# A table of systematic mineralogy IV: numbers of minerals

| *Minerals consisting of uncharged atoms (i.e., in elemental state)* | *Minerals consisting of cations bonded to single anions (no radical groups or complex ions)* | | *Minerals consisting of cations bonded to negatively-charged radical groups (i.e., to complex ions like $CO_3^{2-}$ or $AsS_3^{2-}$)* | | |
|---|---|---|---|---|---|
| Native elements<br>Sulfur (S)<br>Diamond (C)<br>Copper (Cu)<br>*90*<br>Only 31 elements occur as native minerals. The number above includes polymorphs (e.g., diamond, graphite, chaoite, and lonsdaleite) and naturally occurring alloys. | Halides<br>("Group VII -ides")<br>(and thus minerals with 1- anions) | Fluorides<br>Fluorite ($CaF_2$)<br>*32* | Fluosalts: *6* | Fluoborates<br>Fluosilicates<br>Ferruccite ($NaBF_4$)<br>Hieratite ($K_2SiF_6$) | *Negative charge in mineral comes from halide anions* |
| | | Chlorides<br>Halite (NaCl)<br>*75* | | | |
| | | Bromides<br>Bromargyrite (AgBr)<br>*4* | | | |
| | | Iodides<br>Iodargyrite (AgI)<br>*3* | | | |
| | "Group VI -ides"<br>(and thus minerals with 2- anions) | Oxides<br>Hematite ($Fe_2O_3$)<br>*255* | Oxysalts:<br>*2700* | Silicates<br>Borates<br>Carbonates<br>Nitrates<br>Phosphates<br>Sulfates<br>Vanadates<br>Chromates<br>Niobates<br>Molybdates<br>Tantalates<br>Tungstates<br>Arsenates<br>Selenates<br>Antimonates<br>Tellurates<br>Iodates<br>Sulfites<br>Arsenites<br>Selenites<br>Antimonites<br>Tellurites<br>Calcite ($CaCO_3$) | *Negative charge in mineral comes from anions of Group VI elements* |
| | | Sulfides<br>Galena (PbS)<br>*138* | Sulfosalts:<br>*250* | Sulfarsenates<br>Sulfogermanates<br>Sulfantimonates<br>Sulfostannates<br>Sulfovanadates<br>Sulfarsenites<br>Sulfantimonites<br>Sulfobismuthites<br>Pyrargyrite ($Ag_3SbS_3$) | |
| | | Selenides<br>Achavalite (FeSe)<br>*37* | Seleniosalts:<br>*2* | Selenioantimonates<br>Seleniobismuthites<br>Permingeatite ($Cu_3SbSe_4$) | |
| | | Tellurides<br>Altaite (PbTe)<br>*34* | Tellurisalts:<br>*1* | Telluribismuthites<br>Volynskite ($AgBiTe_2$) | |
| | "Group V -ides"<br>(and thus minerals with 3- anions) | Nitrides<br>Osbornite (TiN)<br>*4* | | | *Negative charge in mineral comes from anions of Group IV and V elements* |
| | | Phosphides<br>Barringerite $(Fe,Ni)_2P$<br>*3* | | | |
| | | Arsenides<br>Löllingite ($FeAs_2$)<br>*21* | | | |
| | | Antimonides & Bismuthides<br>Sobolevskite (PdBi)<br>*6* | | | |
| | "Group IV -ides"<br>(and thus minerals with 4- anions) | Carbides<br>Moissanite (SiC)<br>*5* | | | |
| | | Silicides<br>Gupeiite($Fe_3Si$)<br>*4* | | | |

*37* Number of minerals known in each category
The number shown for oxides does not include minerals that are solely hydroxides.

The numbers shown here can be taken at face value as an indication that there are more oxysalt and oxide minerals than any other kinds. That would not be surprising, given that oxygen is the most abundant element in Earth's crust. Alternately, the numbers shown here can be taken to reflect the greatest human access to oxidizing environments at Earth's surface, and our inability to sample the reducing environments in Earth's deep interior to any significant extent.

As of 2004, a total of about 4100 minerals had been been formally recognized by the International Mineralogical Association. For the list, see Mandarino, J.A,, and Back, M.E., 2004, Fleischer's Glossary of MIneral Names: Tuscon, The Mineralogical Record Inc., 309 p.

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Railsback's *Some Fundamentals of Mineralogy and Geochemistry*