

# METAMOPRHIC ROCK CLASSIFICATION

## Introduction

Most metamorphic rocks are derived from sedimentary or igneous precursors. The metamorphic rock has a composition similar to that of the parent, but changes in mineralogy and texture have occurred in response to the processes of metamorphism.

Most metamorphic rock classification schemes emphasize textural rather than mineralogical or compositional characteristics. The relatively few common textural names are generally made more specific by adding mineral-content modifiers. These names are ordered according to their increasing abundance in the rock. For example muscovite-biotite gneiss, in which biotite is more abundant than muscovite. The prefix "meta-" may be used to designate the parent rock, as in metabasalt or metagabbro.

## Foliated Rocks (Regional metamorphism)

*Slate* - a very-fine-grained rock showing fissility due to incipient growth of micaceous minerals.

*Phyllite* - a fine-grained rock showing a moderately well-developed foliation (schistosity). The surface of schistosity has a lustrous sheen due to the development of new mica and chlorite.

*Schist* - a medium- to coarse-grained rock. Well-developed foliation (schistosity). micas are often abundant.

*Gneiss* - A medium- to coarse-grained irregularly banded rock. The most common types have alternating mica-rich and quartzofeldspathic layers.

## Massive Rocks (Contact metamorphism)

*Hornfels* - a fine-grained rock lacking any preferred orientation of the grains.

*Granofels* - a medium- to coarse-grained granoblastic rock without, or with only indistinct, foliation or lineation.

## Cataclastic Rocks

*Mylonite* - a foliated, medium- to fine-grained to flinty or glassy and streaky looking rock. Eyes or relict lenses of the parent rock may persist in the finer-grained matrix.

*Phyllonite* - a rock resembling a phyllite, but formed by intense deformation and reduction of grain size. Silky film of mica may be sheared out on the schistosity.

*Cataclasite* - a fault breccia with randomly oriented matrix fabric, as contrasted with mylonite which is foliated. Tectonic reduction in grain size dominates grain growth.

## Miscellaneous Rock Names

*Quartzite* or *metaquartzite* - a metamorphic rock consisting primarily of recrystallized and interlocking grains of quartz. May be massive or foliated. A few percent mica or other minerals may be present.

*Marble* - a metamorphic rock consisting primarily of recrystallized and interlocking grains of calcite or dolomite. A few percent diopside, tremolite, garnet, or other minerals may be present.

*Skarn* (tactite) - a coarse-grained calc-silicate rock. Formed by metasomatism of a carbonate rock by an igneous intrusion.

*Serpentinite* - a serpentine-rich rock formed by hydration of a peridotite and generally containing a little talc, tremolite, or chlorite. Most are green to dark green in color but they may weather to orange-brown.

*Amphibolite* - a medium- to coarse-grained rock. Hornblende and plagioclase are essential components and the rock may be foliated or lineated due to preferred orientation of the hornblende. Amphibolites are compositionally equivalent to basalts and gabbros. Orthoamphibolites are derived from igneous rocks, para-amphibolites from sedimentary rocks.

*Eclogite* - a medium-grained rock, green to dark green in color, dominated by green omphacite (a Na-rich pyroxene) and lesser red garnet. It is compositionally equivalent to basalt and is considered to be an extremely high pressure metamorphic rock.