Unit 240: Install regular sized natural roof slate to standard roof details

# Delivery guide

Unit information

This unit is about interpreting information, adopting safe, healthy, and environmentally responsible work practices, selecting, and using materials, components, tools, and equipment and installing regular sized natural slate roof coverings to battens and/or boards for new and/or re-roof work.

Learners may be introduced to this unit by asking themselves questions such as:

* What mortar mix is used for roof work?
* What methods are used to fix natural slates?
* What type of metal should be used for a slate nail?

Learning outcomes

1. Understand resource selection
2. Understand working to a contract specification
3. Comply with the given contract information to carry out the work safely and efficiently to the required specification

Suggested resources

British Standards

* BS 5534:2014+A2:2018 *Slating and tiling for pitched roofs and vertical cladding – Code of Practice.*
* BS 8000-6:2013 *Workmanship on building sites – Code of Practice for slating and tiling of roofs and claddings.*
* BS 8000-0:2014 *Workmanship on construction sites: Introduction and general principles.*

Websites

* [Roof Tile Association Roof Tile Association](https://rooftileassociation.co.uk/) | Home
* [National Federation of Roofing Contractors (NFRC) | Technical Bulletins](https://www.nfrc.co.uk/knowledge-hub/NFRC-publications)

Textbooks

* Health and Safety Executive (5th edition) HSG33 *Health and safety in roof work* (2020) Norwich: The Stationery Office.

ISBN 978-0-71766-722-2

* Building Regulations Conservation of Fuel and Power: *Approved Document L1B: conservation of fuel and power in existing dwellings*, 2010 edition. Newcastle Upon Tyne: RIBA Bookshops.

ISBN 978-1-85946-744-2

* Building Regulations Conservation of Fuel and Power: *Approved Document L2B: conservation of fuel and power in existing buildings other than dwellings*, 2010 edition. Newcastle Upon Tyne: RIBA Bookshops. ISBN 978-1-85946-746-6

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to know: * the differences between high-end and commercial/budget slates * the differences between UK and imported slates * what is meant by the head and tail of a slate * why slates are cut and holed from the back * about pre-holed slates and their limitations/uses * why slates must be graded before use * why slates should be laid with gaps no more than 5mm (to prevent slates riding up onto each other and to accommodate slight changes in width) * about the suitability of different slate sizes in relation to roof pitch and exposure zones (sheltered, moderate, severe, very severe), including head and side-laps * about dry fix ridge, hip, verge and valley systems * the materials and ratios required for mixing roofing mortar * about gauges, head laps, side-lap and half-bond * about the types of nails and hooks used for slating * about the range of fittings, including ridge and hip tiles, cloaked verge tiles, slate-and-a-half and tile vents * the common defects such as splits, cracks, misshaped materials and general damage caused during the manufacturing process or by poor manual handling/transport * about repair materials such as specialist fixing kits and hooks/clips/tingles and how they are used to repair broken slates/components * minimum pitch (installed at no less than 20 degrees). |
| * 1. Use of resources | * Learners to know how to select appropriate quantities from given information. * Learners to know the purpose of the resources and how they are used on the roof. * Learners to ensure that resources cover the following range: general areas, eaves, abutments, openings (roof lights/windows), dry and/or wet fix verges, ridges, hips and valleys and top edges. * Learners to know how to identify and report defective materials, shortages and how to correctly transport, handle, store and protect materials. |
| * 1. Organisational procedures to select resources | * Learners to demonstrate knowledge and understanding of drawings, specifications, Manufacturers’ Technical Information (MTI), job cards and other working instructions from the employer. * Learners to know how to use the internal storage systems when selecting materials from their own yard or compound. * Learners to demonstrate knowledge and understanding of site compounds when selecting materials on-site. * Learners to know to organise deliveries direct to site. * Learners to know to use plant and tool hire shops when specialist equipment is needed. * Learners to know how to use a range of resources, including natural slates, fittings, fixings, ridge and hip tiles, dry fix systems, ventilation systems, mortar mixes and additives in relation to types, quantity, quality and sizes. |
| * 1. Hazards | * Learners to understand Risk Assessment Method Statements (RAMS) relating to: * working at height * accidents associated with installing the materials and components, particularly when disc cutting requires personal protective equipment (PPE) or dust suppression using water or mechanical extraction * safe manual handling when moving, loading and unloading materials * safe use of hand tools when hammering and cutting * safe used of hazardous materials when dealing with lead or solvents. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to demonstrate knowledge and understanding of: * grading/sorting natural slates into no less than three thicknesses * holing or re-holing of slates from the reverse side to produce counter-sunk holes no more than 5mm diameter * hooking slates and when that might be preferable to nailing (slates with a low modulus of rupture, very exposed areas) * laying natural slates to general and local areas, including eaves, verges, openings, abutments, hips and valleys * nailing roof tiles to fixing specification * screwing dry ridge, verge and hip systems * bedding and pointing of mortar to wet verges, ridges, hips and valleys * cutting natural slates and related components to shape and size * lapping natural slates at the sides to achieve nominal half-bond of no less than permitted side-lap (by calculation) when cutting in, and at the heads to ensure correct coverage * positioning materials and components to working instructions. |
| * 1. Tools and equipment | * Learners to know how and where in the contract the following tools are used: * slate knife, break-irons, hand-held slate cutters and guillotines for manual cutting and shaping of natural slates * hammers for nailing slates and related components * knee pads for comfort and protection when kneeling on battens * measuring tape/rule for setting out battens, measuring and cutting and for all dimensional positioning of materials and components (pencil and/or marker pen) * chalk or wet line for striking positional lines for tiles, cutting angles at valleys and positional guides at hips * trowel for bedding and pointing wet verges, ridges, hips and valleys * bucket for carrying and transporting mortar when wet fixing * disc cutter with dust suppression via water feed or mechanical extraction. |
| 1. Comply with the given contract information to carry out the work safely and efficiently to the required specification | * 1. Demonstration of work skills | * Learners to practically demonstrate how to check that: * the roof is measured for rafter length to establish datum points at eaves and ridge/top edges, number of courses, maximum gauges and to gauge what adjustments may be necessary/possible for pre-holed and un-holed slates * the forming of short courses and at eaves or ridges * setting out and striking lines * slates are laid with gaps of no more than 5mm * slates are laid evenly across the roof with minimal gaps * slates are laid in straight lines to struck ‘perp’ lines up the roof * nominal half-bond is maintained in general areas * minimum side-laps are maintained at details * openings and penetrations are neatly finished * measuring and cutting of slates is accurate and neat with chamfered edge re-produced on the front of the slate * measuring and cutting of other materials and components is neat and accurate * slate holing is neat and accurate with holes no larger than 5mm * small cuts are avoided using slate-and-a-half * nails are correctly applied * dry verge, ridge, valley and hip systems are installed to MTIs * wet verge, ridge and hip systems are installed in line with the standards (see BS 8000-6:2013 and MTIs) and mechanically fixed where appropriate * open valleys are finished dry to straight lines and there is a consistent open channel to the required width * work is planned to minimise foot traffic on the slates * finished installation of the materials and components demonstrates a clear understanding of the manufacturer’s and/or work instructions. |
| * 1. Use and maintain hand tools, power tools and ancillary equipment to install regular sized natural roof slates to battens and/or boards and related fittings, fixings, and components to given working instructions, using new and/or reclaimed materials for roofs with the following: * general areas * eaves and top course * abutments * openings (roof lights/windows) * dry and/or wet fix verges * ridges, hips, and valleys | * Learners to know how to ensure the safe use and maintenance of hand tools, portable power tools and ancillary equipment, including regular inspection and replacement where appropriate. * Range to include using tools and equipment to install materials and components to eaves, verges, hips, ridges, valleys, abutments, openings, penetrations, general areas and vertical surfaces. |