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IRON CHIPS AND POWDER

= class, where 1 = CRM and 2 = RM analysis listed in mass %

#	Number	C	Mn	P	S	Si	Cu	Ni	Cr	N	Al	Co	Mo	Nb	O	Sn	Ti	V	W
1	NCS HC15014	0.0208	0.246	0.0121	0.007	0.0922	0.020	0.0202	0.013	.	0.046	.	.	.	.	0.0012	.	.	.
1	SRM 2165	(0.0063)	0.144	0.0052	0.003643	(0.0040)	0.0013	0.155	0.050	.	(0.0060)	0.0012	0.0055	0.0004	.	0.002	0.0051	0.0040	.
1	IARM 27G	(0.003)	(0.003)	(0.003)	0.0011	(0.07)	0.040	0.045	0.043	(0.0003)	(0.0013)	(0.0009)	(0.002)	(0.002)	0.025	(0.001)	<0.005	(0.001)	<0.005
1	NCS HC11011b	0.0023	0.013	0.0014	0.0014	0.0023	0.0045	0.0027	0.0066	0.0045	<(0.0001)	0.0012	0.00030	(0.00004)	.	0.00015	<(0.0001)	<(0.0001)	(0.00004)
1	VS SI/4	0.0023	0.0009	0.0010	0.0021	0.0160	0.0048	0.0210	0.0025	0.025	0.041	0.0007	0.00054	.	.	0.00021	0.00019	.	.
2	TL 1669C	0.00226	0.0955	0.0137	0.0100	0.0093	0.0217	0.0160	0.0246	0.0024	0.03553	0.0019	0.0011	0.00046	.	0.0071	0.0504	(0.0006)	.
1	NCS HC15002g	0.0013	0.00018	(0.0001)	0.0010	0.0014	0.00024	0.0052	0.00019	.	0.00065	(0.0001)	0.0033	.	Cd:(0.0001)	(0.0001)	(0.0001)	(0.0001)	.
1	Y TSC101	0.0013	0.00018	(0.0001)	0.0010	0.0014	0.00024	0.0052	0.00019	.	0.00065	(0.0001)	0.0033	.	Cd:(0.0001)	(0.0001)	(0.0001)	(0.0001)	.
1	ECRM 088-2	0.0006	0.0809	0.0048	0.0070	0.0052	0.0163	0.0275	0.0244	.	0.0061	.	.	.	.	.	.	0.00029	.
1	JSS 003-8	0.00040	0.00109	0.00040	0.00016	0.00064	0.00039	0.00007	0.00012	0.00068	0.00667	0.000046	0.000020	0.000048	.	0.000020	<0.00006	(0.000006)	(0.00001)
1	JSS 003-7	0.00034	0.00054	0.00038	0.00016	0.00052	0.00032	0.00007	0.00013	0.00061	0.00682	0.000047	0.000017	<0.0002	.	0.000017	<0.00006	trace	trace
1	SRM 937	99.90% Fe	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	ECRM 097-2C	.	0.012	0.00538	0.00181	0.00285	0.00793	0.0241	0.0213	0.00294	.	0.0139	0.00370	.	.	0.00043	.	0.00011	0.00386

analysis listed in mg/kg except

Number	Ag	As	B	Bi	Ca	Mg	Pb	Sb	Se	Ta	Te	Zn	Zr	Units
NCS HC15014	.	2	.	.	.	0.85	5	.	.	.	.	.	.	100 g chips
SRM 2165	2	10	9.44	<(1)	.	<(1)	3	10	.	.	.	.	.	150 g chips
IARM 27G	.	(16)	(6)	<70	(2)	(20)	<100	.	<200	.	.	<50	(30)	100 g chips
NCS HC11011b	.	26	2.3	<(0.1)	3	(0.2)	2.9	<0.1	<(0.1)	<0.1	1.5	<0.1	.	50 g chips also trace Cd, Ce, Hf, La, and Mg
VS SI/4	.	2.8	.	.	.	1.2	.	.	.	.	2.2	.	.	100 g chips
TL 1669C	.	17	3.8	.	1.7	(1.6)	1.3	4.9	.	.	.	2.7	(2.1)	100 g chips
NCS HC15002g	.	(1)	.	(1)	17	2.2	(1)	(1)	.	.	(1)	.	.	15 g powder Fe > 99.984%
Y TSC101	.	(1)	.	(1)	17	2.2	(1)	(1)	.	.	(1)	.	.	15 g powder Fe > 99.984%
ECRM 088-2	7.2	.	.	.	.	.	.	.	.	100 g chips
JSS 003-8	.	(0.1)	(0.26)	<0.7	<1	<1	0.04	<2	<1	<0.7	<1	(0.2)	<0.5	150 g chips also trace Cd, Ce, and La
JSS 003-7	.	<1	0.18	<0.7	<1	<1	(0.02)	<2	<1	<0.7	<1	(0.2)	<0.5	150 g chips
SRM 937	50 g chips
ECRM 097-2C	.	28.1	1.2	.	.	.	.	1.2	.	1.5	.	1.4	.	100 g chips

There are also purity iron powders in our
Geological catalog, Iron Ore section
<http://brammerstandard.com/pdf/geological.pdf>

CRM IRON CHIPS AND POWDER

analysis listed in mass %

Number	C	Mn	P	S	Si	Cu	Ni	Cr	N	Al	Ins.Al	As	B	Co	Mo	Ti	Units
NCS HC15007	0.091	0.399	0.0246	0.017	0.341	0.201	0.243	0.148	.	0.180	.	.	.	.	.	.	100 g chips
NCS HC15007a	0.080	0.358	0.036	0.031	0.506	0.254	0.203	0.170	0.018	0.432	.	.	.	.	.	.	50 g chips
NCS HC15017	0.061	0.319	0.04	0.005	0.166	0.02	0.02	0.022	0.0146	0.284	.	.	.	.	.	.	50 g chips
BAM 031-3	0.055	0.329	0.014	0.021	0.037	0.020	.	.	0.0050	0.054	.	0.013	.	.	.	.	100 g chips
BAM 031-2	0.0344	0.296	0.053	(0.052)	.	0.083	.	.	0.012	.	.	0.061	.	.	.	.	100 g chips
NCS HC15005a	0.030	0.106	0.0061	0.025	0.182	0.123	0.162	0.147	0.011	0.205	.	.	.	.	.	.	50 g chips
ECRM 083-1	0.028	0.289	0.0077	0.0100	.	0.016	0.014	.	0.00189	.	.	.	.	.	.	.	100 g chips
NCS HC15004	0.0272	0.246	0.0094	0.012	0.0994	0.031	0.0202	0.013	.	0.37	.	.	.	.	.	.	100 g chips
NCS HC15004a	0.027	0.195	0.014	0.0063	0.018	0.089	0.116	0.048	0.016	0.290	.	.	.	.	.	.	50 g chips
NCS HC15016	0.022	0.201	0.0072	0.0027	0.199	0.066	0.066	0.032	0.0123	0.217	.	.	.	.	.	.	50 g chips
NCS HC15003a	0.012	0.034	0.0019	0.020	0.017	0.021	0.030	0.016	0.015	0.060	.	.	.	.	.	.	50 g chips
NCS HC13013	0.0041	0.126	0.0085	0.021	0.018	.	.	.	.	.	.	.	.	.	.	.	150 g powder
IPT 73	0.0034	0.044	0.0034	0.0049	0.0028	0.076	0.033	0.030	0.0076	.	.	.	.	0.004	.	TEMPORARILY UNAVAILABLE	

CRM LOW ALLOY STEEL CHIPS WITH NITROGEN

IPT 96: 120 g JK, JSS, NCS, SRM: 150 g all others: 100 g

Table with 25 columns: Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Als, Co, Mo, N, Nb, Ti, V, W, As, B, O, Pb, Sn, Other. Rows include material grades like BCS 401/2, IMZ C-119, BAM 036-1, ECRM 182-1, JK 3B, ECRM 059-2C, IPT 29A, IMZ C-120, ECRM 079-2, ECRM 055-2C, ECRM 091-1, IARME6150-22, IARM 299A, BAM 030-4, ECRM 080-1, IARM Fe300M22, IARM 30H, IARM 305B, IARM 252D, IARM 252C, IARM 252E, SRM 12h, IARM 252F, SRM 139b, IARM 31G, SRM 100b, JSS 502-7, IARM 31F, IARM 322A, IARM 143F.

Table with 25 columns: Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Als, Co, Mo, N, Nb, Ti, V, W, As, B, O, Pb, Sn, Other. Rows include material grades like IPT 142, BAM 032-2, ECRM 017-1, IARM Fe1-21, IARM 195B, ECRM 197-1C, ECRM 187-2C, JSS 514-8, ECRM 192-1C, JK 21, IMZ C-195, ECRM 194-2C, JSS 517-8, ECRM 194-1C, VS UNL17, ECRM 060-1, VS UNL5/3, IPT 96, BAM 042-1, IMZ C-169, IARM 37C, VS UNL10/3, DSZU CX02a, SRM 368, ECRM 183-1, NCS HC22201, NCS HC22202, ECRM 057-1, BAM 031-3, BAM 031-2, ECRM 083-1, ECRM 064-1C, BCS 117.

* Clearance Sale Item

CRM MILD STEEL CHIPS, chart 2 of 2

JSS: 150 g all others: 100 g

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Als	Mo	Ti	V	W	B	Ca	Co	Nb	Sn	Zr
JSS 150-19	0.497	0.101	0.0389	0.0292	0.207	0.049	4.00	0.310	0.0157	0.0153	0.195		0.0190	.	.	.	.	.	.	.
IARM 170B	0.400	0.821	(0.005)	(0.004)	0.21	(0.005)	0.197	0.009	0.230	.	(0.003)	(0.19)	(0.002)	.	(0.0004)	.	(0.005)	(0.004)	(0.002)	.
IMZ 1.10/2	0.39	0.48	0.020	0.013	0.24	0.076	0.17	1.46	0.82	.	0.20	.	.	.	.	.	.	.	.	.
IARM Fe434022	0.382	0.739	0.0079	0.0273	0.244	0.174	1.75	0.787	0.022	As:0.0055	0.242	0.0010	0.0047	0.011	.	.	0.093	(0.003)	0.0083	.
IMZ 1.9/3	0.38	0.55	0.025	0.016	0.28	0.101	1.62	1.30	.	.	0.16	.	.	.	.	.	.	.	.	.
IMZ 1.11/3	0.35	0.48	0.025	0.020	0.18	0.077	0.12	1.00	.	.	0.19	.	.	.	.	.	.	.	.	.
JSS 152-19	0.295	0.398	0.0202	0.0392	0.412	0.496	2.00	0.507	0.0097	0.0092	0.998	.	0.1016	.	.	.	.	.	.	.
IARM 378A	0.274	1.38	0.018	0.037	0.307	0.299	0.142	0.187	(0.0029)	.	0.031	(0.003)	0.0844	(0.006)	(0.0006)	.	0.013	(0.003)	0.0236	.
IARM 169B	0.232	0.75	(0.004)	(0.004)	(0.32)	(0.005)	(0.010)	0.010	0.36	.	(0.004)	0.23	(0.002)	(0.003)	0.0003	.	(0.003)	(0.004)	(0.002)	.
IMZ 1.85	0.205	1.69	0.026	0.026	0.51	0.29	0.24	0.27	(0.064)	0.064	0.007	.	0.093	.	.	.	.	(0.011)	.	0.026
IMZ 1.19/2	0.20	1.00	0.020	0.017	0.30	0.11	0.096	1.10	.	.	.	0.084	.	.	.	.	.	.	.	.
JSS 153-19	0.198	0.806	0.0098	0.0102	0.305	0.307	1.003	1.010	0.0111	0.0102	0.1289	.	0.200	.	.	.	.	.	.	.
IMZ 1.73/1	0.18	1.24	0.014	0.029	0.34	0.56	0.095	0.15	0.043	0.036	0.056	.	0.073	.	.	.	.	0.088	.	.
IMZ 1.31	0.14	0.81	0.022	(0.025)	0.31	0.33	(0.87)	0.55	.	.	0.50	.	(0.10)	.	0.0013	.	.	.	.	.
IMZ 1.33	0.14	0.69	(0.022)	(0.014)	0.26	0.43	0.88	0.52	.	.	0.51	.	(0.087)	.	0.0057	.	.	.	.	.
IMZ 1.76/1	0.13	1.39	0.022	0.032	0.28	0.058	0.33	0.11	0.042	0.036	0.101	.	.	.	.	.	.	0.068	.	.
IMZ 1.32	0.12	0.80	0.018	0.016	(0.21)	0.37	0.83	0.55	.	.	0.53	.	(0.093)	.	0.0021	.	.	.	.	.
IMZ 1.72/1	0.12	0.56	0.019	0.030	0.55	0.88	0.041	0.45	0.032	0.026	.	.	(0.047)	.	.	.	.	.	.	.
IARM FeF11-21	0.114	0.530	0.0067	0.0141	0.679	0.123	0.069	1.349	0.018	As:0.0048	0.614	0.0015	0.0038	.	0.0004	.	0.0062	.	0.0084	Sb:0.0017
IMZ 1.74/1	0.11	1.95	0.030	0.024	0.20	0.31	0.055	0.25	0.014	(0.009)	.	.	0.094	.	.	.	.	.	.	.
IMZ 1.34	0.11	0.84	0.014	(0.030)	0.31	(0.05)	0.65	0.73	.	.	0.39	.	(0.005)	.	0.0084	.	.	.	.	.
IMZ 1.77/1	0.11	0.37	0.029	0.027	0.18	0.17	0.051	0.32	0.012	(0.008)	.	0.021	0.046	.	.	.	.	.	.	.
IMZ 1.82	0.10	1.11	0.017	0.020	0.27	0.069	0.085	0.21	0.060	.	0.060	.	0.101	.	.	.	.	0.058	.	(0.0015)
IMZ 1.81	0.10	0.28	0.043	0.012	0.28	0.32	0.069	0.58	0.017	.	.	.	.	.	.	.	.	.	.	0.005
JSS 154-18	0.0995	1.212	0.0046	0.00488	0.620	0.201	0.508	2.01	0.0093	0.0086	0.405	.	0.307	.	.	.	.	.	.	.
IARM FeT23-18	0.068	0.82	0.012	0.006	0.18	0.046	0.53	2.47	.	0:0.0044	0.261	(0.004)	0.238	1.60	0.0020	.	0.085	0.052	(0.004)	.
JSS 155-17	0.050	0.205	0.0017	0.0021	0.498	0.407	0.151	3.03	0.0102	0.0095	0.709	.	0.397	.	.	.	.	.	.	.
Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Als	Mo	Ti	V	W	B	Ca	Co	Nb	Sn	Zr

RM LOW ALLOY STEEL CHIPS, chart 1 of 2

analysis listed in mass % except * which is mg/kg Cl2X, DH: typical analysis 50 g chips BS CE: 150 g chips all others: 100 g chips

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Al.sol	Al.insol	Co	Mo	N	Nb	Ti	V
DSZU CX012	1.220	0.237	0.0159	0.0145	0.226	0.071	0.046	0.134	.	.	.	.	.	.	.	.	.
BS CE26 *	0.88	0.18	0.042	0.005	0.24	.	.	.	.	.	.	.	.	.	.	.	.
Cl2X LA50	0.81	0.98	0.057	0.015	0.67	0.09	0.13	0.12	0.19	.	.	.	0.19	.	.	.	0.58
DSZU CX014	0.802	0.212	0.129	0.0174	0.240	(0.16)	0.125	0.230	.	.	.	.	.	.	.	.	.
Cl2X LA40	0.67	0.24	0.044	0.021	0.28	0.29	0.46	0.64	0.19	.	.	.	0.46	.	.	.	0.36
BS CE24 *	0.63	0.84	0.016	0.010	0.27	0.066	0.045	0.016	0.044	.	.	0.010	0.006	.	.	.	.
IARM 34A	0.51	0.78	0.01	0.010	0.22	0.18	0.14	0.99	0.014	.	.	0.009	0.044	0.0076	0.003	0.003	0.17
DH E2208	0.4843	0.8406	0.0144	0.0013	0.2616	0.0202	0.0416	0.9596	0.0271	.	.	0.0037	0.0105	.	0.0005	0.0018	0.1325
BS CSN-2C	0.469	0.60	0.012	0.0305	0.17	0.073	0.071	0.072	.	.	.	.	(0.006)	0.0173	.	.	.
DSZU CX03a	0.206	0.369	0.029	0.033	0.014	0.020	0.0155	0.046	.	.	.	.	.	.	.	.	200 g
DH E2110	0.2035	1.483	0.0186	0.0169	0.500	0.056	0.0179	0.023	.	0.0385	0.002	0.0042	0.00249	.	.	0.0014	0.0019
Cl2X 3550	0.20	0.62	0.028	0.024	0.48	.	.	.	<0.01	.	.	0.05	.	.	0.02	.	0.11

Number	As	B	B.sol	Ca*	O*	Pb	Sb	Sn	W	Zn	Zr
DSZU CX012	.	.	.	.	.	.	.	.	.	.	.
BS CE 26 *	.	.	.	.	.	.	.	.	.	.	.
Cl2X LA50	.	.	.	.	.	.	.	.	.	.	.
DSZU CX014	.	.	.	.	.	.	.	.	.	.	.
Cl2X LA40	.	.	.	.	.	.	.	.	.	.	.
BS CE 24 *	0.0029	.	.	.	.	.	.	.	.	.	.
IARM 34A	(0.006)	(0.0002)	.	.	(14)	.	.	0.009	(0.02)	.	.
DH E2208	0.004	.	.	26	.	.	0.0005	0.0004	.	.	.
BS CSN-2C	.	.	.	33	.	.	.	.	.	.	.
DSZU CX03a	.	.	.	.	.	.	.	.	.	.	.
DH E2110	0.006	0.00006	.	3	.	0.00048	0.0008	0.00178	.	0.00053	.
Cl2X 3550	.	0.001	.	.	.	.	0.08	.	.	.	<0.01

* Clearance Sale Item, no uncertainties

* Clearance Sale Items

RESULFURIZED STEEL

= class, where 1 = CRM and 2 = RM C12X, C14X typical analysis 100 g units

#	Number	S	C	Mn	P	Si	Cu	Ni	Cr	Al	Co	Mo	N	Ti	V	W	As	Pb	Sb	Sn	Zn
1	IMZ C-123	0.38	0.25	1.57	0.030	0.23	0.093	0.057	0.16	0.032	.	.	0.0171	.	.	.	0.033	0.030	0.030	(0.007)	.
1	ECRM 085-1C	0.336	0.067	0.977	0.062	0.008	0.291	.	.	.	0.019	.	.	.	0.0021	.	.	0.0010	0.0073	.	0.0025
1	IARM Fe114422	0.323	0.406	1.34	0.0091	0.171	0.115	0.036	0.061	.	0.0061	0.0112	0.0081	0.0007	0.0023	0.0017	0.0040	.	0.0017	0.0081	.
1	IRSID 022-1	0.300	0.115	0.797	0.057	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	IMZ C-124	0.28	0.10	0.60	0.082	(0.019)	0.060	0.046	0.11	0.005	.	.	0.0059	.	.	.	0.004	(0.002)	0.002	0.009	.
1	IMZ C-122	0.21	0.27	1.33	0.073	0.43	0.25	0.25	0.19	(0.027)	.	.	0.0110	.	.	.	0.007	(0.020)	0.019	0.12	.
1	VS U2/7	0.193	0.136	1.19	0.040	0.046	0.082	0.076	0.158	.	.	.	.	.	.	.	(0.005)	0.166	.	.	.
1	ECRM 058-2C	0.1712	0.424	1.186	0.0098	0.1080	0.261	0.199	0.1211	.	.	0.0589	0.0107	.	.	.	0.0095	.	.	.	.
1	ECRM 051-1	0.126	0.181	1.18	(0.025)	(0.11)	(0.15)	(0.14)	(0.05)	.	.	.	.	.	.	.	.	.	.	.	.
1	C12X 3520	0.125	0.30	0.63	0.067	0.33	0.14	0.33	0.415	0.145	0.050	0.255	.	0.28	0.058	0.22	0.010	.	0.022	0.106	.
1	IARM 29E	0.121	0.193	1.19	0.0157	0.239	0.253	0.082	0.105	0.0032	0.008	0.0269	0.0093	0.0014	0.0255	.	0.0085	(0.001)	(0.003)	0.0109	(0.004)
1	IARM 348A	0.102	0.384	1.46	0.0121	0.270	0.230	0.081	0.123	(0.002)	(0.010)	0.026	(0.010)	0.0015	0.0029	(0.009)	(0.007)	(0.002)	(0.003)	0.0112	<0.003
1	IMZ C-121	0.097	0.39	1.18	0.057	(0.056)	0.032	0.029	0.036	0.016	.	.	0.0125	.	.	.	0.002	0.011	0.017	0.059	.
1	IARM 307A	0.096	0.163	1.44	0.0113	0.281	0.190	0.197	0.104	0.032	(0.010)	0.045	0.0108	0.0015	(0.0028)	(0.005)	0.008	(0.002)	<0.004	0.0090	<0.002
1	IARM 307B	(0.094)	0.162	1.45	(0.012)	(0.30)	0.191	0.195	0.105	0.034	0.0101	0.045	(0.011)	(0.003)	(0.003)	.	.	.	.	0.010	.
1	IMZ C-125	(0.057)	0.029	0.95	(0.018)	0.15	0.044	0.023	0.18	(0.007)	.	.	.	.	.	.	0.065	.	0.014	0.002	.

SILICON STEEL CHIPS WITH NITROGEN

= class, where 1 = CRM and 2 = RM 100 g units

#	Number	Si	C	Mn	P	S	Cu	Ni	Cr	Al	Als	As	Co	Mo	N	Nb	Sn	Ti	V	W
1	ECRM 191-2C	3.267	0.0043	0.1334	0.0087	0.0029	0.0165	0.0224	0.0314	0.985	.	0.0018	.	0.0020	0.00105	.	0.0050	0.0024	.	.
1	ECRM 191-3C	3.226	0.0027	0.153	0.0097	0.0005	0.0097	0.0124	0.0242	0.81	.	0.0014	.	0.00127	0.00105	.	0.0013	0.0020	0.00043	.
1	NCS HC14213	3.18	0.076	0.081	0.0090	0.023	0.066	.	.	.	0.031	.	.	.	0.0081	.	.	.	0.138	.
1	VS S9/4 **	3.12	0.040	0.066	0.0063	0.0034	0.139	0.097	0.044	0.0106	0.0074	0.0061	0.0101	0.0050	0.0130	.	0.0040	0.0057	0.0009	.
1	IMZ 1.22/1	2.02	0.090	0.24	0.019	0.026	0.071	0.039	0.045	0.014	0.011	0.020	.	.	0.0039	.	0.0076	(0.004)	.	.
1	ECRM 196-2C	1.808	0.0060	0.364	0.00369	0.00065	0.0057	0.0401	0.0282	0.2167	.	0.00033	0.0138	0.0142	0.00178	.	0.00047	0.00253	0.00368	.
1	IARM 340A	1.63	0.414	0.755	0.011	0.001	0.103	1.80	0.84	0.062	.	(0.004)	0.006	0.39	0.0020	0.015	0.005	0.0098	0.064	(0.005)
1	IMZ 1.8/4	1.31	0.35	0.99	0.020	0.018	0.11	0.16	1.18	.	.	.	.	.	.	.	.	.	.	.
1	IMZ 1.21/1	1.29	0.058	0.16	0.013	0.024	0.068	0.056	0.037	0.005	0.003	0.019	.	.	0.0030	.	0.0067	(0.005)	.	.
1	BCS 404/2	1.121	0.696	0.532	0.0479	0.0228	0.427	0.393	0.774	0.017	.	.	.	0.307	0.0089	.	.	.	0.107	.
1	BCS 113	0.931	0.837	1.207	0.0595	0.0294	0.179	0.0784	1.248	0.0151	.	0.0020	0.0415	0.056	0.0109	0.0487	0.0067	0.0390	0.201	0.012

Number	B	Ca	Mg	O	Pb	Sb	Zn	Zr
ECRM 191-2C	.	.	.	.	.	.	.	.
ECRM 191-3C	0.00024	.	0.0036	.	.	.	.	.
NCS HC14213	.	.	.	.	.	.	.	.
VS S9/4	.	.	0.0007	.	0.0029	0.0009	0.0006	.
IMZ 1.22/1	.	.	.	.	.	0.0028	.	.
ECRM 196-2C	0.00014	0.00071	0.00075	.	.	.	0.00019	.
IARM 340A	0.0004	.	.	(0.0010)	.	0.0021	.	.
IMZ 1.8/4	.	.	.	.	.	.	.	.
IMZ 1.21/1	.	.	.	.	.	0.0025	.	.
BCS 404/2	.	.	.	.	.	.	.	.
BCS 113	0.0066	.	.	.	.	.	0.0029	.

SILICON STEEL CHIPS

C12X: typical analysis 50 g BS CE: 150 g all others: 100 g

Number	Si	C	Mn	P	S	Cu	Ni	Cr	Al	Als	Co	Mo	Ti	V	W	As	Bt	Bs	Sn
CRM																			
VS S57/1	3.54	0.256	.	0.0051	0.0039	.	0.758	.	.	.	.	.	.	.	.	.	2.98	.	.
ECRM 151-1 *	3.49	0.028	0.085	0.015	(0.025)	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CMSI 1232	3.36	0.057	0.225	0.0124	0.020	0.314	0.316	0.259	0.166	.	.	0.0036	.	.	.	.	.	.	.
NCS HC20210	3.36	0.057	0.225	0.012	0.020	0.314	0.316	0.259	0.1679	0.166	.	0.0036	.	.	.	.	.	.	.
CMSI 1432	2.91	0.400	0.437	0.0064	0.0029	0.64	0.064	0.159	.	0.113	.	0.012	.	.	1.18	.	.	.	.
SRM 125b	2.889	0.0261	0.2751	0.0276	0.0095	0.0707	0.0375	0.0198	0.329	.	(0.007)	0.0087	(0.004)	(0.0005)	.	(0.003)	.	.	0.0034
CMSI 1431	2.15	0.051	0.600	0.0149	0.0174	0.195	0.276	0.362	.	0.065	.	0.160	.	0.043	0.77	.	.	.	.
IPT 108	1.96	0.598	0.861	0.028	0.020	0.121	0.052	0.133	.	0.019	0.006	0.017	0.004	.	.	.	.	.	.
CMSI 1435	1.74	0.666	0.725	0.0144	0.0190	0.147	0.081	0.071	.	0.132	.	0.061	.	0.129	0.40	.	.	0.0013	.
ECRM 186-1C	1.72	0.610	0.870	0.022	0.035	0.281	0.190	0.218	0.014	.	.	0.048	.	.	.	.	.	.	.
BCS 405/1	1.71	0.032	1.28	0.018	0.069	0.013	0.22	0.15	.	.	.	0.002	.	0.28	.	.	.	.	.
CMSI 1433	1.69	0.599	1.14	0.0209	0.0291	0.095	0.124	1.13	.	0.018	.	0.071	.	0.081	0.028	.	.	.	.
VS S15/5	1.69	0.558	0.701	0.0140	0.0185	0.205	0.135	0.199	.	.	.	.	.	.	.	(0.005)	.	.	.
IARM 342A	1.63	0.257	1.37	0.006	0.0051	0.110	1.76	0.38	0.019	N:0.0102	0.008	0.42	0.0028	0.023	(0.005)	(0.006)	O:0.0006	B:0.0004	0.021
BCS 409/1	1.46	0.082	0.44	0.025	0.021	0.048	3.06	0.94	.	.	0.014	0.65	.	0.09	.	.	.	.	.
Number	Si	C	Mn	P	S	Cu	Ni	Cr	Al	Als	Co	Mo	Ti	V	W	As	Bt	Bs	Sn
CMSI 1108	1.42	1.086	0.308	0.013	0.004	0.036	0.021	0.045	.	0.11	.	0.89	0.30	0.50	.	.	.	0.016	.
IMZ 1.8/4	1.31	0.35	0.99	0.020	0.018	0.11	0.16	1.18	.	.	.	.	.	.	.	.	.	.	.
VS S22/4	1.29	0.348	0.606	0.0090	0.0060	0.167	0.850	2.83	.	.	.	0.426	.	0.189	0.8	(0.005)	.	.	.
VS S58	1.27	0.348	1.25	0.0076	0.0077	0.100	0.086	0.123	.	.	.	.	.	.	.	.	.	.	.
DSZU C58	1.27	0.348	1.25	0.0076	0.0077	0.100	0.086	0.123	.	.	.	.	.	.	.	.	.	.	250 g
BCS 409/2	1.18	0.086	0.559	0.0141	0.0179	0.205	3.02	1.318	0.094	.	.	0.599	.	0.008	.	.	.	.	.
CMSI 1434	1.10	0.706	0.875	0.0256	0.0374	0.303	0.393	0.760	.	0.158	.	0.273	.	0.168	0.176	.	.	0.0012	.
CMSI 1189	1.09	0.283	0.438	0.022	0.023	0.247	0.224	0.300	0.132	0.128	.	.	0.171	0.144	.	.	0.0045	0.0041	last
BCS 409 *	1.07	0.11	0.48	0.025	0.015	0.23	3.14	1.22	.	.	.	0.77	.	0.028	.	.	.	.	.
NCS HC28304	1.06	0.407	0.315	0.015	0.013	0.017	0.037	5.08	0.0096	0.0056	.	1.20	.	.	.	.	.	.	.
BCS 404	1.04	0.67	0.52	0.050	0.018	0.31	0.46	0.68	.	.	.	0.33	.	0.100	.	.	.	.	last
NCS HC20212	0.998	0.162	0.346	0.036	0.030	0.213	0.103	0.471	0.2090	0.208	.	0.0048	.	.	.	.	.	.	.
BAM 128-1	0.949	0.085	0.839	0.007	0.007	0.055	0.046	0.108	0.286	.	.	.	0.890	(0.008)	.	.	.	.	.
BCS 405/2	0.947	0.044	0.903	0.0095	0.058	0.022	0.102	0.206	0.330	.	.	0.025	.	0.411	.	.	.	.	.
RM																			
C12X LA90	1.07	0.47	0.58	0.074	0.065	0.51	2.04	3.10	0.05	.	0.30	1.10	.	0.39	.	.	.	.	0.007
C12X LA20	0.98	0.24	0.55	0.026	0.042	0.44	0.73	0.81	0.03	.	.	0.10	.	0.09	.	.	.	.	.
Number	Si	C	Mn	P	S	Cu	Ni	Cr	Al	Als	Co	Mo	Ti	V	W	As	Bt	Bs	Sn

TOOL STEEL CHIPS

= Class, where 1 = CRM and 2 = RM C14X: typical analysis 50g IPT 50: 120g NCS HC174xx, HC23503: 100g other NCS, SRM: 150g others: 100g

Table with columns: # Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Als, Co, Mo, Nb, Ti, V, W, Sn. Rows list various tool steel chips like IARM Fe15V-18, CMSI 1406, IMZ 1.25/3, IPT 67, CMSI 1405, VS S26/5, NCS HC17405, IPT 50, VS S24/5, ECRM 254-1, SRM 132b, CMSI 1401, BCS 484, NCS HC28402, C14X HS30, ECRM 251-1, IMZ 1.14/4, NCS HC21401, SRM 134a, C14X HS10, NCS HC17406, VS S27/4, CMSI 1404, NCS HC20505, NCS HC17407, VS S25/4, BCS 482, BCS 481, BCS 483, NCS HC17408, IPT 145, IPT 117, VS S28/5, CMSI 1182, NCS HC17409, VS S60, IARM 255B, IPT 114, CMSI 1402, IRSID 112-1, IMZ 1.13/3, IMZ 1.26/2, CMSI 1254, IMZ 1.43, SRM 133b, VS S23/5, BCS 422, BCS 423, BCS 424.

BRAMMER STANDARD ONLINE CATALOG-IRON CHIPS

STAINLESS STEEL CHIPS AND POWDER WITH NITROGEN

Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Co, Mo, N, Nb, Ti, V, As, B, Ca*, O, Pb*, Sn, W. It lists various stainless steel chip grades and their chemical compositions in two sections.

* ECRM 272-1C also contains Sb: 0.0007, Zn: 0.0032 ** IPT 98 also contains 0.070 soluble Aluminum

STAINLESS STEEL CHIPS AND POWDER

= Class, where 1 = CRM and 2 = RM

C13X: typical analysis

#	Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Co	Mo	Nb	Ti	V	As	B	Ce	Pb	Sn	Units
1	IMZ 1.45	0.34	0.84	0.028	0.012	2.67	0.38	5.23	27.89	.	.	0.59	.	.	.	.	.	.	.	.	100 g
1	VS S30/4	0.293	0.510	0.0117	0.0053	2.51	.	6.39	12.74	.	.	.	0.060	.	.	.	.	.	.	.	100 g
1	BCS 468/1	0.143	1.70	0.014	0.020	1.41	.	8.90	17.96	.	0.018	.	.	.	.	.	.	.	.	.	100 g
1	NCS HC28315	0.110	0.841	0.024	0.0082	0.780	0.089	18.02	23.71	0.0056	0.102	0.115	0.016	(0.003)	0.077	0.0042	.	0.0004	0.0025	.	50 g
1	BCS 462	0.092	0.74	0.010	0.018	0.46	.	12.55	12.35	.	.	.	.	.	.	0.007	.	.	0.0005	.	100 g last of stock
2	C13X 190030	0.09	1.60	0.063	0.029	0.59	0.08	13.1	18.9	.	.	2.50	0.11	.	.	.	.	.	.	.	50 g
2	C13X 180040	0.09	1.53	0.077	0.017	1.30	0.02	11.98	21.84	.	0.16	0.60	0.78	.	.	.	.	.	.	.	50 g
1	BCS 463	0.088	0.77	0.015	0.017	0.51	.	9.65	18.29	.	.	.	.	.	.	.	(0.0004)	.	.	.	100 g
1	ECRM 282-1	0.086	1.64	0.019	0.0042	0.734	0.109	10.86	16.72	.	.	2.19	.	0.488	.	.	.	.	.	.	100 g
1	NM 220A	0.086	1.35	0.031	0.014	0.57	0.13	8.74	19.21	.	0.15	.	.	.	.	.	.	.	.	.	100 g
1	IMZ 1.12/4	0.084	1.47	0.040	0.013	0.30	.	10.14	17.41	.	.	1.96	.	0.52	.	.	.	.	.	.	100 g
1	NM 220	0.084	1.35	(0.030)	0.013	0.56	0.12	8.70	19.26	.	0.16	.	.	.	.	.	.	.	.	.	100 g last
1	DSZU CX06	0.082	1.20	0.026	0.0118	0.64	0.16	10.23	18.40	(0.1)	(0.04)	(0.13)	.	0.56	(0.03)	(0.01)	.	.	.	.	100 g
1	IMZ C-154	0.076	2.18	0.040	0.16	0.89	0.33	9.86	17.71	(0.16)	0.105	2.58	.	1.00	0.073	.	.	.	.	.	100 g
1	VS S62	0.071	0.064	(<0.001)	0.0128	0.032	0.0083	13.00	17.24	(0.02)	.	.	.	0.030	.	.	Ca:0.058	.	O:(0.35)	.	100 g powder
2	C13X 190020	0.07	1.05	0.031	0.053	0.76	0.105	9.18	17.1	.	.	1.99	0.07	.	.	.	.	.	.	.	50 g
1	NCS HC28316	0.067	1.10	0.028	0.021	0.435	0.166	10.39	16.80	0.012	0.063	2.01	0.027	(0.006)	0.048	0.0037	.	.	0.0005	0.0034	50 g
1	IARM Fe309-18	0.066	1.61	0.029	(0.002)	0.30	0.430	12.2	22.42	.	0.248	0.357	0.021	W:0.063	0.073	0.0065	.	.	Sb:0.0018	0.012	100 g
1	IMZ C-152	0.065	1.42	0.010	0.0025	0.52	0.061	9.48	18.04	.	.	0.017	.	.	0.030	.	.	.	.	.	100 g
1	BCS 332	0.063	0.80	0.015	0.020	0.44	(0.10)	12.45	12.80	.	(0.037)	.	.	.	(0.02)	.	.	.	.	.	100 g
1	BCS 333	0.066	0.79	0.016	0.020	0.45	.	9.49	18.7	.	.	.	.	.	.	.	.	.	.	.	100 g
1	VS S43/4	0.058	0.408	0.0153	0.0048	0.717	0.122	10.20	19.69	.	.	5.02	0.78	0.686	.	(0.004)	.	.	.	.	100 g
1	VS S38/6	0.056	1.60	0.0135	0.0030	0.970	0.096	8.47	17.06	.	.	.	.	0.445	.	.	.	.	.	.	100 g
1	IRSID 202-1	0.055	.	.	.	0.68	.	9.8	16.	.	.	2.30	.	0.54	.	.	.	.	.	.	100 g last of stock
1	IMZ 1.40	0.054	1.60	0.011	0.017	0.93	0.098	16.10	17.59	.	.	3.70	.	0.47	.	.	.	.	.	.	100 g
1	NCS HC41317	0.053	1.03	0.032	0.00071	0.571	0.383	9.19	17.17	.	0.132	0.154	0.0095	0.309	0.059	0.0047	.	.	W:0.018	0.013	50 g
1	SRM 339	0.052	0.738	0.129	0.013	0.654	0.199	8.89	17.42	.	0.096	0.248	.	.	0.058	.	.	.	.	Se:0.247	150 g
1	NCS HC28313	0.039	1.07	0.037	0.016	0.425	0.399	8.19	18.31	.	0.208	0.027	.	(0.002)	0.106	0.0035	.	.	(0.0001)	0.0051	50 g
1	VS S39/4	0.037	0.97	0.0092	0.0048	0.526	0.019	9.91	18.04	.	.	.	.	.	.	.	.	.	Se:0.213	.	100 g
1	BCS 462/1	0.0345	0.722	0.0053	0.0041	0.463	0.0112	12.85	11.8	.	.	0.0304	.	.	.	.	.	.	.	.	100 g
1	NCS HC28314	0.021	0.940	0.034	0.0028	0.414	0.043	8.11	18.21	.	0.216	0.025	.	0.006	0.089	0.0025	.	.	(0.0001)	(0.0001)	50 g
1	VS S37/5	0.018	1.43	0.0067	0.0079	0.696	0.133	12.28	17.39	.	0.0069	.	1.03	.	.	.	.	.	.	.	100 g
1	NCS HC28317	0.018	1.17	0.042	0.0057	0.317	0.334	10.34	16.61	.	0.185	2.05	.	(0.002)	0.070	0.0055	.	.	(0.0001)	0.0073	50 g
1	VS S29/4	0.017	0.636	0.0099	0.0026	0.751	0.018	19.02	11.39	0.149	.	.	.	2.88	0.0099	.	Sb:0.00027	.	0.00017	0.0006	100 g Zn: 0.0017
1	NCS HC28320	0.013	1.17	0.033	0.0021	0.464	1.49	24.23	19.67	0.024	0.096	4.47	0.042	(0.002)	0.086	0.0053	.	.	(0.0001)	0.0043	50 g
1	BCS 461/1	0.0103	0.686	0.0053	0.0051	0.374	0.0091	6.124	14.727	.	(0.004)	0.0138	.	.	.	.	.	.	.	.	100 g
1	IARM 99D	(0.006)	(0.013)	(0.004)	0.0011	(0.03)	(0.045)	18.4	(0.12)	0.117	9.24	4.8	(0.011)	0.67	(0.037)	.	0.0026	.	(0.010)	.	100 g
1	JK 25	.	(1.7)	(11.3)	(22.3)	.	.	(0.1)	0.096	.	.	150 g

#	Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Co	Mo	Nb	Ti	V	As	B	Ce	Pb	Sn	Units
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HIGH ALLOY STEEL CHIPS AND POWDER

= Class, where 1 = CRM and 2 = RM

C13X: typical analysis 50 g chips

CMSI, JSS, JK, and SRM 126c: 150 g chips

NILAB: 150 g powder

all others: 100 g chips

#	Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Co	Mo	N	Nb	Ti	V	W	As	B	O	Pb	Sn	Other
1	IMZ 1.39	0.23	1.75	0.022	0.009	1.96	.	35.23	15.57	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	BAM 327-2	0.152	1.289	0.0228	0.0046	2.052	0.060	19.72	24.35	0.070	0.159	0.174	0.059	.	.	0.044	.	.	.	.	.	.	.
1	BCS 464/1	0.086	0.791	0.020	0.028	0.57	.	20.05	25.39	.	0.054	.	.	.	.	.	(0.003)	.	.	.	0.0004	.	.
1	BCS 467/1	0.082	0.788	0.018	0.019	0.52	.	9.21	18.09	.	.	.	.	0.99	.	.	.	0.004	.	.	0.004	.	.
2	C13X 142110	0.08	0.70	0.006	0.016	1.72	0.31	12.4	26.05	.	0.08	0.30	.	0.18	.	.	3.29	.	.	.	.	.	.
1	NCS HC41503	0.071	0.807	0.015	0.0006	0.36	0.038	32.27	20.72	0.299	0.050	0.297	.	.	0.49	.	.	.	.	.	.	.	.
1	IARM 24B	0.053	0.82	0.009	0.0010	0.28	0.052	35.86	0.121	0.002	0.036	0.011	0.0017	<0.01	0.002	<0.005	<0.04	<0.005	(0.001)	0.003	.	0.0018	Se: 0.19
1	BCS 479	0.0529	0.680	0.0029	0.0030	0.553	0.0052	24.87	19.922	(0.013)	(0.002)	(0.003)	0.0057	0.625	0.0306	0.0052	.	(0.002)	<0.0005	.	.	.	.
1	BCS 475	0.050	0.89	0.037	0.008	0.21	1.94	5.66	14.14	0.013	0.22	1.59	.	0.22	.	.	.	.	.	.	.	0.015	.
1	ECRM 289-1C	0.0489	1.016	0.0114	0.0027	0.531	.	24.68	14.63	0.199	0.065	1.102	.	.	2.01	0.260	.	.	0.0044	.	.	0.111	.
1	IARM 15B	0.047	0.39	0.013	0.001	0.33	1.53	6.94	14.53	0.006	0.24	0.82	0.0355	0.65	0.005	0.033	0.12	.	.	0.0039	.	0.009	last
1	IARM 26D	0.038	0.224	0.013	(0.0008)	(0.05)	0.047	24.6	14.29	0.29	0.040	1.23	0.0035	(0.007)	2.17	0.223	0.036	.	0.0063	.	.	0.0039	.
1	VS S47/4	0.036	0.402	0.0062	0.0083	0.366	0.686	30.84	.	.	4.06	.	.	.	.	.	.	.	.	.	.	.	.
1	ECRM 273-1	0.0336	0.785	0.0131	0.0004	0.378	3.046	4.85	14.747	.	0.0391	0.2462	0.0444	0.221	.	0.0512	.	0.0030	.	.	.	0.0021	.
1	CMSI 1320	0.032	0.578	0.013	0.0036	0.238	0.030	22.43	4.04	0.0024	0.011	0.0019	(0.011)	.	0.0018	0.0047	(0.001)	0.0026	.	.	.	0.0022	last
1	SRM 126c	0.02540	0.4684	(0.00350)	(0.0050)	0.1936	(0.0396)	36.054	(0.0625)	.	(0.0080)	(0.0110)	.	.	.	(0.001)	.	.	.	.	.	.	.
1	BCS 474	0.022	1.70	0.008	0.020	0.17	0.35	14.74	19.06	.	(0.02)	3.55	.	.	.	0.30	.	0.030	.	.	.	.	.
1	SRM 868	0.022	0.052	<0.003	0.0025	0.097	0.022	37.78	0.077	0.99	16.1	0.014	.	2.99	1.48	0.077	.	.	0.0078	.	.	.	.
1	VS S33/4	0.020	0.733	0.0095	0.0058	0.354	.	22.48	15.25	.	.	.	.	.	1.38	.	4.38	.	0.0079	.	.	.	.
1	VS S64	0.017	0.147	0.0023	0.0037	0.267	0.044	33.20	0.146	.	16.57	.	.	.	.	.	.	.	.	.	.	.	.
1	ECRM 295-1C	0.0166	1.758	0.0167	0.0004	0.418	1.481	24.40	19.51	0.0203	0.0450	3.996	0.0615	.	.	0.0453	.	0.0041	0.0018	.	.	0.0025	last
1	IARM 157D	0.0154	0.626	0.016	0.0005	0.28	0.196	23.9	20.31	0.020	0.102	6.08	0.203	0.149	0.009	0.050	0.036	.	0.0007	.	.	0.0036	Fe: 48.0
1	ECRM 299-1C	0.0154	0.2678	0.0152	0.00022	0.299	0.0382	0.172	22.32	5.33	0.0187	0.0186	0.0198	.	0.1289	0.0329	.	0.0054	0.0002	.	.	.	Zr: 0.1775
1	NILAB 501HAC	0.014	0.858	0.020	0.003	.	0.761	17.69	19.79	0.003	0.159	6.14	0.2243	0.007	.	0.044	.	.	.	.	.	.	.
1	VS S42/4	0.014	0.604	0.0105	0.0049	0.958	2.85	26.43	23.30	0.0140	.	2.68	.	.	0.270	.	.	.	.	.	.	.	.
1	VS S66	0.0124	0.0270	.	0.0054	0.050	3.30	28.28	17.54	.	.	1.78	.	.	0.486	.	.	.	Ca:0.202	.	.	.	.
1	ECRM 379-1D	0.0121	1.804	0.0166	0.0006	0.393	0.984	30.83	26.79	(0.00246)	0.0390	3.290	0.0550	(0.0028)	(0.0014)	0.0663	(0.0091)	(0.0018)	0.00190	(0.0027)	(0.000038)	0.0021	Sb: 0.00057
1	BCS 477	0.0102	1.623	0.0209	0.00039	0.473	1.340	25.07	20.38	0.0303	0.0875	4.23	0.0562	.	.	0.0527	.	0.00399	0.00198	.	Mg:0.00053	0.00453	Sb: 0.0078
1	VS S46/5	0.01	0.4	0.002	0.003	0.1	.	29.3	.	.	17.2	.	.	.	.	.	.	.	.	.	.	.	.
2	DH E2401	0.0048	0.0203	0.0013	0.0026	0.0222	0.0161	18.85	0.0405	.	11.46	4.64	Ca:0.0002	0.0023	1.28	0.0029	.	0.0038	.	Sb:0.0003	<0.0001	0.0016	Al.s:0.1013
1	VS S65	0.0031	0.275	0.0201	0.0119	0.017	0.469	29.63	0.236	.	13.94	.	.	.	.	.	.	.	.	.	.	.	.
1	VS S63	0.0024	0.402	0.0166	0.0113	0.175	0.284	27.73	0.016	.	18.63

#	Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Co	Mo	N	Nb	Ti	V	W	As	B	O	Pb	Sn	Other
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* ECRM 295-1C also contains Fe: 48.36, Mg: (0.0003), and Sb: 0.0007

** Provisional Analysis

CAST IRON CHIPS WITH GRAPHITIC CARBON

analysis listed in mass %

IPT: 80 g

SRM: 150 g

all others: 100 g

Number	C	C.Grph	Mn	P	S	Si	Cu	Ni	Cr	Mo	Ti	V	As	Sn	Mg	N
IPT 75A	3.4	2.7	0.722	0.250	0.033	1.98	0.433	0.425	0.487	0.438	0.022	0.030	.	.	.	.
IPT 69	3.34	2.50	0.715	0.267	0.018	2.07	0.47	0.272	0.353	(0.004)	0.019	.	.	.	.	.
IPT 37B	3.37	2.85	0.737	0.148	0.069	1.66	0.052	0.074	0.088	.	0.034	.	.	.	.	last of stock
SRM 4L	3.21	2.66	0.82	0.149	0.043	1.33	0.240	0.042	0.118	0.040	.	0.024	.	.	.	.
NM 73 **	3.07	2.55	0.82	0.22	0.014	1.21	.	** Combined Carbon:	0.52%	.	.	.	.	.	.	last
VS Ch15/1	3.04	(0.2)	1.08	0.211	0.040	1.49	0.606	0.256	2.04	.	0.70	.	(0.006)	.	.	.
VS Ch6/11	3.01	(1.0)	0.776	0.289	0.031	2.38	.	0.79	0.261	0.318	0.028	.	.	Co:0.048	.	.
SRM 107c	2.99	1.98	0.480	0.079	0.059	1.21	0.205	2.20	0.693	0.83	(0.019)	(0.015)	.	.	.	.
VS Ch1/9	2.94	(2.1)	0.271	0.0125	0.0290	0.293	.	0.061	.	.	0.046	.	(0.004)	.	.	.
DSZU CH02X	2.90	(1.5)	1.08	0.006	0.013	1.36	(0.04)	0.66	0.59	0.23	0.16	.	.	(0.015)	.	.
SRM 6g	2.85	2.01	1.05	0.557	0.124	1.05	0.502	0.135	0.370	0.035	0.059	0.056	(0.042)	.	.	0.005
VS Ch19	2.73	1.73	0.250	0.074	0.028	0.202	.	0.081	0.067	.	0.038	.	0.0125	.	.	.
SRM 115a	2.62	1.96	1.00	0.086	0.064	2.13	5.52	14.49	1.98	0.050	0.020	0.014	.	.	.	.
ECRM 454-1	(2.53)	(1.96)	1.16	0.046	0.068	2.00	(0.07)	(0.21)	.	.	0.052	.	(0.025)	.	.	.
ECRM 453-1	(2.44)	(2.37)	0.72	1.63	0.049	3.17	0.10	0.068	0.053	.	(0.040)	0.050	0.019	.	.	.
VS Ch5/7	2.27	1.02	1.27	0.0115	0.0044	1.86	0.069	0.061	0.327	.	.	.	(0.005)	.	0.042	.
SRM 342a	1.86	1.37	0.274	0.018	0.00214	2.73	0.134	0.058	0.033	0.005	0.020	.	.	.	0.070	.
SRM 341	1.81	1.23	0.92	0.024	0.007	2.44	0.152	20.32	1.98	0.010	0.018	0.012	.	.	0.068	.
VS Ch17/1	1.66	(0.8)	1.32	0.0313	0.0087	2.08	0.0197	0.039	0.299	.	.	.	(0.002)	.	0.044	.

CRM CAST IRON CHIPS

Number	C	Mn	P	S	Si	As	Units
NCS HC18009	3.83	0.74	0.186	0.023	1.88	0.025	100 g
NCS HC16023	3.8	0.929	0.171	0.016	1.42	.	150 g
NCS HC11003	3.77	0.659	0.230	0.129	1.47	.	100 g
NCS HC37011	3.73	0.565	0.117	0.067	2.58	.	100 g
NCS HC18010	3.66	0.59	0.145	0.041	2.399	0.036	100 g
NCS HC16024	3.59	0.514	0.315	0.033	1.96	.	150 g
NCS HC18011	3.43	0.729	0.079	0.0082	1.93	0.036	100 g
NCS HC18013	3.40	0.79	0.049	0.0087	2.12	0.013	100 g
NCS HC18014	3.36	0.792	0.049	0.0087	2.136	0.012	100 g
NCS HC11003a	3.36	0.561	0.166	0.176	1.39	.	100 g
NCS HC11003b	3.36	0.386	0.135	0.154	1.82	.	100 g
NCS HC18012	3.23	0.74	0.079	0.0080	1.93	0.037	100 g
NCS HC16026	3.22	0.726	0.085	0.059	2.25	.	150 g
NCS HC18016	3.20	0.42	0.104	0.0092	2.91	0.092	100 g
NCS HC18003	3.18	0.732	0.243	0.049	1.43	0.064	100 g
NCS HC11006	3.11	0.850	0.270	0.130	1.37	.	100 g
NM 18A	3.06	0.43	0.05	0.11	2.67	.	100 g
NCS HC13016	2.99	1.30	0.278	0.100	1.29	.	150 g
NCS HC39003	2.95	0.26	0.142	0.085	1.49	.	100 g
NCS HC18005	2.89	0.733	0.108	0.0058	2.01	0.091	100 g
NCS HC39001	2.85	0.38	0.081	0.096	2.48	.	100 g
NCS HC16022	2.83	0.721	0.094	0.067	2.19	.	100 g
NCS HC39002	2.81	0.57	0.062	0.134	1.71	.	100 g
NCS HC39004	2.78	0.78	0.066	0.082	2.17	.	100 g
NCS HC11004	2.72	0.359	0.124	0.115	2.56	.	100 g
NCS HC18002	2.67	1.36	0.051	0.031	2.94	.	150 g
NCS HC18006	2.65	0.75	0.114	0.0057	1.99	0.092	100 g
NCS HC39010	2.65	0.331	0.113	0.134	1.29	.	100 g
NCS HC39008	2.59	0.859	0.187	0.093	2.17	.	100 g
NCS HC15011	2.58	1.00	0.087	0.068	2.76	.	100 g
NCS HC13015	2.51	0.62	0.104	0.020	4.08	.	150 g
CTIF FG20	2.487	0.571	1.440	0.109	1.726	.	100 g
NCS HC39009	2.47	1.56	0.318	0.057	3.33	.	100 g
CTIF FG10	2.322	1.098	0.111	0.016	2.467	.	100 g
NCS HC11005	2.19	0.219	0.047	0.048	3.07	.	100 g

last

CRM CAST IRON CHIPS WITH MAGNESIUM AND RARE EARTHS

unit sizes have been abbreviated as follows: A = 80 g, B = 100 g, and C = 150 g

Number	C	Mg	T.RE	Mn	P	S	Si	Cu	Ni	Cr	Al	Als	Co	Mo	Ti	V	As	Ce	La	Sn	Units	Other
NCS HC18011	3.43	0.030	.	0.729	0.079	0.0082	1.93	.	.	.	.	.	.	.	.	.	0.036	.	.	.	B	Re: 0.024
NM 207.3	3.13	0.026	.	0.83	0.21	0.016	1.23	0.029	1.90	0.37	.	.	.	.	.	.	0.036	.	.	.	B	
NCS HC37019	3.06	0.054	0.049	6.72	0.11	0.0041	5.80	.	.	.	.	.	.	.	.	.	.	.	.	.	A	
BS CE207 *	3.05	0.003	.	1.20	0.090	0.016	2.07	0.222	0.048	0.039	0.005	.	0.031	(0.001)	0.079	0.034	0.004	0.016	0.004	.	C	
ECRM 480-1	3.029	0.0172	.	0.1514	0.0021	0.0086	2.407	(0.0052)	0.4826	.	0.0163	.	.	.	.	.	.	.	.	.	B	
NCS HC28054	3.01	0.047	.	0.645	0.188	0.011	2.03	.	1.19	0.619	.	.	.	0.355	.	.	.	.	.	.	B	Nb: 0.095
NCS HC37020	2.88	0.068	0.047	6.40	0.11	0.0035	3.75	.	.	.	.	.	.	.	.	.	.	.	.	.	A	
NCS HC37021	2.79	0.028	0.045	8.77	0.10	0.0060	6.58	.	.	.	.	.	.	.	.	.	.	.	.	.	A	
NCS HC37018	2.78	0.049	0.041	6.80	0.12	0.0027	5.96	.	.	.	.	.	.	.	.	.	.	.	.	.	A	
NCS HC19017	2.77	0.070	0.070	0.570	0.015	0.014	2.52	0.046	0.031	0.042	.	.	0.037	.	0.072	0.356	.	.	.	.	B	
NCS HC11015	2.74	0.012	0.036	0.473	0.022	0.0009	2.32	0.031	0.627	0.040	.	0.021	0.011	0.0016	0.015	0.031	0.011	0.019	0.013	0.0037	A	N: 0.0047
NCS HC19018	2.70	0.083	0.083	0.625	0.024	0.011	3.10	0.049	0.031	0.043	.	.	0.035	.	0.125	0.405	.	.	.	.	B	
NCS HC19010	2.69	0.028	0.040	0.79	0.029	0.023	2.92	0.042	0.025	0.227	.	.	.	0.0016	0.109	0.236	.	.	.	.	B	
BS CE206 *	2.64	0.0006	.	0.99	0.145	0.018	2.76	0.45	0.048	0.068	0.004	.	0.029	0.007	0.078	0.038	0.004	0.011	0.004	.	C	
NCS HC37008	2.59	0.014	0.011	0.373	0.042	0.012	3.08	0.288	.	.	.	.	.	0.514	.	.	.	.	.	.	A	
CKD 230 *	2.55	0.040	.	0.31	0.049	0.024	1.04	1.05	1.11	0.09	.	0.01	0.01	0.05	0.01	0.02	0.005	0.01	(0.005)	0.010	B	Sb: 0.006
BS CE209 *	(2.47)	0.0013	.	0.39	0.167	0.027	2.13	0.211	0.045	0.010	0.006	.	0.030	(0.001)	0.062	0.030	0.003	0.026	0.008	.	C	
BS CE208 *	2.41	0.0008	.	0.34	0.118	0.041	1.63	0.212	0.047	0.007	0.003	.	0.031	(0.001)	0.048	0.024	0.004	0.018	0.007	.	C	
NCS HC19016	2.21	0.099	0.099	0.420	0.014	0.012	3.78	0.047	0.032	0.040	.	.	0.037	.	0.066	0.310	.	.	.	.	B	
NCS HC37005	1.92	0.073	0.059	0.955	0.041	0.0064	3.36	0.181	0.128	A	

Number	C	Mg	T.RE	Mn	P	S	Si	Cu	Ni	Cr	Al	Als	Co	Mo	Ti	V	As	Ce	La	Sn	Units	Other
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* Clearance Sale Item

ALLOYED CAST IRON

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Als	Co	Mo	Ti	V	W	As	B	Bi	Pb	Sb	Sn	Units	Other	
CRM																							
CMSI 1571	3.95	0.27	0.130	0.233	1.30	0.011	0.029	4.31	.	.	0.36	0.016	0.012	.	.	.	.	.	.	.	100 g	
NCS HC37001	3.40	0.99	0.060	0.054	1.35	1.22	0.63	13.54	.	.	1.03	.	.	.	.	.	.	.	.	.	50 g	
NCS HC13010	3.35	0.699	0.147	0.045	2.44	0.018	0.300	0.96	.	.	2.39	.	.	.	.	.	.	.	.	.	100 g	
SRM 892	3.33	0.76	0.054	0.015	1.83	0.270	5.53	10.18	.	0.31	0.20	.	0.041	.	.	.	.	.	.	.	150 g	
NCS HC13011	3.23	1.20	0.310	0.045	4.30	0.243	0.919	1.36	.	.	0.639	.	.	.	.	.	.	.	.	.	100 g	
CKD 227 *	3.2	0.95	0.66	0.037	1.67	0.33	0.05	0.68	0.04	0.03	0.60	0.07	0.11	0.06	0.01	0.007	0.0005	0.001	0.03	0.07	100 g	Zn: 0.01	
NCS HC28034	3.15	0.795	0.321	0.082	1.67	1.04	.	0.464	.	.	0.515	0.053	.	.	.	.	.	.	.	.	150 g	
NCS HC37003	2.95	1.72	0.062	0.034	1.32	1.06	1.05	15.39	.	.	1.12	.	.	.	.	.	.	.	.	.	50 g	
CMSI 1569	2.86	1.07	0.058	0.028	0.36	0.42	0.25	22.52	.	.	1.14	0.005	0.039	.	.	.	.	.	.	.	100 g	
ECRM 482-2	2.599	0.728	0.0974	0.0491	1.815	1.231	2.284	0.675	.	.	0.454	.	.	.	.	.	.	.	.	.	100 g	
CMSI 1568	2.46	1.63	0.383	0.013	0.32	0.73	1.20	12.95	.	.	0.76	0.0089	0.026	.	.	.	.	.	.	.	100 g	
NCS HC37002a	2.42	0.71	0.058	0.064	1.05	0.90	0.23	8.93	.	.	1.74	.	.	.	.	.	.	.	.	.	80 g	
NCS HC11013	2.35	1.05	0.010	0.0094	1.05	.	.	15.06	.	.	2.84	0.062	0.16	.	.	.	.	.	.	.	100 g	
CMSI 1570	2.31	0.83	0.064	0.043	0.59	0.36	0.49	26.50	.	.	2.71	0.0051	0.039	.	.	.	.	.	.	.	100 g	
ECRM 451-2	2.059	1.079	0.0593	0.0315	2.092	6.26	14.01	1.097	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
CTIF FA10	1.976	1.063	0.045	.	1.480	0.492	20.05	1.986	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
NCS HC11012	1.95	0.926	0.0084	0.0079	0.59	.	.	13.11	.	.	0.52	0.064	0.137	.	.	.	.	.	.	.	100 g	
VS Ch18	1.91	4.27	0.095	0.0147	1.167	0.257	0.168	15.61	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
CTIF FA20	0.643	0.368	0.045	.	1.519	.	.	28.30	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
RM																							
BS CE 216 *	.	0.80	0.193	0.043	2.60	0.68	0.24	0.41	.	0.014	0.68	0.097	0.032	.	0.0070	.	.	.	0.00043	.	150 g		
BS CE 217 *	.	1.07	0.356	0.029	3.15	0.13	0.002	1.08	.	0.014	0.002	0.093	0.036	.	.	.	.	.	0.00041	.	150 g	
BS CE 219 *	.	1.23	0.505	0.038	2.47	0.415	0.228	0.31	.	0.014	0.283	0.080	0.034	.	.	.	.	.	0.00050	.	150 g	
Number	C	Mn	P	S	Si	Cu	Ni	Cr	Als	Co	Mo	Ti	V	W	As	B	Bi	Pb	Sb	Sn	Units	Other	

* BS and CKD Clearance Sale Items, BS CE items have no uncertainties

CAST IRON CHIPS AND POWDER WITH CARBON OVER 3%

unit sizes have been abbreviated so that: A = CRM, 100g and B = CRM, 150g and C = RM, 50g

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Co	Mo	N	Ti	V	As	B	Cd	Ga	Pb	Sb	Sn	Tl	Units	
ECRM 490-1	4.813	10.83	0.0267	0.0040	(0.03)	0.0088	(0.02)	0.0183	.	.	0.0030	0.0035	0.0152	.	.	.	.	.	.	.	.	A
JSS 102-10	4.66	0.244	0.127	0.0303	0.703	.	.	.	.	.	0.0053	0.0525	.	.	.	.	.	.	.	.	.	B
VS Ch13/1	4.16	1.11	0.067	0.034	2.90	0.91	0.454	1.30	.	1.16	.	.	.	(<0.002)	.	.	.	.	.	.	powder	A
NCS HC16027	4.06	0.094	0.038	0.029	0.725	0.0023	0.0023	0.010	.	0.0027	.	0.026	0.0064	0.0011	.	.	.	<0.0002	0.00013	0.00014	.	A	
ECRM 478-2	4.003	0.321	0.201	0.0460	2.411	0.1276	0.151	0.251	.	.	0.0023	0.0328	0.0113	(0.0018)	0.0006	.	.	.	.	.	.	A
NCS HC16028	4.00	0.634	0.046	0.0073	1.55	0.0051	0.0045	0.036	.	0.0089	.	0.084	0.018	0.0012	.	.	.	<0.0002	0.00016	0.00018	.	A	
ECRM 488-2	3.956	0.201	0.0111	0.1173	0.374	0.0256	0.1247	0.303	.	.	0.0052	0.0636	0.0545	.	.	.	.	.	.	0.0013	.	A
BCS 535	3.875	0.456	0.1438	0.0276	2.702	0.1397	1.349	0.0501	.	0.0037	.	Al:0.0087	.	As:0.0049	powder	A
BCS 527	3.873	0.316	0.1269	0.0366	1.000	0.0104	0.0229	.	.	.	.	0.0187	.	.	.	.	.	.	.	.	.	A
VS Ch14/2	3.81	1.05	0.061	0.034	2.09	0.427	1.52	0.724	0.265	0.625	.	.	.	(<0.005)	.	.	.	.	.	.	powder	A
NCS HC16010c	3.76	0.206	0.35	0.049	0.84	0.026	.	.	.	.	.	0.036	.	.	.	.	.	.	.	.	.	A
VS Ch2/7	3.61	0.079	0.078	0.071	0.836	0.142	0.222	0.218	0.124	0.444	.	0.293	0.521	(<0.002)	.	.	.	.	.	.	powder	A
NCS HC28015	3.58	0.97	0.080	0.014	3.02	0.091	0.0125	0.0075	.	.	.	.	.	.	.	.	.	.	.	.	.	B
ECRM 487-2 *	3.5730	0.0491	0.0065	0.0031	0.0898	0.0136	0.0219	0.0248	0.0151	0.0034	0.004	0.0022	0.0117	0.0045	.	.	.	.	.	.	last	A
CTIF FB20-2	3.557	(0.39)	(0.07)	0.0614	(0.935)	.	.	(0.10)	.	.	.	.	.	.	.	.	.	.	.	.	.	A
CTIF FB20-1	3.552	(0.39)	(0.07)	0.059	(0.935)	.	.	(0.10)	.	.	.	.	.	.	.	.	.	.	.	.	.	A
CMSI 1503B	3.53	1.10	0.066	0.048	1.83	0.258	.	.	.	.	.	0.025	.	.	.	.	.	.	.	.	.	A
NCS HC16004c	3.50	1.00	0.128	0.024	2.33	0.257	.	.	.	.	.	0.027	.	.	.	.	.	.	.	.	.	A
SRM 122i	3.47	0.530	0.28	0.087	0.89	0.033	0.047	0.151	0.28	0.008	.	0.024	0.012	.	.	.	.	.	.	.	.	B
CMSI 1572	3.46	1.05	0.252	0.062	3.15	0.263	0.132	0.202	.	0.047	.	0.047	0.007	.	.	.	.	.	.	.	.	A
NCS HC16008b	3.45	1.84	0.046	0.018	1.44	0.015	.	.	.	.	.	0.019	.	.	.	.	.	.	.	.	.	A
GBW 01108b	3.45	1.84	0.046	0.018	1.44	0.015	.	.	.	.	.	0.019	.	.	.	.	.	.	.	.	.	A
ECRM 476-3	3.390	0.987	0.0908	0.0493	1.813	0.2445	0.0549	0.0648	.	.	0.0038	0.0222	0.0115	0.0145	.	.	.	.	.	.	.	A
ECRM 485-2	3.308	0.190	0.610	0.165	0.508	0.0303	0.0742	0.0845	.	.	0.0058	.	.	.	.	.	.	.	.	.	.	A
ECRM 487-1	3.27	0.094	0.0020	0.0007	0.0060	.	0.040	0.063	0.0088	.	0.0042	.	.	0.011	.	.	.	.	.	.	last	A
ECRM 492-1	3.258	.	.	0.0854	.	.	.	.	.	.	0.0048	.	.	.	.	.	.	.	.	.	.	A
ECRM 484-1	3.20	0.395	0.121	0.230	0.717	.	.	0.155	.	.	.	.	.	.	.	.	.	.	.	.	.	A
CMSI 1530	3.16	0.335	0.066	0.103	0.461	0.065	0.027	0.030	0.033	.	.	.	0.56	.	.	.	0.0078	.	.	last	0.225	A	
NCS HC28035	3.15	0.685	0.49	0.076	1.44	0.915	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC28028	3.11	0.605	0.250	0.088	1.71	1.03	.	0.280	.	.	.	0.0494	0.023	.	.	.	.	.	.	.	.	B
NCS HC28014	3.05	0.57	0.300	0.079	2.67	0.194	0.018	0.022	.	.	.	.	.	.	.	.	.	.	.	.	.	B
GBW 01101B	3.04	1.22	0.072	0.052	1.34	0.025	.	.	.	.	.	0.008	.	.	.	.	.	.	.	.	.	A
CMSI 1501B	3.04	1.22	0.072	0.052	1.34	0.025	.	.	.	.	.	0.008	.	.	.	.	.	.	.	.	.	A
CMSI 1533	3.00	0.869	0.048	0.145	1.42	0.066	0.027	0.033	0.033	.	.	.	0.29	.	.	.	0.0077	.	.	.	0.254	A	

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Co	Mo	N	Ti	V	As	B	Cd	Ga	Pb	Sb	Sn	Tl	Units
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* ERM 487-2 also contains: Al: 0.079, As: 0.0063, Te: 0.0064, and Zn: 0.0012

CAST IRON CHIPS WITH CARBON UNDER 3%

analysis listed in mass % except * which is mg/kg

unit sizes have been abbreviated as follows: A = 80 g, B = 100 g, C = 150 g, and D = 200 g

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Als	Co	Mo	N	Ti	V	As	B	Bi*	Ga*	Pb*	Sb*	Sn	Tl	Units
CRM																								
NM 201.8	2.99	0.44	0.054	0.11	2.64	0.035	0.024	0.030	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC28025	2.98	0.698	1.80	0.087	1.80	0.201	.	0.081	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC39011	2.96	0.57	0.082	0.058	1.67	.	.	.	.	.	.	.	.	.	.	.	0.061	.	.	.	.	.	.	C
VS Ch1-1	2.94	0.271	0.0125	0.0290	0.293	0.101	0.061	0.051	.	.	.	.	.	0.046	.	.	.	.	.	.	.	.	.	B
NCS HC28026	2.90	0.702	1.91	0.124	1.81	0.245	.	0.086	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	C
ECRM 489-1	2.860	(0.510)	0.815	0.155	1.524	0.274	.	.	.	.	.	.	(0.0056)	.	.	.	.	.	.	.	.	.	.	B
NCS HC39013	2.86	0.56	0.106	0.052	2.35	.	.	.	.	.	.	.	.	.	.	.	0.0101	.	.	.	.	.	.	B
NCS HC28029	2.85	0.85	0.086	0.0995	1.91	0.865	.	0.316	.	.	.	.	.	0.033	0.017	.	.	.	.	.	.	.	.	C
JSS 120-1	2.85	0.70	0.053	0.0095	1.32	0.29	0.12	0.28	.	.	.	(0.007)	0.0058	0.006	0.007	last of stock	.	.	.	.	.	.	C	
VS ch6/1	2.82	0.803	0.267	0.037	2.76	.	0.716	2.73	.	.	0.096	0.215	.	0.093	.	.	.	.	.	.	.	.	.	B
CMSI 1506A	2.809	1.48	0.039	0.062	0.856	0.045	.	.	.	.	.	.	.	0.0118	.	.	.	.	.	.	.	.	.	C
VS Ch4/7	2.78	0.742	0.194	0.0276	1.60	0.221	0.525	0.706	.	.	.	.	.	.	.	(0.006)	.	.	.	.	.	.	.	B
ECRM 428-2	2.747	0.750	0.0691	0.1105	1.751	0.0996	0.0358	0.0366	.	.	.	.	.	0.0311	0.0120	0.0156	.	.	.	.	.	.	.	B
GBW 01106b	2.71	0.98	0.077	0.089	1.14	0.036	.	.	.	.	.	.	.	0.007	.	.	.	.	.	.	.	.	.	B
NCS HC16006b	2.71	0.98	0.077	0.089	1.14	0.036	.	.	.	.	.	.	.	0.007	.	.	.	.	.	.	.	.	.	B
NCS HC11007	2.70	1.66	0.201	0.102	1.72	0.031	.	0.589	.	.	.	.	.	0.014	0.0067	.	.	.	.	.	.	.	.	B
NCS HC28013	2.65	0.575	0.450	0.098	2.29	0.086	0.0675	0.041	.	.	.	.	.	0.041	.	.	.	.	.	.	.	.	.	C
VS Ch16/1	2.64	1.23	0.0237	0.049	0.864	0.242	4.15	1.77	.	.	.	.	.	.	.	(0.007)	.	.	.	.	.	.	.	B
NCS HC41010	2.64	0.540	0.086	0.029	1.49	0.056	0.030	0.086	.	.	.	0.021	.	0.024	0.011	.	.	.	.	.	.	.	.	C
NCS HC41011	2.64	0.725	0.177	0.033	2.23	0.146	0.035	0.151	.	.	.	0.105	.	0.031	0.014	.	.	.	.	.	.	.	.	C
SRM 5m	2.59	0.74	0.32	0.133	1.83	0.89	0.041	0.080	.	.	.	(0.029)	(0.006)	(0.097)	0.033	.	.	.	.	.	.	.	.	C
NCS HC41012	2.52	1.24	0.635	0.032	3.86	0.114	0.037	0.115	0.017	.	.	.	.	0.071	0.033	.	.	.	8	11	.	.	.	C
VS Ch20	2.41	1.84	1.46	0.053	0.594	0.050	0.157	0.170	.	.	.	.	.	0.0040	(0.015)	0.089	.	.	.	.	.	.	.	B
CMSI 1534	2.38	1.28	0.069	0.077	2.12	0.070	0.028	0.030	.	.	0.034	.	.	.	0.40	.	.	.	73	.	.	.	0.314	B
GBW 01109b	2.31	0.509	0.025	0.100	0.28	0.038	.	.	.	.	.	.	.	0.030	.	.	.	.	.	.	.	.	.	B
NCS HC37030	2.22	0.869	0.339	0.101	2.20	0.501	.	0.142	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC37041	2.22	0.869	0.339	0.101	2.20	0.501	.	0.142	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
ECRM 486-1	2.21	0.841	1.00	0.023	2.43	0.548	0.057	0.104	.	.	.	.	.	.	0.020	.	.	.	.	.	.	0.074	.	B
CMSI 1509A	2.202	0.528	0.0226	0.080	0.378	0.063	.	.	.	.	.	.	.	0.0094	.	.	.	.	.	.	.	.	.	C
NCS HC37029	2.15	1.08	0.451	0.068	2.69	0.752	.	0.221	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC37040	2.15	1.08	0.451	0.068	2.69	0.752	.	0.221	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
BCS 170/4 *	2.15	0.78	0.70	0.080	2.45	0.60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
CTIF FB20	2.114	0.464	0.039	0.128	1.012	.	.	0.035	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC37013	2.11	0.353	0.167	0.139	1.70	.	.	0.119	.	.	.	.	.	.	.	.	.	25	.	.	.	.	.	A
IPT 49	2.11	0.272	0.012	0.019	0.78	0.040	0.021	0.020	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A
NCS HC37028	2.04	1.34	0.479	0.038	3.37	0.642	.	0.197	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC37039	2.04	1.34	0.479	0.038	3.37	0.642	.	0.197	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC37042	2.04	0.670	0.226	0.103	1.86	0.176	.	0.054	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B
NCS HC37038	2.01	0.677	0.057	0.115	1.44	.	.	0.113	.	.	.	.	.	.	.	.	.	15	.	.	.	.	.	B
NCS HC11008	1.90	1.96	0.060	0.097	2.72	0.041	.	0.766	.	.	.	.	.	0.013	0.0075	.	.	.	.	.	.	.	.	B
NCS HC37037	1.90	0.780	0.110	0.055	2.34	.	.	0.024	.	.	.	.	.	.	.	.	.	38	.	.	.	.	.	B
NCS HC37036	1.67	1.05	0.085	0.024	1.90	.	.	0.055	.	.	.	.	.	.	.	.	.	34	.	.	.	.	.	B
RM																								
VS Ch12-1	2.83	1.32	0.049	0.006	2.41	.	.	.	.	.	.	.	.	0.04	0.05	0.02	.	.	.	.	.	0.048	B	
CKD 215 *	2.46	0.76	0.087	0.17	3.08	0.43	0.081	0.15	.	0.01	.	0.05	.	.	.	.	.	.	.	.	.	.	.	D
Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Als	Co	Mo	N	Ti	V	As	B	Bi*	Ga*	Pb*	Sb*	Sn	Tl	Units

* Clearance Sale Item

CRM OTHER IRON BASE CHIPS AND POWDER

100 g

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Co	Mo	N	Nb	Sn	Ti	V	W	As	B	O	Sb	Other
IARM Fe5140H-18	0.37	0.93	0.014	0.022	0.187	0.253	0.266	0.67	0.13	0.0081	0.031	0.007	(0.0015)	0.0069	0.0015	(0.0024)	(0.003)	(0.011)	.	.	.	.
IARM Fe422-22	0.239	0.687	0.021	0.0095	0.44	0.126	0.616	12.22	0.0024	0.022	0.97	0.050	0.013	0.0035	0.0017	0.210	1.03	0.0039	0.0006	0.0073	0.0009	Ca: 0.0029
IARM FeA100-18	0.222	(0.013)	(0.004)	(<0.0010)	(0.039)	(0.010)	11.2	2.98	(0.007)	13.4	1.19	(0.0010)	(0.003)	.	(0.008)	(0.007)	(0.006)	.	.	(0.0009)	.	.
IARM Fe8620-18	0.211	0.857	0.012	0.026	0.23	0.197	0.446	0.536	0.0246	0.0085	0.197	0.007	(0.0014)	0.0090	0.0015	0.0061	(0.004)	0.009	.	.	.	.
IARM Fe4820-18	0.192	0.541	(0.011)	0.0018	0.26	0.167	3.51	0.144	0.022	0.0107	0.287	0.007	(0.002)	0.0089	(0.0011)	0.0015	(0.004)	(0.006)	.	(0.003)	.	.
IARM FeE9310-18	0.121	0.62	0.009	0.0128	0.256	0.158	3.07	1.09	0.036	0.009	0.086	0.0070	.	0.0072	.	0.0030	.	.	.	(0.0017)	.	.
IARM FeDP1080-18	0.110	1.88	0.014	(0.006)	0.11	0.042	0.554	0.554	(0.002)	0.069	0.445	(0.009)	0.014	(0.0064)	(0.0013)	(0.0043)	(0.030)	.	.	(0.0055)	.	.
IARM Fe91-18	0.099	0.453	0.015	(0.002)	0.27	0.041	0.187	8.24	(0.006)	0.013	0.94	0.046	0.070	(0.004)	(0.0021)	0.198	(0.003)	.	.	(0.003)	.	.
IARM FeP92-18	0.092	0.737	(0.005)	(0.005)	0.20	0.074	0.82	9.4	(0.005)	0.036	0.52	(0.0036)	0.096	(0.006)	(0.003)	0.188	1.97	.	0.0026	(0.013)	.	.
IARM FeINVR36-22	0.0497	0.78	0.0041	0.0019	0.307	0.058	36.0	0.094	0.0023	0.010	0.012	0.0021	(0.0016)	0.0042	(0.0020)	0.0013	(0.0328)	0.0029	0.0019	(0.0042)	(0.0006)	Se: 0.21
IARM Fe174PH-18	0.041	0.47	0.024	(<0.0040)	0.52	3.33	4.73	15.10	0.007	0.047	0.315	0.0436	0.285	0.008	.	0.051	0.015	.	.	0.0035	.	.
IARM FeKovar-18	0.024	0.26	(0.004)	(0.0055)	(0.09)	0.077	29.0	0.068	.	17.3	0.062	.	.	0.0021	.	.	(0.020)	.	.	.	.	.
IARM FE2507-21	0.019	0.85	0.024	0.0005	0.36	0.125	7.12	25.2	(0.0051)	0.039	3.76	0.27	0.022	0.0034	0.0019	0.067	0.026	0.004	0.0024	(0.0048)	0.0015	Zr: 0.0013
IARM Fe254SMO-21	0.017	0.892	0.022	0.0010	0.301	0.77	18.1	19.7	0.022	0.118	6.09	0.200	(0.0083)	0.0041	0.004	0.052	0.041	0.0044	0.0009	0.0025	0.0017	Ca: 0.0024
IARM Fe2205-18	0.018	1.18	0.023	(0.0013)	0.46	0.208	5.57	22.6	(0.007)	0.104	3.20	0.17	(0.011)	(0.006)	(0.003)	0.063	0.024	.	.	(0.004)	.	.
IARM Fe415-21	0.018	0.640	0.028	0.013	0.42	0.198	3.55	11.64	0.0018	0.065	0.537	0.073	0.0049	0.0104	0.0013	0.086	0.042	0.0036	0.0008	0.0075	0.0019	.
IARM Fe904L-22	0.0133	1.14	0.020	0.0007	0.654	1.30	24.0	19.3	0.036	0.126	4.03	0.045	0.017	0.0051	0.0020	0.064	0.024	0.0044	(0.0005)	0.0018	0.0018	Ca: 0.0041
IARM Fe316LP-18	(0.006)	1.56	(0.011)	0.0041	0.29	0.0031	13.9	17.9	(0.006)	(0.006)	2.81	(0.081)	.	.	.	(0.006)	.	.	.	(0.043)	.	POWDER 75g
IARM FeC250-21	0.0028	0.022	0.0033	0.0006	0.0091	(0.0041)	18.6	(0.0093)	0.101	7.92	4.93	0.0004	0.0019	(0.0015)	0.418	(0.0074)	(0.0069)	(0.0011)	0.0029	0.0006	(0.0044)	.

Number	C	Mn	P	S	Si	Cu	Ni	Cr	Al	Co	Mo	N	Nb	Sn	Ti	V	W	As	B	O	Sb	Other
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