**LIST OF CERTIFIED NATURAL STANDARD MATERIALS CURRENTLY AVAILABLE**

NOTE: NOT ALL STANDARDS ARE CERTIFIED FOR ALL MEASUREMENTS. IF LARGE AMOUNTS OF STANDARD ARE REQUIRED FOR A PROJECT, AT THE DISCRETION OF LAB STAFF, USERS MAY BE REQUIRED TO PURCHASE THEIR OWN STANDARD FROM NIST, USGS, OR THE IAEA.

**Rocks / sediments**

NIST 2710 – Montana soil, Highly elevated trace element concentrations

Certified for: 64400 ppm Al, 12500 ppm Ca, 33800 ppm Fe, 8530 ppm Mg, 10100 ppm Mn, 1060 ppm P, 21100 ppm K, 289700 ppm Si, 11400 ppm Na, 2400 ppm S, 2830 ppm Ti, 38.4 ppm Sb, 626 ppm As, 707 ppm Ba, 21.8 ppm Cd, 2950 ppm Cu, 5532 ppm Pb, 32.6 ppm Hg, 14.3 ppm Ni, 35.3 ppm Ag, 76.6 ppm V, 6952 ppm Zn.

NIST 2711 – Montana Soil, Moderately elevated trace element concentrations

Certified for: 65300 ppm Al, 28800 ppm Ca, 28900 ppm Fe, 10500 ppm Mg, 860 ppm P, 24500 ppm K, 304400 ppm Si, 11400 ppm Na, 420 ppm S, 3060 ppm Ti, 19.4 ppm Sb, 105 ppm As, 726 ppm Ba, 41.70 ppm Cd, 114 ppm Cu, 1162 ppm Pb, 638 ppm Mn, 6.25 ppm Hg, 20.6 ppm Ni, 1.52 ppm Se, 4.63 ppm Ag, 245.3 ppm Sr, 2.47 ppm Tl, 81.6 ppm V, 350.4 ppm Zn.

NIST 2586 – Trace Elements in Soil Containing Lead from Paint

Certified for: 8.7 ppm As, 2.71 ppm Cd, 301 ppm Cr, 432 ppm Pb.

NIST 1646 – Estuarine sediment

Certified for: 62500 ppm Al, 8300 ppm Ca, 33500 ppm Fe, 10900 ppm Mg, 540 ppm P, 11.6 ppm As, 0.36 ppm Cd, 76 ppm Cr, 10.5 ppm Co, 18 ppm Cu, 28.2 ppm Pb, 375 ppm Mn, 0.063 ppm Hg, 32 ppm Ni, 94 ppm V, 138 ppm Zn.

USGS BIR-1 – Icelandic Basalt

Certified for: 223813 ppm Si, 82059 ppm Al, 95068 ppm Ca, 58489 ppm Mg, 79015 ppm Fe, 13503 ppm Na, 249 ppm K, 1355 ppm Mn, 92 ppm P, 5755 ppm Ti, 125 ppm Cu, 4 ppm Dy, 1.9 ppm Ce, 52 ppm Co, 370 ppm Cr, 0.55 ppm Eu, 1.8 ppm Gd, 0.6 ppm Hf, 2.5 ppm Nd, 170 ppm Ni, 0.63 ppm La, 3.6 ppm Li, 44 ppm Sc, 110 ppm Sr, 310 ppm V, 16 ppm Y, 1.7 ppm Yb, 70 ppm Zn, 18 ppm Zr.

USGS BCR-2 – Columbia River Basalt

Certified for: 71400 ppm Al, 50900 ppm Ca, 96500 ppm Fe, 14900 ppm K, 21600 ppm Mg, 23400 ppm Na, 1500 ppm P, 253000 ppm Si, 13500 ppm Ti, 683 ppm Ba, 53 ppm Ce, 37 ppm Co, 18 ppm Cr, 2 ppm Eu, 23 ppm Ga, 6.8 ppm Gd, 25 ppm La, 1520 ppm Mn, 248 ppm Mo, 28 ppm Nd, 48 ppm Rb, 33 ppm Sc, 346 ppm Sr, 6.2 ppm Th, 1.69 ppm U, 416 ppm V, 37 ppm Y, 3.5 ppm Yb, 127 ppm Zn, 188 ppm Zr.

USGS GSP-2 – Granodiorite, Silver Plume, Colorado

Certified for: 78800 ppm Al, 15000 ppm Ca, 34300 ppm Fe, 44800 ppm K, 5800 ppm Mg, 20600 ppm Na, 1300 ppm P, 311000 ppm Si, 4000 ppm Ti, 1340 ppm Ba, 410 ppm Ce, 7.3 ppm Co, 20 ppm Cr, 43 ppm Cu, 2.3 ppm Eu, 22 ppm Ga, 180 ppm La, 320 ppm Mn, 27 ppm Nb, 200 ppm Nd, 17 ppm Ni, 42 ppm Pb, 245 ppm Rb, 6.3 ppm Sc, 27 ppm Sm, 240 ppm Sr, 105 ppm Th, 2.4 ppm U, 52 ppm V, 28 ppm Y, 1.6 ppm Yb, 120 ppm Zn, 550 ppm Zr.

USGS Nod-A1 – Manganese nodule, Atlantic

Certified for: 17780 ppm Si, 20488 ppm Al, 109083 ppm Fe, 110078 ppm Ca, 28702 ppm Mg, 185065 ppm Mn, 7419 ppm Na, 4979 ppm K, 3177 ppm Ti, 6113 ppm P, 1670 ppm Ba, 3110 ppm Co, 1100 ppm Cu, 448 ppm Mo, 6360 ppm Ni, 846 ppm Pb, 1750 ppm Sr, 770 ppm V, 590 ppm Zn.

USGS Nod-P1 – Manganese nodule, Pacific

Certified for: 64867 ppm Si, 25412 ppm Al, 58038 ppm Fe, 22159 ppm Ca, 19898 ppm Mg, 291148 ppm Mn, 16323 ppm Na, 9962 ppm K, 2997 ppm Ti, 2008 ppm P, 3350 ppm Ba, 2240 ppm Co, 11500 ppm Cu, 760 ppm Mo, 13400 ppm Ni, 560 ppm Pb, 680 ppm Sr, 570 ppm V, 1600 ppm Zn.

USGS SCo-1 – Cody Shale

Certified for: 293067 ppm Si, 72529 ppm Al, 35871 ppm Fe, 18728 ppm Ca, 16401 ppm Mg, 6677 ppm Na, 22995 ppm K, 917 ppm P, 3777 ppm Ti, 12 ppm As, 72 ppm B, 570 ppm Ba, 7.8 ppm Cs, 1.8 ppm Be, 62 ppm Ce, 11 ppm Co, 68 ppm Cr, 29 ppm Cu, 770 ppm F, 30 ppm La, 45 ppm Li, 410 ppm Mn, 1.4 ppm Mo, 26 ppm Nd, 27 ppm Ni, 31 ppm Pb, 110 ppm Rb, 630 ppm S, 2.5 ppm Sb, 11 ppm Sc, 170 ppm Sr, 9.7 ppm Th, 130 ppm V, 26 ppm Y, 100 ppm Zn, 160 ppm Zr.

USGS SDO-1 – Devonian Ohio Shale

Certified for: 64959 ppm Al, 7505 ppm Ca, 65310 ppm Fe, 27798 ppm K, 9286 ppm Mg, 325 ppm Mn, 2819 ppm Na, 480 ppm P, 229973 ppm Si, 4260 ppm Ti, 68.5 ppm As, 397 ppm Ba, 79.3 ppm Ce, 46.8 ppm Co, 66.4 ppm Cr, 6.0 ppm Dy, 1.6 ppm Eu, 16.8 ppm Ga, 38.5 ppm La, 134 ppm Mo, 11.4 ppm Nb, 36.6 ppm Nd, 99.5 ppm Ni, 8.9 ppm Pr, 126 ppm Rb, 13.2 ppm Se, 7.7 ppm Sm, 75.1 ppm Sr, 48.8 ppm U, 160 ppm V, 40.6 ppm Y, 3.4 ppm Yb, 64.1 ppm Zn, 165 ppm Zr.

USGS G-2 – Analyzed Granite

Certified for: 81476 ppm Al, 14010 ppm Ca, 18620 ppm Fe, 37191 ppm K, 4522 ppm Mg, 232 ppm Mn, 30271 ppm Na, 611 ppm P, 322653 ppm Si, 2880 ppm Ti, 1880 ppm Ba, 2.5 ppm Be, 160 ppm Ce, 4.6 ppm Co, 1.34 ppm Cs, 2.4 ppm Dy, 1.4 ppm Eu, 1280 ppm F, 23 ppm Ga, 7.9 ppm Hf, 89 ppm La, 34 ppm Li, 55 ppm Nd, 30 ppm Pb, 170 ppm Rb, 3.5 ppm Sc, 7.2 ppm Sm, 478 ppm Sr, 25 ppm Th, 36 ppm V, 11 ppm Y, 0.8 ppm Yb, 86 ppm Zn, 309 ppm Zr.

USGS RGM-1 – Glass Mountain Rhyolite

Certified for: 342533 ppm Si, 72529 ppm Al, 13020 ppm Fe, 279 ppm Mn, 30197 ppm Na, 35696 ppm K, 1619 ppm Ti, 8220 ppm Ca, 1688 ppm Mg, 0.11 ppm Ag, 3 ppm As, 28 ppm B, 810 ppm Ba, 2.4 ppm Be, 1.3 ppm Br, 47 ppm Ce, 510 ppm Cl, 2 ppm Co, 9.6 ppm Cs, 12 ppm Cu, 4.1 ppm Dy, 0.66 ppm Eu, 340 ppm F, 15 ppm Ga, 3.7 ppm Gd, 24 ppm La, 57 ppm Li, 0.4 ppm Lu, 280 ppm Mn, 2.3 ppm Mo, 8.9 ppm Nb, 19 ppm Nd, 24 ppm Pb, 150 ppm Rb, 1.3 ppm Sb, 4.4 ppm Sc, 4.3 ppm Sm, 4.1 ppm Sn, 110 ppm Sr, 0.95 ppm Ta, 15 ppm Th, 5.8 ppm U, 13 ppm V, 1.5 ppm W, 2.6 ppm Yb, 220 ppm Zr.

USGS COQ-1 – Carbonatite

Certified for: 1959 ppm Al, 16193 ppm Si, 20580 ppm Fe, 7537 ppm Mg, 345246 ppm Ca, 1328 ppm K, 899 ppm Ti, 11352 ppm P, 3330 ppm Mn, 1000 ppm Ba, 1.2 ppm Be, 1700 ppm Ce, 0.2 ppm Cs, 7 ppm Er, 15 ppm Eu, 6 ppm Ga, 50 ppm Gd, 3 ppm Ho, 750 ppm La, 3900 ppm Nb, 480 ppm Nd, 13 ppm Ni, 150 ppm Pr, 3 ppm Sc, 56 ppm Sm, 12000 ppm Sr, 4 ppm Tb, 10 ppm Th, 11 ppm U, 110 ppm V, 81 ppm Y, 6 ppm Yb, 87 ppm Zn, 65 ppm Zr.

NIST 2702 – Inorganics in Marine Sediment

Certified for: 84100 ppm Al, 45.3 ppm As, 397.4 ppm Ba, 123.4 ppm Ce, 0.817 ppm Cd, 27.76 ppm Co, 352 ppm Cr, 79100 ppm Fe, 0.438 ppm Hg, 20540 ppm K, 73.5 ppm La, 1757 ppm Mn, 6810 ppm Na, 75.4 ppm Ni, 127.7 ppm Rb, 1552 ppm P, 132.8 ppm Pb, 5.6 ppm Sb, 25.9 ppm Sc, 119.7 ppm Sr, 20.51 ppm Th, 8840 ppm Ti, 0.8267 ppm Tl, 357.6 ppm V, 485.3 ppm Zn.

**Waters**

NRC SLEW-3 – Estuarine Water

Certified for: 0.00134 ppm As, 0.000047 ppm Cd, 0.000181 ppm Cr, 0.00004 ppm Co, 0.00153 ppm Cu, 0.000561 ppm Fe, 0.000009 ppm Pb, 0.00159 ppm Mn, 0.00121 ppm Ni, 0.00254 ppm V, 0.000198 ppm Zn.

NRC CASS-5 – Nearshore seawater reference material for trace metals

Certified for: 0.00121 ppm As, 0.0000210 ppm Cd, 0.000103 ppm Cr, 0.000371 ppm Cu, 0.00140 ppm Fe, 0.000011 ppm Pb, 0.00256 ppm Mn, 0.00959 ppm Mo, 0.000322 ppm Ni, 0.00311 ppm U, 0.00128 ppm V, 0.000702 ppm Zn.

NRC NASS-5 – Seawater reference material for trace metals

Certified for: 0.00127 ppm As, 0.000023 ppm Cd, 0.000110 ppm Cr, 0.000011 ppm Co, 0.000297 ppm Cu, 0.000207 ppm Fe, 0.000008 ppm Pb, 0.000919 ppm Mn, 0.0096 ppm Mo, 0.000253 ppm Ni, 0.000102 ppm Zn.

OSIL IAPSO – Standard seawater calibrated for salinity

Certified for: 0.174 ppm Li, 4.5 ppm B, 27.6 ppm C, 0.42 ppm N, 1.3 ppm F, 10770 ppm Na, 1290 ppm Mg, 0.00054 ppm Al, 2.8 ppm Si, 0.07 ppm P, 904 ppm S, 19354 ppm Cl, 399 ppm K, 412 ppm Ca, 0.000014 ppm Mn, 0.000055 ppm Fe, 0.0005 ppm Ni, 0.00025 ppm Cu, 0.0004 ppm Zn, 0.0017 ppm As, 67 ppm Br, 0.12 ppm Rb, 7.9 ppm Sr, 0.00008 ppm Cd, 0.05 ppm I, 0.00029 ppm Cs, 0.014 ppm Ba, 0.000001 ppm Hg, 0.000002 ppm Pb, 0.0033 ppm U.

**Organic materials**

NIST 1400 – Bone ash

Certified for: 381800 ppm Ca, 6840 ppm Mg, 179100 ppm P, 660 ppm Fe, 9.07 ppm Pb, 186 ppm K, 249 ppm Sr, 181 ppm Zn.

NIST 1575a – Trace Elements in Pine Needles

Certified for: 1070 ppm P, 4170 ppm K, 2500 ppm Ca, 580 ppm Al, 6.0 ppm Ba, 0.233 ppm Cd, 421 ppm Cl, 2.8 ppm Cu, 46 ppm Fe, 0.0399 ppm Hg, 16.5 ppm Rb, 38 ppm Zn.

NIST 1947 – Lake Michigan fish tissue

Certified for: 0.732 ppm As, 0.411 ppm Cu, 3.79 ppm Fe, 0.254 ppm Hg including isotope ratios, 0.076 ppm Mn, 4.51 ppm Rb, 0.475 ppm Se, 2.66 ppm Zn.