
Vulcan Expert+ Calibration datasheet

December 2020

VULCAN



Aluminium alloys

Element	Be	B	Mg	Al	Si	Ti	Cr	Mn	Fe	Ni	Cu	Zn	Zr	Ag	Pb	Bi
Calibration range	0 - 0.24	0 - 10	0 - 10.2	79.6-100	0 - 18.7	0 - 0.33	0 - 0.16	0 - 1.3	0 - 1.1	0 - 2.4	0 - 8.0	0 - 8.0	0 - 0.3	0 - 0.31	0 - 1.1	0.2 - 1.3
Error, wt. %	0.005	1.06	0.26	1.04	0.79	0.04	0.05	0.07	0.11	0.07	0.23	0.14	0.04	0.03	0.13	0.19

Magnesium alloys

Element	Mg	Al	Mn	Cu	Zn
Calibration range	82.4 - 100	0 - 12.4	0 - 1.8	0 - 2.9	0 - 6.8
Error, wt. %	0.78	0.46	0.13	0.07	0.41

Error %: Typical difference between measured value and certified reference value when large set of test samples are measured with multiple production instruments. Notice that performance of individual instrument may differ slightly.

Calibration range: Concentration range of the standards used in calibration.

Stainless steels

Element	Al	Si	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Nb	Mo	W
Calibration range	0 - 1.2	0 - 4.0	0 - 2.2	0 - 3.0	0 - 27.4	0 - 9.7	36 - 88.7	0 - 18.7	0 - 37.4	0 - 3.4	0 - 1.5	0 - 6.5	0 - 3.0
Error, wt. %	0.04	0.15	0.04	0.06	0.49	0.12	0.93	0.24	0.53	0.06	0.12	0.22	0.17

Low alloy steels

Element	Al	Si	Ti	V	Cr	Mn	Fe	Ni	Cu	Zr	Nb	Mo
Calibration range	0 - 1.3	0 - 4.0	0 - 0.3	0 - 1.8	0 - 8.8	0 - 2.2	84.4 - 100	0 - 5.3	0 - 0.6	0 - 0.41	0 - 0.3	0 - 1.4
Error, wt. %	0.01	0.18	0.02	0.04	0.17	0.12	1.2	0.10	0.03	0.04	0.02	0.09

Tool steels

Element	Al	Si	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Mo	W
Calibration range	0 - 0.9	0 - 2.6	0 - 0.47	0 - 4.9	0 - 12.0	0 - 2.3	69.6 - 96	0 - 8.0	0 - 2.0	0 - 0.7	0 - 9.4	0 - 18.1
Error, wt. %	0.04	0.20	0.06	0.20	0.40	0.06	2.56	0.18	0.14	0.03	0.31	1.11

Error %: Typical difference between measured value and certified reference value when large set of test samples are measured with multiple production instruments. Notice that performance of individual instrument may differ slightly.

Calibration range: Concentration range of the standards used in calibration.

Nickel alloys

Element	Al	Si	Ti	Cr	Mn	Fe	Co	Ni	Cu	Nb	Mo	Hf	W
Calibration range	0 - 6.0	0 - 3.9	0 - 5.2	0 - 29.5	0 - 1.6	0 - 42.7	0 - 19.0	33.3 - 100	0 - 33.0	0 - 5.1	0 - 26.5	0 - 1.5	0 - 14.1
Error, wt. %	0.29	0.38	0.20	0.99	0.08	1.4	0.64	2.5	0.49	0.27	1.1	0.12	0.72

Copper alloys

Element	Be	Mg	Al	Si	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ag	Sn	Pb	Bi
Calibration range	0 - 1.9	0 - 0.19	0 - 13.5	0 - 3.6	0 - 0.8	0 - 3.0	0 - 5.4	0 - 2.3	0 - 30.2	57.9 - 100	0 - 39.3	0 - 0.7	0 - 12.6	0 - 11.7	0 - 6.5
Error, wt. %	0.02	0.01	0.22	0.08	0.03	0.06	0.04	0.09	0.36	1.4	0.88	0.02	0.35	0.66	0.18

Titanium alloys

Element	Al	Ti	V	Cr	Mn	Fe	Zr	Nb	Mo	Sn
Calibration range	0 - 6.3	74.8 - 100	0 - 15.3	0 - 6.3	0 - 2.0	0 - 1.2	0 - 4.1	0 - 6.9	0 - 6.2	0 - 3.1
Error, wt. %	0.27	2.9	0.18	0.28	0.07	0.13	0.13	0.47	0.26	0.46

Error %: Typical difference between measured value and certified reference value when large set of test samples are measured with multiple production instruments. Notice that performance of individual instrument may differ slightly.

Calibration range: Concentration range of the standards used in calibration.

Zinc alloys

Element	Al	Fe	Cu	Zn	Sn	Pb
Calibration range	0 - 4.5	0 - 0.5	0 - 1.5	94.7 - 100	0 - 0.15	0 - 1.0
Error, wt. %	0.12	0.08	0.01	1.2	0.03	0.04

Cobalt alloys

Element	Si	Ti	Cr	Mn	Fe	Co	Ni	Nb	Mo	W
Calibration range	0 - 1.2	0 - 3.0	19 - 31	0 - 1.9	0 - 15.2	24 - 65	0.1 - 25.7	0 - 2.4	0 - 7.9	0 - 15.1
Error, wt. %	0.25	0.05	1.4	0.08	0.17	1.9	0.4	0.18	0.3	0.99

Error %: Typical difference between measured value and certified reference value when large set of test samples are measured with multiple production instruments. Notice that performance of individual instrument may differ slightly.

Calibration range: Concentration range of the standards used in calibration.

Lead alloys

Element	Sn	Sb	Pb
Calibration range	0 - 10.1	0 - 9.6	89.9 - 100
Error, wt. %	0.18	0.24	0.32

Tin alloys

Element	Cu	Ag	Sn	Sb	Pb	Bi
Calibration range	0 - 8.0	0 - 4.0	83.1 - 100	0 - 8.3	0 - 0.3	0 - 1.1
Error, wt. %	0.62	0.09	0.80	0.18	0.03	0.03

Lead + Tin alloys

Element	Ag	Sn	Pb
Calibration range	0 - 2.0	30.9 - 62.4	35.7 - 68.4
Error, wt. %	0.05	1.46	1.27

Error %: Typical difference between measured value and certified reference value when large set of test samples are measured with multiple production instruments. Notice that performance of individual instrument may differ slightly.

Calibration range: Concentration range of the standards used in calibration.