

TABLE 1.—KEY NUMBER AND COMPOSITION OF EACH OF VARIOUS SPECIMENS OF IRON, COBALT, NICKEL, THEIR ALLOYS, AND ALLOYS CONTAINING MANGANESE AND COPPER

Those alloys which occur in only a single table and are of such a nature that there is no reason for comparing their compositions with those of others are not included in this list. When materials from distinctly different sources have the same composition, they are distinguished in the property tables by roman numerals appended to the key number. Amounts expressed in % by weight.

Key number	Material	% C	% Si	% Mn	% S	% P	Tables
	Carbon irons and pure Fe						
1	Electrolytic Fe; fused <i>in vacuo</i> (3 mm Hg).....						4
1.1	Electrolytic Fe; fused <i>in vacuo</i> ; Heraeus; extremely pure.....						6
2	Electrolytic Fe; fused <i>in vacuo</i> ; total impurities = 0.02%.....						22
3	Electrolytic Fe; fused in H; Merck.....						6, 22
4	Electrolytic Fe; fused in N; Merck.....						4, 6, 22
5	Pure iron. Data obtained from commercial materials; correction applied for effect of impurities.....						4
6	Electrolytic Fe; fused <i>in vacuo</i>	0.0015			0.014		6
7	Electrolytic Fe; fused <i>in vacuo</i>	0.0017			0.014		6
8	Electrolytic Fe; fused <i>in vacuo</i>	0.0018			0.014		6
9	Electrolytic Fe.....	0.004	0.007		0.006	0.011	3, 22
10	Electrolytic Fe; fused <i>in vacuo</i>	0.006	0.01				6
11	Iron, 0.006% Cu.....	0.009	0.005		0.006		22
12	Iron, 0.006% Cu.....	0.009	0.006		0.009		22
13	Electrolytic Fe; fused in H, 0.072% H.....	0.012	0.003	0	0.001	0.004	6
14	Electrolytic Fe + C.....	0.018	0.004	Tr.	0.011		9
15	Electrolytic Fe.....	0.024	0.004	0.008	0.001	0.08	6
16	Swedish charcoal iron.....	0.027	0.006	0.030	0.002	0.08	3, 4, 9, 11
17	Swedish charcoal iron.....						5
18	Mild steel; dynamo steel.....	0.044	0.004	0.400	0.027	0.044	4, 9, 11
19	Swedish iron.....	0.046	0.006	0.12			

TABLE 1.—(Continued)

Key number	Material	% C	% Si	% Mn	% S	% P	Tables
	Carbon irons and pure Fe.—(Continued)						
20	Taylor iron.....	<0.05					4
21	American ingot iron.....	<0.05					4
22	Norway iron.....	<0.05					4
23	Best refined iron.....	<0.05					4
24	Soft iron.....						2, 5, 11
25	Bessemer steel.....	0.05					4
26	Firminy.....	0.06					12, 14
27	Iron, 0.03% Cu.....	0.08	0.01	0.06	0.01	0.01	22
28	Mild steel; dynamo.....	0.085	0.028	0.380	0.024	0.029	4, 9, 11
29	Kohlsua iron.....	0.09	0.04	0.06	0.009	0.024	4
30	Bessemer steel.....	0.1					4
31	Electrolytic Fe + C.....	0.14	0.01	0.002	0.020		9
32	Bessemer steel.....	0.15					4
33	Firminy.....	0.20					12, 14
34	Hard steel.....	0.23	0.04	0.18	(?)	0.08	9, 11
35	Electrolytic Fe + C.....	0.23	0.006	0.004	0.020		9
36	Electrolytic Fe + C.....	0.32	0.007	Tr.	0.009		9, 10
37	Electrolytic Fe + C.....	0.39	0.004	Tr.	0.009		10
38	Mild steel, no As.....	0.44			0	0	5
39	Firminy.....	0.49					12, 14, 15
40	Electrolytic Fe + C.....	0.52	0.003	Tr.	0.011		9
41	Hard steel.....	0.69	0.16	0.13	0.08	0.02	9, 11
42	Firminy.....	0.84					12, 13, 14
43	Eutectoid steel, * 0.05% Cr.....	0.85	0.23	0.23	0.014	0.016	9, 11
44	Electrolytic Fe + C.....	0.88	0.018	0.006	0.011		9, 10
45	Electrolytic Fe + C.....	0.96	0.017	0.004	0.009		10
46	Unieux.....	0.96					12, 14
47	Hard steel.....	0.99	0.24	0.28	0.01	0.01	9, 11
48	High carbon steel.....	0.99	0.10	0.40	0.07	0.04	3
49	Drill rod.....	1.10					4
50	Firminy.....	1.21					12, 14
51	Electrolytic Fe + C.....	1.28	0.025	Tr.	0.008		9
52	Electrolytic Fe + C.....	1.32	0.006	Tr.	0.011		9
53	Unieux.....	1.40					14
54	Unieux.....	1.41					14
55	Electrolytic Fe + C.....	1.55	0.004	Tr.	0.003		9
56	Hard steel.....	1.57	0.23	0.37	0.01	0.01	9, 11
57	Electrolytic Fe + C.....	1.60	0.005	Tr.	0.005		9
58	Unieux.....	1.61					14
59	Hard steel.....	1.78	0.10	0.17	0.08	0.02	9, 11
	Silicon steels						
60	Silicon steel.....	0.25	1.03	0.09	0.04	0.02	17
61	Silicon steel.....	0.21	2.40	0.08	0.04	0.01	17
62	Stalloy.....		3				3
63	Silicon steel.....	0.06	3.71	0.31	0.01	0.01	17
64	Silicon steel†.....	0.07	4.09	0.10	0.01		17
65	Ferrosilicon.....		4.4				2
66	Dynamo sheets.....		4 to 5				3
67	Silicon steel.....	0.29	4.45	0.12	0.03	0.02	17
	Series of alloys; Si = 0.001% to 4.92%; see.....						17
68	Cast iron.....	3.109	3.270	0.560	0.061	1.050	4, 9, 11
	Manganese steels						
70	Manganese steel.....	0.46		0.7			12
71	Manganese steel.....	0.10	0.03	2.76			17
72	Manganese steel.....	0.09	0.04	4.20			17
73	Manganese steel.....	0.13	0.05	5.74			17
74	Manganese steel.....	0.20	0.09	7.81			17
75	Manganese steel.....	0.22	0.11	10.30			17
76	Manganese steel.....	0.20	0.13	12.34			17

* The magnetic properties of commercial tool steel lie between those of the annealed and of the quenched eutectoid.

† More recent than 60, 61, 63, 67.