

**Abundance and form of the most abundant elements in Earth's continental crust.**

<i>Order of abundance</i>	<i>Element</i>	<i>Weight % in crust</i>	<i>Molar % in crust</i>	<i>Volume % in crust</i>	<i>Typical natural form at Earth surface</i>
1	Oxygen	46.3	60.2	<b>94.2</b>	O <sup>2-</sup> in minerals and H <sub>2</sub> O; small amount as elemental O <sub>2</sub> in atmosphere
2	Silicon	28.2	20.8	0.8	Almost all as Si <sup>4+</sup> in silicate minerals; some as H <sub>4</sub> SiO <sub>4</sub> in seawater
3	Aluminum	8.1	6.2	0.4	Almost all as Al <sup>3+</sup> in minerals
4	Hydrogen	0.1	2.9	-	Almost all as H <sup>+</sup> in H <sub>2</sub> O, OH <sup>-</sup> in minerals, and HCO <sub>3</sub> <sup>-</sup>
5	Sodium	2.4	2.2	1.1	All as Na <sup>+</sup> , largely in minerals but also in seawater
6	Calcium	4.1	2.1	1.2	All as Ca <sup>2+</sup> , largely in minerals but also in seawater
7	Iron	5.4	2.0	0.4	Mostly as Fe <sup>2+</sup> and Fe <sup>3+</sup> in minerals
8	Magnesium	2.3	2.0	0.3	All as Mg <sup>2+</sup> , largely in minerals but also in seawater
9	Potassium	2.1	1.1	1.5	All as K <sup>+</sup> , largely in minerals but also in seawater
10	Titanium	0.5	0.2	0.04	Almost all as Ti <sup>4+</sup> in minerals
11	Phosphorous	0.1	0.1	0.002	Mostly as P <sup>5+</sup> in phosphate (PO <sub>4</sub> <sup>3-</sup> )
12	Fluorine	0.06	0.07	0.1	All as F <sup>-</sup> , largely in minerals but also in seawater
13	Carbon	0.02	0.04	0.0003	Range of valence states from 4- to 4+
14	Manganese	0.1	0.04	0.007	Mostly as Mn <sup>2+</sup> , Mn <sup>3+</sup> , and Mn <sup>4+</sup> in minerals
15	Sulfur	0.03	0.02	0.004	Almost all as S <sup>6+</sup> in sulfate (SO <sub>4</sub> <sup>2-</sup> ) or S <sup>2-</sup> in sulfides
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≥73	Gold	0.0000003	0.00000003	-	As Au <sup>0</sup> and Au <sup>+</sup>

Percentages are calculated from data for average continental crust in Appendix III of Krauskopf (1979). For a more recent but less complete compilation, see Taylor and McLennan (1985). The abundances of the first fifteen elements listed add up to 99.77 molar % of average crust. Gold is included solely to allow comparison of these 15 most abundant elements to a very scarce element. Volume percent for oxygen in boldface illustrates the paraphrase by Mason (1958) of the words of Viktor Goldschmidt that "the lithosphere may well be called the oxysphere".