	0.003	0.64	-	-	-	
CA DL (GPC)	0.10	0.0003	0.012	0.018	0.0003	0.011	0.006	0.78	-	0.021	0.20	Volatile Matters: 10.4%

RM	Fe	Ni	Si	Ca	V	S	H	Ash	100 g
C AS (MC)	0.45	-	2.33	-	-	0.84	-	-	Hüttenkoks
C AZ (MC)	0.77	<0.001	2.43	0.090	0.005	1.05	-	-	Metallurgical Coke
C BY (MC)	0.60	0.009	2.38	0.022	0.004	0.96	-	10.03	
C CA (MC)	0.40	0.016	2.64	0.017	<0.001	0.65	0.50	10.10	
C CB (MC)	0.38	0.011	1.62	0.021	0.003	0.54	-	7.48	

RM	C	H	N	S	Cl	P	Al	Ca	Fe	Mg	Mn	K	Si	Na	ppm As	ppm Cd	ppm Cr	ppm Cu
UU 94-1	(55.6)	5.8	2.09	0.29	0.028	0.045	0.090	1.02	0.39	0.077	0.0036	(0.012)	0.33	(0.008)	(2.4)	0.062	1.3	2.0
UU 94-2	(55.3)	5.7	1.10	0.217	0.061	0.024	0.09	0.12	0.13	0.11	0.0008	(0.017)	0.28	(0.019)	0.6	0.16	1.1	1.7
UU 94-3	(49.0)	(6.05)	0.37	0.026	(0.010)	0.05	(0.002)	0.44	0.0026	0.034	0.006	0.20	(0.012)	0.0029	0.1	1.8	0.24	4.0
UU 94-4	(46)	5.7	1.04	0.132	0.058	0.109	0.18	0.21	0.108	0.088	0.016	0.38	2.1	(0.03)	0.4	0.09	3.4	6.8
UU 94-5	(51)	(6.04)	(0.17)	0.018	(0.010)	0.021	0.026	0.35	0.007	0.030	0.021	0.09	0.023	0.004	0.8	0.27	0.8	2.2
	ppm Pb	ppm Hg	ppm Ti	ppm V	ppm Zn	Ash	Vol. Matter	Calor. Value (MJ/kg) 50 g										
	2.4	0.027	40	1.62	9	4.07	69.8	22.3	Heiztorf; Energy Peat									
	10.1	0.029	(70)	1.12	9	1.57	69.7	21.8	Heiztorf; Energy Peat									
	0.14	0.00	0.9	-	75	1.56	81.8	19.5	Brennholz; Energy Forest									
	2.1	0.010	130	2.9	42	6.87	77.2	18.5	Heizgras; Energy Grass									
	0.68	0.013	2.4	-	38	1.22	79.2	20.6	Holzbrennstoff; Wood Fuel									

DE HGI/ASTM

Hardgrove Mahlbarkeitsindex - Kohlestandardproben für die Überprüfung von Mahlwerkzeugen nach ASTM-Methode D409-93a.
1 Satz besteht aus 4 Proben in einem HGI-Indexbereich von 40, 60, 80 und 100 - 4 Dosen, Gesamtgewicht 16 kg brutto.
Dieses Material wird vom U.S. Department of Energy (DOE/PETC) herausgegeben.

Hardgrove Grindability Index Standards on Coal for testing of grinding equipment as per ASTM method D409-93a.
1 set consists of 4 samples with HGI-index range of 40, 60, 80 and 100 - 4 one gallon tight metal containers, total gross weight is 16 kg.
This material is issued by the U.S. Department of Energy (DOE/PETC).

AS 011-9 HGI

Hardgrove Mahlbarkeitsindex - Kohlestandardproben für die Überprüfung von Mahlwerkzeugen nach ASTM-Methode D409-93a.
1 Satz besteht aus 4 Proben in einem HGI-Indexbereich von 32, 49, 65 und 95 - Das Probengewicht des Satzes/4 Proben beträgt 8 kg.
Dieses Material wird vom australischen Komitee für Standards von Kohle und Koks herausgegeben.

Hardgrove Grindability Index Standards on Coal for testing of grinding equipment as per ASTM method D409-93a.
1 set consists of 4 samples with HGI-index range of 32, 49, 65 and 95 - Total net weight of the set/4 samples is 8 kg.
This material is issued by the Standards Australia Committee on Coal and Coke.