Unit 234: Prepare and mix construction related materials

# Delivery guide

Unit information

The aim of this unit is to provide learners with the relevant practical skills and understanding required for preparing and mixing construction related materials, in a construction and civil engineering environment. It also covers interpreting information, adopting safe, healthy and environmentally responsible work practices, and selecting, preparing and using materials, components, tools and equipment.

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

* What different types of materials are used when mixing concrete?
* What types of personal protective equipment is needed when mixing materials?
* What different types of materials used when mixing mortar?
* How many different methods are there when mixing materials?

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

Textbooks

* Kendrick, P. (2004) *Roadwork: Theory and Practice*, 5th edition. London: Routledge.

ISBN 9-7807-506-6470-7

* Chudley, R. (2020) *Chudley and Greeno's Building Construction Handbook*, 12th edition. London: Routledge.

ISBN 9-7803-671-3543-0

* Pitman, P. (2017*) External Works, Roads and Drainage: A Practical Guide*, 1st edition. London: CRC Press.

ISBN 9-7811-384-0887-6

* Butler, D., Digman, C. J., Makropoulos, C., Davies, J. W. (2018) *Urban Drainage*, 4th edition.London: CRC Press.

ISBN 9-7814-987-5058-5

Websites

* [Cadw (gov.wales)](https://cadw.gov.wales/) | Homepage
* [Constructing Excellence | Homepage](https://constructingexcellence.org.uk)
* [HSE | Homepage](https://www.hse.gov.uk)
* [Oxford University Press | Free Building & Construction resources](https://global.oup.com/education/secondary/subjects/vocational/building/free-resources/?region=international)
* [Construction Knowledge | Excavation](https://www.constructionknowledge.net/sitework/sitework_excavation.php)

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to understand the range of resources used in the process to prepare and mix construction related materials to drawings, specifications and verbal instructions. * Learners to know and understand the characteristics and suitability of materials when selecting resources to prepare and mix construction related materials if the materials are contaminated. * Learners to have knowledge of materials and to be able to identify defects that can affect structural integrity and those that only affect the aesthetics. * Learners to know the uses and limitations of materials. * Materials could include aggregates, cementitious materials, grouts and pre-mixed compounds. * Tools and equipment could include cement mixers, buckets, water containers, shovel and brush, wheelbarrows, transformers, generators. |
| * 1. Use of resources | * Learners to understand how the resources should be used and how any problems associated with the resources are reported. * Learners to know and understand which materials are to be used in specific locations, poor weather conditions, inclement or freezing temperatures but also in high temperatures. * Learners to know how to select and use tools and equipment for their intended purpose and how to rectify or report any defects. |
| * 1. Organisational procedures to select resources | * Learners to understand the working procedures used to select the most appropriate methods to prepare and mix construction related materials and when to use ready mix, hand mix or other alternatives. * Learners to know how to raise requisitions and order resources to complete a specific task using organisational procedures and given scenarios. |
| * 1. Hazards | * Learners to be able to identify the hazards associated with preparing and mixing construction related materials, e.g. burns, splashes, flying particles when mixing. * Learners to be able to ensure the correct methods of work required to prepare and mix construction related materials are followed. * Learners to know and understand the importance of working to method statements and risk assessments, to understand the dangers of slips, trips and falls, working at height, hand and eye injuries, potentially being hit by falling objects, inhaling silica dust and working with electricity. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to know and understand the application of safe and healthy work practices, procedures and skills relating to the method, process and area of work. * Learners to plan their work efficiently from the given instructions and complete the work to the agreed specifications. * Learners to understand the importance of communication among team members during activities, as well as the needs of other occupations working alongside them. * Learners to understand the correct methods used to prepare and mix construction related materials accurately to establish type and quantity of materials. * Learners to know how to establish the details from drawings, specifications and verbal instructions. |
| * 1. Tools and equipment | * Learners to know and understand the importance of maintaining tools and equipment and the operative care associated with hand tools and portable power tools. * Learners to ensure that tools and equipment are washed down and cleaned after use and stored ready for re-use. * Learners to understand the procedures for reporting any faults or defects with tools and equipment and how this could impact future work if not reported, causing delays or injury. |
| 1. Comply with the given contract information to carry out the work safely and efficiently to the required specification | * 1. Use and maintain hand tools, power tools and equipment to prepare materials for use | * Learners to demonstrate that they can plan for preparing and mixing construction related materials by following the information and guidance given to them and by using the relevant documentation. * Learners to produce a basic method statement, tool list, material list and work programme to plan efficiently for the work to be carried out within the agreed time for the work. * Learners to ensure a suitable safe workstation is set up that is a flat hard-bottomed area, clean from containments and well cordoned off from other site personnel. |
| * 1. Demonstrate work skills to measure, gauge, stir, mix, agitate and blend | * Learners tobe able toidentify and extract suitable information from a range of sources for preparing and mixing construction related materials. * Learners to be able to prepare and mix construction related materials as per instructions or methods of work. * Learners to be able to identify suitable Personal Protective Equipment(PPE) and use itwhile preparing and mixing construction related materials, including overalls, gloves, glasses etc. * Learners to be able to: * prepare and mix construction related materials using tools and equipment to measure, gauge, stir, mix, agitate and blend transfer * wash down equipment using water, then store tools and equipment safely, ensuring the work area is kept clean and tidy after use. |