Unit 238: Install plain tile roof coverings

# 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 plain tile roof coverings for new and/or re-roof work.

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

* Where would a cold roof be insulated?
* Why are plain tiles cambered in their length?
* What feature is used to hang a plain tile on a batten?

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 concrete and clay tiles * the differences between single and double cambered tiles * the differences between machine-made, hand-made, and hand-crafted * about the suitability of different tiles in relation to roof pitch * the differences between granular and smooth faced tiles * about dry fix ridge, hip, verge and valley systems * the uses and limitations of universal and purpose-made hip and valley tiles * the materials required for mixing roofing mortar * about gauges, head laps and side-lap, and half bond * the types of nails used for tiling * about the range of fittings, including ridge and hip tiles, cloaked verge tiles, tile-and-a-half, and tile vents * the types of adhesives available for bonding tile cuts and their limitations * the common defects such as splits, cracks, misshaped materials and general damage caused during manufacturing process or by poor manual handling/transport * about repair materials such as specialist fixing kits, clips and adhesives and how they are used to repair broken tiles/components. |
| * 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 required. * Learners to know to use a range of resources, including plain tiles, fittings, fixings, standard segmental/angled ridge and hip tiles, purpose-made hip and valley tiles including universal, bonnets and arris, dry fix systems, ventilation systems, lead and proprietary soakers, mortar mixes and additives in relation to types, quantity, quality and sizes. |
| * 1. Hazards | * Learners to understand of Risk Assessment Method Statements (RAMS) relating to: * working at height * potential 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 use of hazardous materials when dealing with lead or solvents. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to know how to lay roof tiles to general and local areas, including eaves, verges, abutments, hips and valleys and top edges. * Learners to know how to nail and clip roof tiles to fixing specification. * Learners to know how to screw dry ridge, verge and hip systems. * Learners to demonstrate knowledge of bedding and pointing of mortar to wet verges, ridge, hips and valleys, mechanically fixing mortar bedded ridges. * Learners to know the ratio of sand to cement and the consistency of the mix required for individual tasks. * Learners to demonstrate knowledge of cutting roof tiles and related components to shape and size. * Learners to demonstrate knowledge of lapping roof tiles at the sides to achieve nominal half bond or no less than one third tile width when cutting in, and at the heads to ensure correct coverage. * Learners to demonstrate knowledge of 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: * nail pouch for nailing and clipping of tiles and related components * hammers for nailing tiles 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, ridge, hips and valleys * bucket for carrying and transporting mortar when wet fixing * battery drill / screw gun and bits for fixing dry verge, ridge, hips and valleys and for drilling small holes for additional fixings * disc cutter with dust suppression via water feed or mechanical extraction * tile scribe and pincers and/or tile cropper for manual cutting. |
| 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: * the roof is measured for rafter length to establish datum points at eaves, and ridge/top edges, number of courses, maximum and even gauges and what adjustments to gauge (top 1m only) may be necessary * setting out and striking lines * that tiles are laid with gaps of no more than 3mm * that tiles are laid evenly across the roof * that tiles are laid in straight lines to struck ‘perp’ lines up the roof * that nominal half-bond is maintained in general areas * that minimum side-laps are maintained at details * that openings and penetrations are neatly finished * that measuring and cutting of materials and components is accurate * that small cuts are avoided using tile-and-a-half * that nails are correctly applied * that dry verge, ridge, valley and hip systems are installed to MTIs * that wet verge, ridge and hip systems are installed in line with the standards (see BS 8000-6:2013, MTIs and the Roof Tile Association) and mechanically fixed where appropriate * that open valleys are finished dry or bedded to straight lines and that there is a consistent open channel to the required width * that purpose-made hip and valley tiles are installed with tile courses on both sides in alignment * that work is planned on pitched roofs to minimise foot traffic on the tiles with crawler boards/roof ladders used where appropriate * vertical tiling, including Winchester Cuts to gable ends and the installation of internal and external angle tiles * that the 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 plain roof tiles to a variable gauge and related fittings, fixings, and components to given working instructions | * 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. |