

Igneous (Latin ig = fire, neous – born) rocks form from molten magma. They are made from interlocking crystals and are therefore hard.

We classify igneous rocks by where they became solid and their chemical composition.

 Extrusive or intrusive Small crystals mean fast cooling = extrusive/volcanic at the Earth's surface Large crystals mean slow cooling = at depth

Using the library or the Internet draw and label a simple diagram of a volcano with its lava flows, underlying sills, dykes and magma chamber. Indicate where extrusive rock would form and where intrusive rock would form.

2. Chemical composition - felsic (Fe+Si) or mafic (Mg+Fe)

Rocks rich in silica/quartz are called FELSIC. Since silica is common in Earth's crust these are probably melted crustal rocks. They are usually light in colour and light in weight.

Rocks rich in iron and magnesium are called MAFIC. Since these elements are more common in Earth's mantle, they probably have a component of mantle material. They are usually darker in colour and heavier in weight.

The following page has pictures of igneous rocks. See if you can classify them as extrusive or intrusive and as felsic, intermediate or mafic.



Picture	Comments	Classification Extrusive or intrusive Felsic or mafic
Australian Geoscience Australian 10 cm	Light white to cream rock. Porous Crystals cannot be seen by naked eye. Floats on water. From Mt Tarawera New Zealand	
	Light grey rock Porous Crystals cannot be seen by naked eye. Does not float on water From New Zealand and Iceland	
	Speckled grey rock with obvious white, grey and black crystals. From Mundaring WA	



Picture	Comment	Classification Extrusive or intrusive
	Dark, heavy, very fine grained rock. Crystals only just visible with a hand lens. Massive	Felsic or mafic
Australian Geoscience Austral 10 cm	Grey crystalline rock with obvious white and grey crystals. Found in New Zealand, Scotland and the Andes Mountains.	
Australian Governm Goscience Australia 10 cm	Curved glassy fragments of rock. Very sharp edges. No crystals visible even under a microscope. From New Zealand	

ROCKS & MINERALS

Recognising Igneous Rocks - Student Activity

Picture	Comment	Classification Extrusive or intrusive Felsic or mafic
Australian Go: Geoscience Austral: -10 cm	Black, heavy, massive, fine grained rock. Crystals only just visible under a hand lens. From the beach in Bunbury WA	
Derer de la constantia de la	Pink silica rich rock. Light Fine crystals just visible From Rotorua New Zealand	
	Very, very large well formed crystals. A light bright rock found in veins within other rocks in the ancient Yilgarn craton in WA.	



Picture	Comment	Classification Extrusive or intrusive Felsic or mafic
Australian Cosscience	Dark medium density rock whose crystals can only be seen with a hand lens. It forms a wall like structure cutting through other country rock. Exposed in a road metal quarry in the Darling Ranges.	

Why is the Geoscience Australia card included in each picture?

We carefully select rocks to use because of their *physical characteristics*.

If you had to carry a bucket of rockr, which rock type above would you choose? Explain your answer.



If you were being attacked and had to quickly pick a rock to throw, which would you choose? Explain your answer.



You are going to design the front of a new art gallery. Which igneous rock would you choose for the front of the building? Explain your answer.

Recognising Igneous Rocks - Student Activity

You have been asked to demonstrate how to make a stone knife. Which igneous rock would you select? Explain your answer