

**CARBON MATERIALS FOR THE
METALLURGICAL INDUSTRY
PHYSICAL AND CHEMICAL PROPERTIES**

Calibration Standards for Impurities by XRF Spectrometry

	S	V	Ni	Si	Fe	Na	Al	F	Ca	K	Mg	Ba	Cr	Cu	Mn	P	Pb	Sr	Ti	Zn
	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
A501	0.89	32	82	40	147	88	115	12	31	5	7	1	3	1	2	1	12	1	2	23
CI 95%	0.04	2	2	3	6	7	3	6	1	1	1	0	0	0	0	1	1	0	0	1
A502	1.27	98	114	123	155	537	228	64	110	10	19	5	10	2	2	5	3	2	7	10
CI 95%	0.04	3	4	5	5	25	7	4	3	0	1	0	1	1	1	1	1	0	1	1
A503	1.29	117	128	63	330	395	156	14	77	9	16	6	6	2	4	13	11	2	4	33
CI 95%	0.04	4	4	4	6	14	2	4	3	1	1	0	1	0	0	2	1	1	0	1
A504	1.39	164	65	70	231	59	32	17	33	6	49	4	6	2	5	24	16	1	4	23
CI 95%	0.04	3	5	4	1	4	3	13	2	1	3	1	1	1	1	0	1	0	1	1
A505	1.68	157	138	61	1454	2401	1524	4953	283	35	59	11	9	4	5	21	15	6	5	30
CI 95%	0.09	8	4	2	59	145	36	89	7	2	1	1	1	1	1	2	1	0	1	1
A506	1.75	177	188	109	252	81	69	5	95	10	15	12	4	2	4	7	30	3	4	41
CI 95%	0.08	3	5	5	8	5	1	2	3	1	1	1	0	1	0	2	0	1	1	1
A507	2.41	324	161	132	524	637	239	75	156	15	49	17	10	6	6	8	19	5	10	33
CI 95%	0.07	9	5	7	16	22	6	5	4	1	1	1	1	0	1	1	0	1	1	1
A508	2.47	156	76	45	99	72	101	6	25	5	4	1	4	1	1	4	5	1	4	10
CI 95%	0.06	6	4	2	4	4	3	8	1	1	0	0	1	0	1	2	1	0	0	1
A509	2.90	511	277	174	219	60	153	3	49	13	15	3	12	3	4	7	24	1	28	26
CI 95%	0.20	8	8	1	10	5	3	1	1	1	1	1	1	1	0	3	1	0	2	1
A510	3.34	300	124	28	266	649	150	29	107	17	24	7	7	3	4	6	28	2	4	41
CI 95%	0.15	12	5	1	13	28	3	6	4	2	1	0	0	1	1	2	1	1	0	1
A511	3.46	698	197	63	684	1302	810	2396	387	19	33	6	10	3	9	6	26	4	5	39
CI 95%	0.11	17	7	4	34	78	14	125	9	2	2	1	1	1	1	1	1	1	1	2
A512	4.58	683	283	70	339	542	232	38	100	16	25	3	6	2	4	4	27	1	15	43
CI 95%	0.06	10	6	4	9	19	4	14	1	1	1	1	1	1	1	1	1	0	0	2
A513	4.69	576	190	24	221	789	199	17	208	13	19	6	8	2	6	5	8	2	5	17
CI 95%	0.14	6	8	3	4	27	2	1	6	1	1	0	1	1	1	4	1	0	0	1
A514	4.60	425	136	180	229	105	121	0	194	11	70	4	9	2	3	11	8	3	6	22
CI 95%	0.37	4	5	9	7	5	4	-	7	1	3	0	1	1	0	4	0	1	1	2

CI 95%: Confidence interval calculated as $\frac{2\sigma}{\sqrt{n}}$ where 2σ is the standard deviation and n the number of laboratories