

Lesson C1.5: Rocks and their formation						
Specification learning outcomes	HSW statements	Prior learning from KS 3	Exemplar teaching activities	Main differentiation	Resource sheets	BTEC Links
<p>2.1 Describe that igneous rocks, such as granite, are: a) formed by the solidification of magma and lava b) made of crystals whose size depends on the rate of cooling</p> <p>2.2 Describe chalk and limestone as examples of sedimentary rocks</p> <p>2.3 Describe how sedimentary rocks are formed by the compaction of layers of sediment over a very long time period</p> <p>2.4 Recall that sedimentary rocks: a) may contain fossils b) are susceptible to erosion</p> <p>2.5 Describe marble as an example of a metamorphic rock</p> <p>2.6 Describe the formation of metamorphic rocks by the action of heat and/or pressure, including the formation of marble from chalk or limestone</p> <p>2.7 Recall that limestone, chalk and marble exist in the Earth's crust and that they are all natural forms of calcium carbonate</p>	<p>HSW 3 Many phenomena can be explained by developing and using scientific theories, models and ideas</p> <p>HSW 6 Collecting data from primary or secondary sources, including the use of ICT sources and tools</p>	<p>Year 7 Recognise, using simple models, the processes of sedimentation, erosion, weathering in the formation of rocks, e.g. in sedimentary rock</p> <p>Year 8 Explain, using models, how some of the characteristics of rocks are linked to biological, physical and chemical processes of formation</p> <p>Year 8 Describe the processes involved in the formation of sedimentary rocks</p> <p>Year 8 Describe the effect of heat and pressure on the formation of igneous and metamorphic rocks as a possible progression from sedimentary rocks</p> <p>Year 9 Use the rock cycle as a model to explain the formation and composition of different rock types</p>	<p>Starter: <i>Sorting rocks</i> Provide cards with the names of different rocks - e.g. limestone, sandstone, marble, slate, granite, basalt. Students work in groups to sort the cards into three groups. They feed their answers back to the class for discussion. What is the basis for their groups? Have they recalled the three main rock types from Key Stage 3, or have they used some other basis for sorting?</p> <p>Main: <i>A model for crystal size in igneous rocks</i> Students cool liquid salol at different rates and observe the relative sizes of the crystals formed. See Worksheet C1.5b and the Teacher and technician practical sheet for full details.</p> <p>Plenary: <i>Rock to rock</i> Divide the class into a <i>multiple of three</i> groups. For example, a class of 24 might be divided into six groups of four, with two groups each working on one of these problems: how metamorphic rock becomes igneous rock; how igneous rock becomes sedimentary rock; how sedimentary rock becomes metamorphic rock. Groups working on the same problem share their ideas to devise a simple flow chart or written explanation of the process. They feed their work back to the class. Note that students need not recall the rock cycle.</p> <p>Homework: Ask students to produce a poster describing how igneous, metamorphic and sedimentary rocks form.</p>	<p>Stretch: Salol is a pure compound that solidifies at a specific temperature, but igneous rocks contain more than one compound. To what extent might this affect the validity of the salol model for crystal formation in igneous rocks?</p> <p>Support: Pair more able students with less able students for the practical. Consider supplying labelled pairs of ignition tubes from previous experiments, one cooled slowly and one cooled quickly.</p>	Worksheet C1.5b Teacher and technician practical sheet	<i>To follow</i>