

Matériaux de Référence

ArcelorMittal Maizières Research SA (ex "IRSID")

Aciers

Co-produits et matières premières de l'industrie sidérurgique



ArcelorMittal



Reference Materials

ArcelorMittal Maizières Research SA (ex "IRSID")

Steels

By-products and raw materials of iron & steel industry

2017

INTRODUCTION

Ce catalogue contient les **Matériaux de Référence** produits par **ArcelorMittal Maizières Research SA (ex "IRSID")** dans le domaine :

- des aciers ;
- des co-produits et matières premières de l'industrie sidérurgique.

Les échantillons sont disponibles sous **deux formes** :

- **Échantillons massifs** pour l'analyse spectrométrique (émission optique et fluorescence X) ;
- **Échantillons divisés** – poudre ou copeaux – pour toute forme d'analyse chimique.

Les échantillons appartiennent à **deux catégories** :

- **IR xxxx : Matériaux de Référence** dont la composition a été déterminée dans le cadre d'un circuit d'analyse de comparaison entre plusieurs laboratoires (par voie spectrométrique et/ou chimique) ;
- **EMRC xxx-x : Matériaux de Référence Certifiés Européens**, élaborés sous les auspices de l'ECISS (*European Committee for Iron and Steel Standardization*), pour lesquels la composition a été déterminée dans le cadre d'un circuit d'analyse de certification entre plusieurs laboratoires (par voie chimique).

This catalogue contains Reference Materials produced by ArcelorMittal Maizières Research SA (ex "IRSID") in the field of :

- *steels;*
- *by-products and raw materials of iron & steel industry.*

Samples are available in two forms:

- *Discs for spectroscopic analysis (optical emission and X-ray fluorescence);*
- *Divided samples – powder or chips – for all kind of chemical analysis.*

Samples belong to two categories:

- *IR xxxx : Reference Materials for which the composition has been determined within a comparison circuit between several laboratories (by spectroscopic and/or chemical method) ;*
- *EMRC xxx-x : European Certified Reference Materials, prepared under the auspices of ECISS (European Committee for Iron and Steel Standardization), for which the composition has been determined within a certification circuit between several laboratories (by chemical method).*

INFORMATION

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INDEX

MASSIFS / Discs

Aciers non alliés / Unalloyed steels.....	1
Aciers peu alliés / Low alloy steels.....	2
Aciers très alliés / Highly alloyed steels.....	3

DIVISÉS / Divided samples

Aciers non alliés / Unalloyed steels.....	4
Aciers peu alliés / Low alloy steels.....	5
Aciers très alliés / Highly alloyed steels.....	6
Co-produits & Matières premières / By-products & Raw materials	
Ferro-alliages / Ferro-alloys.....	7
Magnésie / Magnesia.....	7
Calcite & Dolomie / Calcite & Dolomite.....	7
Carbure / Carbide.....	7
Poussières / Dusts.....	7
Poudres de coulée / Casting powders.....	7
Minerais, Agglomérés, Concentrés - Fer / Iron - Ores, Sinters, Concentrates.....	8
Laitiers & Scories / Slags.....	8

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	As	B	Co	Cu	N	Nb
IR 1636	0.466	0.401	0.781	0.029	0.037	(0.06)	.....	0.092	(0.007)	.....	.....	.....	0.135	.....	.....
IR 1637	0.401	0.378	0.940	0.030	0.030	(0.033)	(0.006)	0.068	0.022	0.042	.....	.....	0.097	.....	.....
IR 1642	0.418	0.388	0.929	0.031	(0.031)	(0.035)	(0.009)	0.068	(0.02)	(0.042)	.....	.....	0.097	.....	.....
IR 1644	0.394	0.287	0.594	0.021	0.031	0.138	.....	0.158	(0.017)	.....	.....	.....	0.265	.....	.....
IR 1645	0.388	0.286	0.610	0.0214	0.0303	0.140	.....	0.157	0.015	.....	.....	.....	0.261	.....	.....
IR 1646	0.414	0.293	0.701	0.0204	0.027	0.493	.....	0.093	0.056	.....	.....	.....	0.104	.....	.....
IR 1647	0.418	0.299	0.701	0.0194	0.027	0.490	.....	0.093	0.060	.....	.....	.....	0.104	.....	.....
IR 1648	0.432	0.242	1.41	0.031	(0.07)	0.172	(0.028)	0.165	(0.004)	(0.038)	.....	.....	0.408	.....	.....
IR 1649	0.384	0.250	0.930	0.045	(0.047)	0.321	0.043	0.226	(0.004)	0.037	.....	.....	0.418	.....	.....
IR 1651 - ÉPUISÉ / Sold out -	0.299	0.438	1.025	0.018	(0.047)	0.294	0.043	0.276	(0.004)	0.038	.....	.....	0.336	.....	.....
IR 1652	0.406	0.386	0.931	(0.017)	0.040	0.184	(0.042)	0.190	.....	0.038	.....	.....	0.345	.....	.....
IR 1653	0.312	0.400	0.962	0.0338	(0.039)	0.358	(0.038)	0.218	(0.005)	(0.039)	.....	(0.028)	0.453	.....	.....
IR 1654	0.270	0.354	0.979	0.036	(0.047)	0.328	(0.043)	0.241	.....	(0.04)	.....	.....	0.441	.....	.....
IR 1655	0.355	0.443	1.018	(0.018)	(0.06)	0.157	(0.043)	0.188	(0.004)	(0.036)	.....	.....	0.415	.....	.....
IR 1656	0.477	0.277	0.730	0.027	0.013	(0.017)	.....	(0.048)	.....	0.055	.....	.....	.....	.....	.....
IR 1657	0.445	0.274	0.724	0.028	(0.013)	(0.022)	.....	0.048	(0.004)	0.052	.....	.....	.....	.....	.....
IR 1658	0.18	0.160	0.618	0.014	0.032	0.147	0.046	0.241	0.029	0.034	.....	.....	0.345	.....	.....
IR 1660	1.20	0.173	0.280	0.014	0.010	(0.026)	(0.005)	0.072	(0.009)	.....	.....	.....	0.059	.....	.....
IR 1661	0.086	0.406	1.476	0.018	(0.006)	(0.021)	.....	(0.029)	(0.028)	.....	.....	.....	.....	.....	0.036
IR 1663	0.353	0.235	0.967	0.0090	0.034	0.206	0.042	0.148	0.037	0.028	(0.0018)	0.015	0.180	.....	.....
IR 1664	0.2008	0.0616	0.472	0.0106	0.0259	0.0707	0.0157	0.0547	.....	0.0115	(0.0002)	(0.0084)	0.0820	0.0072	(0.0002)
IR 1665	0.1209	0.187	0.446	0.0104	0.0135	0.0363	0.0047	0.0308	.....	0.0067	(0.00032)	0.0046	0.0469	0.0049	.....
IR 1667 - ÉPUISÉ / Sold out -	0.679	0.240	0.668	0.0136	0.0018	0.235	(0.0014)	0.0189	0.0217	0.0017	(0.0002)	0.0031	0.0115	0.0048	(0.0002)
IR 1670	0.0011	0.0046	0.3981	0.0128	0.0075	0.0174	0.0009	0.0142	0.0479	0.0018	0.0007	0.0018	0.0134	0.0016	(0.0003)

	Pb	Sn	Ti	V	Zr	Al Ins	Al Sol	Ca	Mg	Sb	Te	Zn
IR 1636												
IR 1637				(0.002)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1642				(0.002)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1644												
IR 1645												
IR 1646												
IR 1647												
IR 1648		0.033	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1649		0.028	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1651 - ÉPUISÉ / Sold out -		0.033	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1652		0.030	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1653		0.066	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1654		0.030	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1655		0.046	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1656				(0.002)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1657				(0.001)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1658		0.022	(0.002)	(0.002)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1660												
IR 1661				(0.060)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1663		0.0143	0.051	.....	.....	.....	.....	(0.0007)	.....	.....	.....	.....
IR 1664	0.0002	0.0108	0.0013	(0.0005)	(0.0001)	(0.0026)	0.0193	(0.0005)	(0.00008)	0.0012	(0.0014)	(0.0007)
IR 1665	(0.0014)	0.0031	(0.0008)	(0.0006)	.....	(0.0025)	0.0379	0.0017	(0.00012)	(0.0008)	.....	(0.0008)
IR 1667 - ÉPUISÉ / Sold out -		0.0008	0.0014	0.0012	.....	.....	.....	0.0019	.....	0.0002	.....	.....
IR 1670		0.0017	0.0078	(0.0005)	.....	.....	.....	(0.0002)	.....	.....	.....	.....

(pour information / for information)

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	As	B	Co	Cu	N	Nb
IR 1707 - ÉPUISÉ / Sold out -	0.31	0.32	0.55	0.015	0.01	0.77	0.09	2.75	0.013	.....	.....	.....	0.13	.....	.....
IR 1713 - ÉPUISÉ / Sold out -	0.105	0.07	0.38	0.008	0.02	0.71	0.04	3.26	0.035	.....	.....	.....	0.209	.....	.....
IR 1727 - ÉPUISÉ / Sold out -	0.154	0.335	0.650	0.009	0.012	0.967	0.449	0.076	.....	(0.036)	.....	.....	0.050	.....	.....
IR 1728 - ÉPUISÉ / Sold out -	0.107	0.415	0.671	0.023	0.033	1.060	0.064	1.360	.....	(0.042)	.....	.....	0.210	.....	.....
IR 1729 - ÉPUISÉ / Sold out -	0.462	0.385	0.292	(0.020)	(0.010)	(0.388)	1.17	4.70	(0.014)	.....	.....	.....	(0.02)	.....	.....
IR 1730	0.355	0.325	0.403	0.010	(0.018)	1.65	0.072	3.64	(0.038)	.....	.....	.....	0.096	.....	.....
IR 1731	0.386	0.263	0.458	0.017	(0.008)	0.734	(0.036)	2.88	(0.012)	.....	.....	.....	0.060	.....	.....
IR 1736 - ÉPUISÉ / Sold out -	0.174	0.288	0.774	(0.016)	(0.016)	1.02	0.238	0.054	(0.025)	.....	.....	.....	.....	.....	.....
IR 1738 - ÉPUISÉ / Sold out -	0.475	1.666	0.604	(0.010)	(0.040)	(0.158)	(0.044)	(0.076)	(0.036)	.....	.....	.....	(0.133)	.....	.....
IR 1740 - ÉPUISÉ / Sold out -	(0.246)	0.378	0.460	0.037	.....	.....	0.207	0.956	(0.114)	.....	.....	.....	0.118	.....	.....
IR 1741 - ÉPUISÉ / Sold out -	(0.244)	0.380	0.466	0.037	.....	.....	0.204	0.962	(0.102)	.....	.....	.....	0.117	.....	.....
IR 1742 - ÉPUISÉ / Sold out -	(0.243)	0.381	0.470	0.037	.....	.....	0.208	0.983	(0.089)	.....	.....	.....	0.119	.....	.....
IR 1744 - ÉPUISÉ / Sold out -	1.016	0.291	0.328	0.024	(0.034)	1.50	(0.016)	0.085	.....	(0.011)	.....	.....	0.143	.....	.....
IR 1745	0.295	0.220	0.850	0.0077	0.081	1.130	0.222	0.188	.....	0.0262	.....	0.0156	0.202	(0.0115)	.....
IR 1746 - ÉPUISÉ / Sold out -	0.236	0.221	0.838	0.0147	0.0280	0.533	0.174	0.607	0.0185	(0.0274)	(0.0004)	0.0167	0.234	0.0096	(0.0003)
IR 1747	0.990	0.222	0.333	0.0078	0.0068	1.501	0.0141	0.0850	.....	0.0170	(0.00015)	0.0110	0.1243	0.0084	(0.00025)
IR 1748 - ÉPUISÉ / Sold out -	0.542	1.482	0.638	0.0130	0.0187	0.633	(0.006)	0.0481	.....	0.0037	.....	0.0054	0.0458	0.0107	0.0005
IR 1749	0.411	0.193	0.733	0.0104	0.0157	1.734	0.257	0.19	1.034	0.0134	.....	0.0141	0.188	0.0066	.....
IR 1750	0.359	0.246	1.801	0.0128	0.075	0.227	0.0433	0.187	0.0175	0.0188	(0.0002)	.....	0.320	0.0107	.....
EMRC 190-1 (D)	0.395	0.278	1.28	0.0112	0.0044	2.18	0.410	0.934	.....	.....	.....	0.034	.....	0.0096	.....

	Pb	Sn	Ti	V	W	Zr	Al Ins	Al Sol	Ca	Mg	O	Sb	Se	Te	Zn
IR 1707 - ÉPUISÉ / Sold out -															
IR 1713 - ÉPUISÉ / Sold out -															
IR 1727 - ÉPUISÉ / Sold out -		(0.022)	.....	(0.011)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1728 - ÉPUISÉ / Sold out -		(0.02)	.....	(0.008)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1729 - ÉPUISÉ / Sold out -		(0.003)	.....	0.478	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1730		(0.01)	.....	(0.01)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1731			(0.047)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1736 - ÉPUISÉ / Sold out -															
IR 1738 - ÉPUISÉ / Sold out -															
IR 1740 - ÉPUISÉ / Sold out -		(0.057)	(0.060)	0.050	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1741 - ÉPUISÉ / Sold out -		0.059	(0.049)	0.051	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1742 - ÉPUISÉ / Sold out -		0.059	(0.041)	0.051	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1744 - ÉPUISÉ / Sold out -	(0.002)	(0.011)	(0.002)	.....	.....	.....	.....	.....	.....	.....	.....	(0.009)	.....	.....	.....
IR 1745		0.0134	(0.003)	(0.004)	.....	.....	(0.0016)	0.0202	.....	.....	.....	(0.0023)	.....	(0.004)	(0.003)
IR 1746 - ÉPUISÉ / Sold out -	(0.0022)	0.0195	0.0016	(0.0017)	.....	.....	.....	.....	0.0021	.....	.....	(0.0034)	.....	0.0041	.....
IR 1747	(0.00025)	0.0105	0.0041	0.0046	(0.005)	(0.00011)	(0.0012)	0.0392	(0.0003)	(0.00022)	.....	(0.0034)	(0.0001)	(0.00012)	(0.0005)
IR 1748 - ÉPUISÉ / Sold out -	(0.00024)	0.0031	0.0011	0.0043	.....	.....	.....	.....	0.0006	.....	.....	0.0007	.....	.....	0.0146
IR 1749		0.0148	0.0031	(0.0036)	.....	.....	.....	.....	(0.0002)	0.0009	0.00020	0.0018	.....	.....	.....
IR 1750		0.0137	(0.0016)	0.114	(0.004)	(0.0002)	.....	.....	(0.0002)	.....	.....	0.0031	(0.0002)	(0.006)	(0.0012)
EMRC 190-1 (D)															

(pour information / for information)

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	As	B	Co	Cu	N	Nb
IR 1819	0.112	0.616	0.903	0.023	0.0112	17.31	0.110	7.1	.....	.....	(0.0004)	0.117	0.064	0.0288	.....
IR 1820	0.0211	0.428	1.614	(0.021)	0.0079	19.51	0.115	9.07	.....	.....	(0.0013)	0.151	0.0448	0.0638	.....
IR 1821	0.037	0.542	1.72	(0.025)	(0.004)	17.04	2.04	10.42	.....	.....	.....	0.268	0.058	0.0125	.....
IR 1822 - ÉPUISE / Sold out -	0.019	(0.260)	(0.086)	0.015	0.020	27.10	(0.004)	0.159	.....	.....	.....	0.030	(0.037)	.....	.....
IR 1823 - ÉPUISE / Sold out -	0.090	0.275	0.99	0.024	0.320	16.9	0.219	0.240	(0.004)	.....	(0.0003)	(0.026)	0.093	.....	.....
IR 1824	0.124	0.444	1.70	0.027	(0.0033)	25.01	0.205	19.02	0.062	.....	.....	0.193	0.200	.....	(0.014)
IR 1825	0.305	0.336	0.650	0.019	0.022	12.90	(0.052)	0.308	.....	.....	.....	(0.026)	(0.1)	.....	.....
IR 1826 - ÉPUISE / Sold out -	0.0176	0.312	1.590	0.0246	0.0008	22.79	2.93	5.36	(0.005)	0.006	(0.0003)	0.097	0.197	0.1522	(0.005)
IR 1833	0.605	0.193	22.57	0.0345	(0.0005)	0.268	0.0133	0.0494	0.0025	0.0034	(0.00017)	0.0089	0.030	0.0120	0.0026
EMRC 269-1 (D)	0.0499	0.441	1.262	0.0313	0.0010	18.150	0.397	8.044	.....	0.0061	.....	0.1116	0.366	0.0460	0.0242

	Pb	Sn	Ti	V	W	Zr	Bi	Ca	Mg	Sb	Te	Zn
IR 1819												
IR 1820												
IR 1821			0.297	.....	.....	.....	.....	.....	.....	.....	.....	.....
IR 1822 - ÉPUISE / Sold out -				(0.027)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1823 - ÉPUISE / Sold out -		(0.006)	.....	0.079	.....	.....	.....	.....	.....	.....	.....	.....
IR 1824			0.066	0.084	(0.066)	.....	.....	.....	.....	.....	.....	.....
IR 1825				(0.052)	.....	.....	.....	.....	.....	.....	.....	.....
IR 1826 - ÉPUISE / Sold out -	(0.0002)	0.0054	0.0024	0.116	0.015	(0.0011)	(0.00002)	0.0014	(0.0004)	0.0010	(0.0001)	(0.0009)
IR 1833	0.00007	0.0043	0.0011	0.203	.....	.....	.....	.....	.....	(0.0005)	.....	(0.0014)
EMRC 269-1 (D)		0.0099	0.0006	0.0991	0.0306	.....	.....	.....	.....	.....	.....	.....

(pour information / for information)

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	As	B	Co	Cu	N	Nb
EMRC 012-1	0.082	.....	.....	0.083	0.255	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 017-1 - ÉPUISÉ / Sold out -	0.261	0.266	0.726	0.0132	0.023	0.044	.....	0.085	.....	.....	.....	.....	0.062	0.009	.....
EMRC 020-2 - ÉPUISÉ / Sold out -	0.139	0.073	0.523	0.0219	0.0144	0.0620	0.0263	0.061	0.093	0.050	.....	0.0161	0.0262	0.0042	.....
EMRC 021-1	0.243	0.271	1.288	0.0121	0.0087	0.125	.....	0.255	.....	.....	.....	.....	0.167	.....	.....
EMRC 022-1	0.115	.....	0.797	0.057	0.296	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 023-1	0.331	0.264	0.667	0.021	0.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 024-1	0.104	0.139	0.726	0.0155	0.235	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 080-1 - ÉPUISÉ / Sold out -	0.452	0.317	1.116	0.028	0.024	0.025	.....	.....	.....	.....	.....	.....	.....	0.0073	.....
EMRC 081-1	0.099	0.105	0.605	0.014	0.014	.....	.....	0.042	0.023	.....	.....	0.017	0.026	.....	.....
EMRC 092-1 - ÉPUISÉ / Sold out -	0.0228	(0.0028)	0.252	0.0139	0.0101	0.0218	(0.003)	0.0393	.....	0.0202	(0.0002)	0.0165	0.0505	(0.0012)	(0.0003)

	Pb	Sn	Ti	V	W	Zr	Al Ins	Al Sol	Ca	Mg
EMRC 012-1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 017-1 - ÉPUISÉ / Sold out -	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 020-2 - ÉPUISÉ / Sold out -	.....	.....	0.0007	.....	.....	.....	.....	0.090	.....	.....
EMRC 021-1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 022-1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 023-1	0.280	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 024-1	0.287	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 080-1 - ÉPUISÉ / Sold out -	.....	(0.0056)	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 081-1	.....	(0.0039)	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 092-1 - ÉPUISÉ / Sold out -	(0.0002)	0.0097	(0.0002)	(0.0005)	(0.0008)	(0.0003)	(0.002)	(0.001)	(0.0003)	(0.0003)

(pour information / for information)

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	Co	Cu	N	Nb	Pb	Sn
EMRC 102-1	0.389	0.281	0.368	0.012	0.006	0.261	1.20	4.40	.....	.....	0.169	.....	.....	.....	.....
EMRC 106-2	0.153	0.238	0.727	.....	.....	1.030	0.054	1.430	.....	.....	0.078	.....	.....	.....	.....
EMRC 107-1	0.407	0.286	0.611	.....	.....	1.443	0.323	0.191	0.345	.....	0.108	.....	.....	.....	.....
EMRC 108-1	0.384	0.340	0.690	0.0176	0.017	2.92	0.538	0.215	.....	.....	0.118	.....	.....	.....	.....
EMRC 112-1	0.348	1.00	0.191	.....	.....	4.78	1.21	0.234	.....	.....	0.115	.....	.....	.....	.....
EMRC 113-1	0.680	0.249	0.586	(0.013)	(0.006)	0.816	0.413	1.74	.....	.....	0.146	.....	.....	.....	.....
EMRC 185-1 - ÉPUISÉ / Sold out -	1.172	.....	.....	.....	0.0209	0.990	.....	.....	.....	.....	.....	.....	.....	.....	0.0212
EMRC 188-1	1.094	.....	.....	.....	0.0113	1.538	.....	.....	.....	.....	.....	.....	0.00013	< 0.0001	.....
EMRC 190-1 (C)	0.395	0.278	1.28	0.0112	0.0044	2.18	0.410	0.934	.....	0.034	.....	0.0096	.....	.....	.....

	V	W	Bi	Cd	Ga	Sb	Te
EMRC 102-1							
EMRC 106-2							
EMRC 107-1							
EMRC 108-1							
EMRC 112-1	0.604	1.78	.....	.....	.....	.....	.....
EMRC 113-1							
EMRC 185-1 - ÉPUISÉ / Sold out -							
EMRC 188-1			< 0.00002	< 0.00005	0.00251	0.00048	< 0.0002
EMRC 190-1 (C)							

(pour information / for information)

	C	Si	Mn	P	S	Cr	Mo	Ni	As	Co	Cu	N	Nb	Sn	Ti
EMRC 201-1	0.291	0.843	0.363	.....	.....	12.33	0.050	0.202	.....	.....	0.099	.....	.....	0.0193	.....
EMRC 269-1 (C)	0.0499	0.441	1.262	0.0313	0.0010	18.150	0.397	8.044	0.0061	0.1116	0.366	0.0460	0.0242	0.0099	0.0006
EMRC 276-1 - ÉPUISÉ / Sold out -	0.364	0.985	0.368	0.012	0.011	5.29	1.47	0.178	.....	.....	0.083	0.021	.....	.....	.....
EMRC 279-2	0.0885	0.5160	0.2584	.....	.....	15.642	.....	1.603	.....	.....	0.1067	.....	.....	.....	.....
EMRC 282-1	0.086	0.734	1.64	0.019	0.0042	16.72	2.19	10.86	.....	.....	0.109	.....	.....	.....	0.488

	V	W	Ca	Mg	Sb	Zn
EMRC 201-1	(0.020)	.....	0.0018	(0.0005)	(0.0033)	0.0005
EMRC 269-1 (C)	0.0991	0.0306	.....	.....	.....	.....
EMRC 276-1 - ÉPUISÉ / Sold out -	0.541	.....	.....	.....	.....	.....
EMRC 279-2	.....	.....	.....	.....	.....	.....
EMRC 282-1	(0.0309)	.....	.....	.....	.....	.....

(pour information / for information)

Ferro-alliages / *Ferro-alloys*

	C	Si	Mn	P	S	Cr	Mo	Al	Co	N	Ti	V	Ca	Fe
EMRC 502-1 - ÉPUISÉ / <i>Sold out -</i>	6.8	0.79	78.3	0.179	0.015	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 503-1	0.700	0.865	80.8	0.069	(0.009)	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 507-1	5.43	1.20	0.270	0.018	.....	70.27	.....	.....	.....	0.050	.....	.....	.....	.....
EMRC 508-1 - ÉPUISÉ / <i>Sold out -</i>	0.052	0.56	.....	0.035	0.085	.....	59.65	.....	.....	.....	.....	.....	.....	.....
EMRC 509-1	0.013	0.229	.....	0.018	.....	72.85	.....	.....	.....	0.026	.....	.....	.....	.....
EMRC 510-1	0.058	4.65	.....	(0.035)	.....	.....	.....	(4.9)	.....	(0.014)	26.95	.....	.....	.....
EMRC 511-1 - ÉPUISÉ / <i>Sold out -</i>	0.049	0.341	.....	(0.016)	0.018	.....	.....	.....	.....	.....	80.7	.....	.....	.....
EMRC 582-2 - ÉPUISÉ / <i>Sold out -</i>	0.150	75.2	0.230	0.0184	.....	0.074	.....	1.154	.....	.....	0.225	.....	0.405	21.42
EMRC 586-1 - ÉPUISÉ / <i>Sold out -</i>	0.025	34.0	62.5	0.041	.....	0.044	.....	0.022	0.007	.....	.....	0.041	0.039	2.89

Magnésie / *Magnesia*

	Fe	Si	Ca	Mg	Al	Ti	Mn	P	Na	K	Cr	C	B	LOI *
EMRC 778-1	0.67	0.489	0.883	48.87	0.297	(0.008)	0.011	(0.004)	(0.023)	(0.020)	0.102	14.00	0.0012	15.38

Calcite & Dolomie / *Calcite & Dolomite*

	Fe	Si	Ca	Mg	Al	Ti	Mn	P	S	Na	K	C	LOI *
EMRC 701-1 - ÉPUISÉ / <i>Sold out -</i>	0.73	0.93	37.66	0.36	0.29	0.018	0.022	0.022	(0.040)	(0.020)	(0.090)	(11.5)	(42.4)
EMRC 702-1	0.440	1.04	21.48	12.37	0.21	0.013	0.098	0.024	(0.027)	(0.026)	(0.044)	(12.3)	(45.6)

Carbure / *Carbide*

	Fe	Si	Ca	Mg	Al	Mn	Na	K	C	C Lib	Fe Met	N	O	SiC	Si Lib
EMRC 780-1	1.30	63.5	0.84	0.051	1.86	0.029	(0.050)	(0.011)	26.38	(0.563)	(0.850)	0.32	(5.24)	(86.12)	(0.215)

Poussières / *Dusts*

	Fe	Si	Ca	Mg	Al	Ti	Mn	P	S	Na	K	F	Cr	Ni	C
EMRC 876-1	24.85	1.72	3.43	1.31	0.34	0.048	2.84	0.128	0.87	1.98	1.63	0.24	0.17	0.034	0.26
EMRC 880-1	31.0	3.34	3.15	0.714	1.28	0.081	0.218	0.038	0.425	0.041	0.108	0.034	0.027	0.014	(37.77)

	Zn	Pb	As	Cd	Cu	Sn	Cl
EMRC 876-1	23.29	7.82	0.023	0.13	0.42	0.094	3.63
EMRC 880-1	0.064	0.017	.....	.....	0.005	.....	0.086

Poudres de coulée / *Casting powders*

	Fe	SiO ₂	Ca	MgO	Al ₂ O ₃	TiO ₂	Mn	P	S	Na	K	F	Cr	C	C Lib
IR 2701	(0.145)	32.70	22.90	2.19	6.10	(0.048)	(0.005)	(0.014)	(0.055)	9.42	0.159	7.58	(0.004)	3.37	(1.78)
IR 2702	1.26	28.70	17.80	(1.47)	12.60	0.564	0.071	(0.18)	(0.49)	3.61	(0.75)	6.08	(0.006)	16.54	15.80

	CO ₂	H ₂ O 600°C	H ₂ O 950°C	LOI *
IR 2701	(5.59)	(2.01)	(2.08)	(10.4)
IR 2702	(2.53)	(1.21)	(1.26)	(20.8)

* LOI = Loss / Gain On Ignition (perte au feu)

(pour information / for information)

Minerais, Agglomérés, Concentrés - Fer / *Iron - Ores, Sinters, Concentrates*

	Fe	Si	Ca	Mg	Al	Ti	Mn	P	S	Na	K	V	Cr	Ni	C
EMRC 601-1	36.76	8.95	4.05	1.21	2.33	0.114	0.370	0.590	0.065	.....	.....	.....	.....	.....	.....
EMRC 603-1	53.65	1.28	(0.91)	(0.2)	4.20	0.137	0.440	0.084	0.097	.....	.....	.....	.....	.....	.....
EMRC 604-1	65.69	1.27	0.107	0.049	0.93	0.060	0.092	0.053	0.015	.....	.....	.....	.....	.....	.....
EMRC 606-1	59.66	1.04	1.04	0.32	0.34	0.019	2.59	0.026	0.033	.....	.....	.....	.....	.....	.....
EMRC 607-1	30.89	3.07	13.74	0.77	2.48	0.123	0.254	0.529	0.050	.....	.....	.....	.....	.....	.....
EMRC 608-1	4.00	28.23	6.22	0.81	5.26	0.428	0.044	0.053	0.455	.....	.....	.....	.....	.....	.....
EMRC 609-1 - ÉPUISÉ / Sold out -	30.52	7.83	6.87	2.00	2.26	0.118	0.472	0.608	1.000	.....	.....	.....	.....	.....	.....
EMRC 610-1 - ÉPUISÉ / Sold out -	47.46	3.16	.....	1.86	1.96	0.015	0.581	0.007	0.189	.....	.....	.....	1.84	1.48	.....
EMRC 611-1	62.22	2.07	2.85	0.32	0.69	0.035	1.97	0.030	(0.008)	.....	.....	.....	.....	.....	.....
EMRC 612-1	42.43	5.94	12.06	1.20	3.00	0.151	0.363	0.885	0.053	.....	.....	.....	.....	.....	.....
EMRC 677-1	51.54	11.78	0.038	0.012	0.32	0.013	0.016	0.017	(0.005)	0.007	0.008	.....	(0.002)	(0.0015)	.....
EMRC 679-1 - ÉPUISÉ / Sold out -	24.20	3.43	18.07	0.70	1.99	0.106	0.295	0.557	0.099	0.054	0.157	0.035	0.012	(0.0095)	5.80
EMRC 685-1	91.10	0.795	0.140	0.239	0.320	0.220	0.042	0.017	0.0031	0.077	0.042	0.144	.....	0.018	1.49
EMRC 691-1 [NEW]	64.39	0.556	0.999	2.022	0.475	0.966	0.1734	0.0877	0.0632	0.0164	0.0504	0.0603	0.0095	0.0299	0.307

	Zn	Pb	As	Co	Cu	Fe ⁺⁺	Fe Met	H ₂ O ⁺	LOI *
EMRC 601-1	.....	.....	.....	.....	.....	(8.8)	.....	.....	.....
EMRC 603-1	.....	.....	.....	.....	.....	(0.3)	.....	.....	.....
EMRC 604-1	.....	.....	.....	.....	.....	(0.5)	.....	.....	.....
EMRC 606-1	.....	.....	.....	.....	.....	(0.1)	.....	.....	.....
EMRC 607-1	.....	.....	.....	.....	.....	(5.95)	.....	.....	.....
EMRC 608-1	.....	.....	.....	.....	.....	(1.85)	.....	.....	.....
EMRC 609-1 - ÉPUISÉ / Sold out -	.....	.....	.....	.....	.....	(15.65)	.....	.....	.....
EMRC 610-1 - ÉPUISÉ / Sold out -	.....	.....	.....	0.075	.....	.....	.....	.....	.....
EMRC 611-1	.....	.....	.....	.....	.....	(13.84)	.....	.....	.....
EMRC 612-1	.....	.....	.....	.....	.....	(9.19)	.....	.....	.....
EMRC 677-1	(0.002)	(0.003)	.....	(0.0006)	(0.0012)	.....	.....	0.43	.....
EMRC 679-1 - ÉPUISÉ / Sold out -	0.021	(0.0062)	0.018	(0.0037)	(0.0027)	(5.20)	.....	(5.44)	(25.61)
EMRC 685-1	.....	.....	.....	0.013	.....	(7.719)	80.80	.....	.....
EMRC 691-1 [NEW]	0.0195	0.0008	.....	.....	0.0768	20.71	.....	.....	.....

Laitiers & Scories / *Slags*

	Fe	Si	Ca	Mg	Al	Ti	Mn	P	S
EMRC 802-1	0.576	15.16	30.62	2.87	8.53	0.366	0.460	0.109	0.714
EMRC 803-1	0.613	17.01	30.93	2.44	6.98	0.301	0.552	0.118	0.767
EMRC 804-1	11.92	2.59	36.88	0.88	0.407	0.152	1.48	7.67	0.127
EMRC 805-1	14.87	3.10	34.96	1.12	0.326	0.205	1.59	7.07	0.092
EMRC 806-1	17.89	5.48	32.97	1.82	0.477	0.302	4.60	0.982	0.110
EMRC 878-1 - ÉPUISÉ / Sold out -	0.60	15.77	25.46	5.80	8.45	0.37	0.99	0.013	.....

	Na	K	F	V	Cr	Zn	Pb	B
EMRC 802-1	0.236	0.491	0.243	0.028	0.0053	0.0025	(0.0015)	0.0245
EMRC 803-1	.....	.....	.....	.....	.....	.....	.....	.....
EMRC 804-1				0.460				
EMRC 805-1				0.514				
EMRC 806-1				0.288				
EMRC 878-1 - ÉPUISÉ / Sold out -	0.35	1.07	0.15					

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