# Common New Zealand Rocks and Minerals

There are 3 main rock types: igneous, metamorphic and sedimentary. The table below shows a few examples of common rocks.

|  |  |  |
| --- | --- | --- |
| **Igneous** | **Metamorphic** | **Sedimentary** |
| [basalt](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/basalt.jpg) Basalt | [greywacke](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/greywacke.jpg) Greywacke | [limestone](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/limestone.jpg) Limestone |
| [granite](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/granite.jpg) Granite | [slate](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/slate.jpg) Slate | [shell bed](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/shell-bed.jpg) Shell bed |
| [obsidian](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/obsidian.jpg) Obsidian | [folded schist](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/schist-fold.jpg) Schist | [greywacke](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/greywacke.jpg) Greywacke |
| [pumice](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/pumice.jpg) Pumice | [garnet schist](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/schist-gnt.jpg) Schist | [graded bed](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/graded-bed.jpg) Graded bed |
| [rhyolite](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/rhyolite.jpg) Rhyolite | [[marble](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/marble.jpg)](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/marble.jpg) Marble | [[conglomerate](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/conglomerate.jpg)](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/conglomerate.jpg) Conglomerate |
| **Igneous** | **Metamorphic** | **Sedimentary** |
| [gabbro](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/gabbro.jpg)  Gabbro |  | [[glossopteris](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/leaf-fossil.jpg)](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/leaf-fossil.jpg) Leaf fossil |
| [[andesite](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/andesite.jpg)](http://www.otago.ac.nz/geology/research/general_geology/rocks-minerals/images/andesite.jpg) Andesite |  |  |

**Identification of Igneous Rocks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Grain Size** | **Usual Colour** | **Other** | **Composition** | **Rock Type** |
| fine | dark | glassy appearance | lava glass | [Obsidian](http://geology.about.com/od/rocks/ig/igrockindex/rocpicobsidian.htm) |
| fine | light | many small bubbles | lava froth from sticky lava | [Pumice](http://geology.about.com/od/rocks/ig/igrockindex/rocpicpumice.htm) |
| fine | dark | many large bubbles | lava froth from fluid lava | [Scoria](http://geology.about.com/od/rocks/ig/igrockindex/rocpicscoria.htm) |
| fine or mixed | light | contains [quartz](http://geology.about.com/library/bl/images/blquartz.htm) | high-silica lava | [Felsite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicfelsite.htm) |
| fine or mixed | medium | between felsite and basalt | medium-silica lava | [Andesite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicandesite.htm) |
| fine or mixed | dark | has no quartz | low-silica lava | [Basalt](http://geology.about.com/od/rocks/ig/igrockindex/rocpicbasalt.htm) |
| mixed | any colour | large grains in fine-grained matrix | large grains of feldspar, [quartz](http://geology.about.com/library/bl/images/blquartz.htm), pyroxene or [olivine](http://geology.about.com/library/bl/images/blolivine.htm) | [Porphyry](http://geology.about.com/od/rocks/ig/igrockindex/pocpicporphyry.htm) |
| coarse | light | wide range of colour and grain size | feldspar and quartz with minor mica, amphibole or pyroxene | [Granite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicgranite.htm) |
| coarse | light | like granite but without quartz | feldspar with minor mica, amphibole or pyroxene | [Syenite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicsyenite.htm) |
| coarse | light to medium | little or no [alkali feldspar](http://geology.about.com/od/minerals/ig/feldspars/kspargranite.htm) | [plagioclase](http://geology.about.com/od/minerals/ig/feldspars/plaganortho.htm) and quartz with dark minerals | [Tonalite](http://geology.about.com/od/rocks/ig/igrockindex/rocpictonalite.htm) |
| coarse | medium to dark | little or no quartz | low-calcium plagioclase and dark minerals | [Diorite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicdiorite.htm) |
| coarse | medium to dark | no quartz; may have [olivine](http://geology.about.com/library/bl/images/blolivine.htm) | high-calcium plagioclase and dark minerals | [Gabbro](http://geology.about.com/od/rocks/ig/igrockindex/rocpicgabbro.htm) |
| coarse | dark | dense; always has [olivine](http://geology.about.com/library/bl/images/blolivine.htm) | olivine with amphibole and/or pyroxene | [Peridotite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicperidotite.htm) |
| coarse | dark | dense | mostly pyroxene with olivine and amphibole | [Pyroxenite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicpyroxenite.htm) |
| coarse | green | dense | at least 90% olivine | [Dunite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicdunite.htm) |
| very coarse | any colour | usually in small intrusive bodies | typically granitic | [Pegmatite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicpegmatite.htm) |

**Identification of Sedimentary Rocks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hardness** | **Grain Size** | **Composition** | **Other** | **Rock Type** |
| hard | coarse | clean [quartz](http://geology.about.com/library/bl/images/blquartz.htm) | white to brown | [Sandstone](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicsandstone.htm) |
| hard | coarse | quartz and [feldspar](http://geology.about.com/library/bl/images/blmicrocline.htm) | usually very coarse | [Arkose](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicarkose.htm) |
| hard or soft | mixed | mixed sediment with rock grains and clay | grey or dark and "dirty" | [Wacke/ Graywacke](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicgraywacke.htm) |
| hard or soft | mixed | mixed rocks and sediment | round rocks in finer sediment matrix | [Conglomerate](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicconglomerate.htm) |
| hard or  soft | mixed | mixed rocks and sediment | sharp pieces in finer sediment matrix | [Breccia](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicbreccia.htm) |
| hard | fine | very fine sand; no clay | feels gritty on teeth | [Siltstone](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicsiltstone.htm) |
| hard | fine | [chalcedony](http://geology.about.com/library/bl/images/blchalcedony.htm) | no fizzing with acid | [Chert](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicchert.htm) |
| soft | fine | clay minerals | splits in layers | [Shale](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicshale.htm) |
| soft | fine | carbon | black; burns with tarry smoke | [Coal](http://geology.about.com/od/rocks/ig/sedrockindex/rocpiccoal.htm) |
| soft | fine | [calcite](http://geology.about.com/library/bl/images/blcalcite.htm) | [fizzes with acid](http://geology.about.com/od/mineral_ident/ig/acidtest/) | [Limestone](http://geology.about.com/od/rocks/ig/sedrockindex/rocpiclimestone.htm) |
| soft | coarse or fine | [dolomite](http://geology.about.com/library/bl/images/bldolomitemin.htm) | [no fizzing with acid unless powdered](http://geology.about.com/od/mineral_ident/ig/acidtest/) | [Dolomite rock](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicdolomite.htm) |
| soft | coarse | fossil shells | mostly pieces | [Coquina](http://geology.about.com/od/rocks/ig/sedrockindex/rocpiccoquina.htm) |
| very soft | coarse | [halite](http://geology.about.com/library/bl/images/blhalite.htm) | salt taste | [Rock Salt](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicrocksalt.htm) |
| very soft | coarse | [gypsum](http://geology.about.com/library/bl/images/bldesertrose.htm) | white, tan or pink | [Rock Gypsum](http://geology.about.com/od/rocks/ig/sedrockindex/rocpicgyprock.htm) |

**Identification of Metamorphic Rocks**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Foliation** | **Grain Size** | **Hardness** | **Usual Colour** | **Other** | **Rock Type** |
| foliated | fine | very soft | light | greasy feel | [Soapstone](http://geology.about.com/od/rocks/ig/metrockindex/rocpicsoapstone.htm) |
| foliated | fine | soft | dark | "tink" when struck | [Slate](http://geology.about.com/od/rocks/ig/metrockindex/rocpicslate.htm) |
| foliated | fine | soft | dark | shiny; crinkly foliation | [Phyllite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicphyllite.htm) |
| foliated | coarse | hard | mixed dark and light | crushed and stretched fabric; deformed large crystals | [Mylonite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicmylonite.htm) |
| foliated | coarse | hard | mixed dark and light | wrinkled foliation; often has large crystals | [Schist](http://geology.about.com/od/rocks/ig/metrockindex/rocpicschist.htm) |
| foliated | coarse | hard | mixed | banded | [Gneiss](http://geology.about.com/od/rocks/ig/metrockindex/rocpicgneiss.htm) |
| foliated | coarse | hard | mixed | distorted "melted" layers | [Migmatite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicmigmatite.htm) |
| foliated | coarse | hard | dark | mostly hornblende | [Amphibolite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicamphibolite.htm) |
| nonfoliated | fine | soft | greenish | shiny, mottled surface | [Serpentinite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicserpentinite.htm) |
| nonfoliated | fine or coarse | hard | dark | dull and opaque colours, found near intrusions | [Hornfels](http://geology.about.com/od/rocks/ig/metrockindex/rocpichornfels.htm) |
| nonfoliated | coarse | hard | red and green | dense; garnet and pyroxene | [Eclogite](http://geology.about.com/od/rocks/ig/metrockindex/rocpiceclogite.htm) |
| nonfoliated | coarse | soft | light | [calcite](http://geology.about.com/library/bl/images/blcalcite.htm) or [dolomite](http://geology.about.com/library/bl/images/bldolomitemin.htm) by the [acid test](http://geology.about.com/od/mineral_ident/ig/acidtest/) | [Marble](http://geology.about.com/od/rocks/ig/metrockindex/rocpicmarble.htm) |
| nonfoliated | coarse | hard | light | [quartz](http://geology.about.com/library/bl/images/blquartz.htm) (no fizzing with acid) | [Quartzite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicquartzite.htm) |

**Igneous Rock Types**

Igneous rocks are formed from magma in the Earth’s mantle. They generally don’t contain fossils, don’t react with acids, don’t usually contain obvious layers, can be made of different minerals, sometimes have holes or bubbles and may be glassy in appearance.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| [Named for the AndesAndesite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicandesite.htm) | [A peculiar feldspathic end-memberAnorthosite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicanorthosite.htm) | [Makes up the oceanic crustBasalt](http://geology.about.com/od/rocks/ig/igrockindex/rocpicbasalt.htm) | [Black and whiteDiorite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicdiorite.htm) | [Strong and dullSyenite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicsyenite.htm) | |
| [All-olivine magmaDunite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicdunite.htm) | [Light lavasFelsite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicfelsite.htm) | [A plutonic basaltGabbro](http://geology.about.com/od/rocks/ig/igrockindex/rocpicgabbro.htm) | [Type rock of continentsGranite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicgranite.htm) | [Much quartzier than dioriteTonalite](http://geology.about.com/od/rocks/ig/igrockindex/rocpictonalite.htm) | |
| [An in-between rock typeGranodiorite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicgranodiorite.htm) | [Rare and ancient ultramafic lavaKomatiite](http://geology.about.com/od/rocks/ig/igrockindex/rocpickomatiite.htm) | [Extrusive monzoniteLatite](http://geology.about.com/od/rocks/ig/igrockindex/rocpic-latite.htm) | [Volcanic glassObsidian](http://geology.about.com/od/rocks/ig/igrockindex/rocpicobsidian.htm) | [A volcaniclastic rockTuff](http://geology.about.com/od/rocks/ig/igrockindex/rocpictuff.htm) | |
| [Big-grained granitesPegmatite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicpegmatite.htm) | [Typical of the mantlePeridotite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicperidotite.htm) | [Stone styrofoamPerlite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicperlite.htm) | [A style not a compositionPorphyry](http://geology.about.com/od/rocks/ig/igrockindex/pocpicporphyry.htm) | [Close to pumiceScoria](http://geology.about.com/od/rocks/ig/igrockindex/rocpicscoria.htm) | |
| [A fluffy stonePumice](http://geology.about.com/od/rocks/ig/igrockindex/rocpicpumice.htm) | [Black deep seafloorPyroxenite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicpyroxenite.htm) | [Quartz-poor graniteQuartz Monzonite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicqtzmonz.htm) | [Stiff stuffRhyolite](http://geology.about.com/od/rocks/ig/igrockindex/rocpicrhyolite.htm) |  |

# Sedimentary Rock Types

[Sedimentary rocks](http://geology.about.com/cs/basics_roxmin/a/aa011804b.htm) form near the Earth's surface, wherever sediments can pile up and be gradually buried. The rocks in this gallery are arranged in order of their grain size: smooth chert through gritty sandstone to stony conglomerate.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **shale with sandstone beds** Shale and Sandstone | | **mudstone-chert sequence** Chert and Mudstone | | **siltstone ripple marks** Siltstone | | | |  |  |
| [Flinty fractureChert Nodule Interior](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/flintnodin.htm) | [Silica mineral crustChert Nodule Exterior](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/flintnodout.htm) | | [Hand specimenRed Chert](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/chocchertspec.htm) | | [Classic chocolate chertRadiolarian Chert](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/chert_conzelman.htm) | [Polished slab of tiger ironBanded Iron Formation](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/bif.htm) | | | | |
| [California bituminousBituminous Coal](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/bituminouscoal.htm) | [Full of energy](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/coalsack.htm)Anthracite Coa[l](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/coalsack.htm) | | [A shattered mudstoneMudstone Breccia](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/faultbreccia.htm) | | [Hand specimen of biomicriteLimestone](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/hoytLS4.--26.htm) | | [Shell hashCoquina](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/coquina.--2t.htm) | | | |
| [A puzzling stoneDolomite](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/dolomite.htm) | [Outcrop at Ocean BeachShale, Pleistocene](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/shale_oceanbeach.htm) | | [A shy rock typeShale, Cretaceous](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/shaleberry.htm) | | [Eroded from distant mountainsSiltstone](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/siltstone.htm) | | [A rock of stonesConglomerate](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/conglomerate500.htm) | | | |
| [Sierra Nevada sedimentsSandstone, Pleistocene](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/ss_tuolumne.htm) | [A former quarry wallSandstone in Outcrop](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/ss_rscquarry.htm) | | [A raw sandstoneArkose](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/arkose.htm) | | [A real gray wackeGraywacke, Franciscan](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/bakerbeach_ss.htm) | | [A study in graysLimestone Breccia](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/nvlwashbreccia.htm) | | | |
| [A rugged coastal exposureGraywacke Outcrop](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/rodeograywacke.htm) | [Coarse dirty sandstoneGreat Valley Graywacke](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/graywacke500.htm) | | [Sandstone beds among shalesTurbidites](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/turbidites.htm) | | [Precursor of coalFlorida Peat](http://geology.about.com/od/more_sedrocks/ig/sedrocksgallery/peat.htm) | |  | | | |

**Metamorphic Rock Types**

Metamorphic rocks are those that form by the effects of heat, pressure and shear upon igneous and sedimentary

rocks. Some form during mountain-building by forces of **regional metamorphism**, others from the heat of

igneous intrusions in **contact metamorphism**. A third category forms by the mechanical forces of fault

movements: **cataclasis** and **mylonitization**.

|  |  |  |  |
| --- | --- | --- | --- |
| [Metamorphosed carbonatesMarble](http://geology.about.com/od/rocks/ig/metrockindex/rocpicmarble.htm) | [Half-melted gneissMigmatite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicmigmatite.htm) | [Ground to a powderMylonite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicmylonite.htm) | |
| [Shiny and leafyPhyllite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicphyllite.htm) | [Well-squeezed sandstone](http://geology.about.com/od/rocks/ig/metrockindex/rocpicquartzite.htm)[Serpentinite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicserpentinite.htm) | [Glittery and fissileSchist](http://geology.about.com/od/rocks/ig/metrockindex/rocpicschist.htm) |
| [Former seafloorSerpentinite](http://geology.about.com/od/rocks/ig/metrockindex/rocpicserpentinite.htm) | [Former shaleSlate](http://geology.about.com/od/rocks/ig/metrockindex/rocpicslate.htm) | [A soft, firm stoneSoapstone](http://geology.about.com/od/rocks/ig/metrockindex/rocpicsoapstone.htm) |