Knowledge and Understanding of Insulation and Building Treatments

Title:	Knowledge and Understanding of Insulation and Building Treatments
Level:	3
Credit value:	10
GLH	100
Unique Reference Number:	**R/650/7449**
Aim:	The aim of this unit is to provide learners with the skills and knowledge to be able to ascertain a comprehensive understanding of the many aspects that are required to become an insulation and building treatments technician on a variety of buildings and construction projects.
Assessment	Assessment of this unit will be through the completion of a mandatory multiple choice knowledge assessment.

Learning outcomes
The learner will:

1. Be able to identify, extract and interpret information relating to insulation and building treatments.

Delivery content:

The aim of this learning outcome is to provide the learners with the skills and knowledge to identify sources of information and then collect, access, interpret and use the information needed to complete insulation and building treatment projects. Learners need to be able to determine if information is accurate and complete.

The learner must be able to:

- identify **types of construction** and **building design** and how these impact on the selection, method and installation of insulation and building treatments.
- identify relevant and necessary **construction documentation** for a range of insulation and building treatment projects.
- identify the sources and location of **construction documentation** and state their purpose and relevance for an insulation and building treatment project.
- identify relevant and necessary **organisation procedures** for a range of insulation and building treatment projects.
- identify the sources and location of **organisational procedures** and state their purpose and relevance.
- identify within which documents current **energy efficiency measures** are located and how they are accessed.

• identify the documents required for recording and reporting incidents, issues and emergencies.
2. Be able to assess a building to select appropriate types and methods of insulation and building treatments, if required.
Delivery content: The aim of this learning outcome is to provide the learners with the knowledge and skills to be able to examine a building and to ensure that appropriate insulation and building treatments are selected to meet its needs. The learner must: • be able to assess a building to identify and diagnose its **defects** and requirements regarding **energy efficiency measures**, **insulation and building treatment measures and methods**. • recognise how performance varies in different types of buildings, locations and through the impact of habitation and usage, including how alterations, additions and extensions to the original construction can affect the performance of the building. • identify the relevance of an assessment of significance and how to recognise specific requirements for structures of special interest, traditional construction, hard-to-treat buildings and historical significance. • identify the **hazards** associated with the methods of work and how they are reported and overcome. • identify why it is important to ensure that all necessary repairs are completed prior to insulation and building treatment works. • state a range of **energy efficiency measures**, including strengths, weaknesses and compatibility. • be able describe the uses and characteristics, including strengths, weaknesses and compatibility of the range of **insulation and building treatment measures and methods.** • be able to select the appropriate insulation and building treatments and / or **energy efficiency** measures for a building based on its type and evidence. • be able to determine the effectiveness of completed insulation and building treatment installations. • identify the importance of the correct sequencing of installation of energy efficiency measures and building treatments.

• identify how to record, report and rectify unintended consequences not addressed in the design.
3. Be able to select appropriate resources for insulation and building treatment measures and methods.
Delivery content: The aim of this learning outcome is to provide the learners with the skills and knowledge to identify and select appropriate resources, including materials, to complete appropriate insulation and building treatment measures and methods. The learner must: • identify the **range of materials** used for insulation and building treatment measures and methods. • identify appropriate external and internal **pre-installation checks** including the recording and reporting of key issues that may **inhibit the commencement of work**. • demonstrate how to calculate lengths and areas as required to determine amounts of resources needed. • explain how to check the suitability, compatibility and characteristics of the materials, components, fixings and finishes and determine if they are moisture open or moisture closed and their impact on the building including their appropriateness to the design and physical application. • be able to select the required quantity and quality of resources for the appropriate methods of work in accordance with organisational procedures. • know why the characteristics, compatibility, quality, uses, sustainability, limitations and defects associated with the resources are important and how defects should be rectified. • identify the hazards associated with the resources and how they are reported and overcome. • identify the requirements from the provided information and confirm information is correct for the given tasks. • identify how the resources should be used and how any problems associated with the resources are reported in relation to **organisational procedures**.

• the implications that types of construction and materials have on the introduction of energy efficiency measures and other forms of building treatments on the different **elements of a building**. • carry out checks on all resources provided to ensure they are fit for purpose and free from defects to confirm they conform to specification. • report and replace any defective resources in accordance with manufacturers' guidance, legislation, specification and organisational procedures
4. Be able to minimise damage when installing insulation and building treatments.
Delivery content: The aim of this learning outcome is to provide the learners with the skills and knowledge to be able to minimise damage to work and surrounding areas while preparing for and carrying out insulation and building treatment projects. The learner must: • identify the importance of protecting the work and its surrounding area against the risk of damage. • identify how to protect work and its surrounding area from **damage** . • identify how to minimise damage to existing building fabric including its design and physical application when completing insulation and building treatment projects. • identify how achieving continuity of the **insulation and building treatments** can prevent problems whilst understanding the unique circumstances at party walls and the associated risks to adjacent properties. • identify the importance of compatibility and interactions between measures and the fabric of the building. • how to recognise **unintended consequences**, why they happen, how to avoid them. • identify when and where **specialist skills and knowledge** are required and report accordingly. • recognise the needs of other occupations associated with **insulation and building treatments**, construction, defects and interfaces.
5. Be able to minimise the risk of damage and work safely when preparing, applying, installing and finishing insulation and building treatments.
Delivery content:

Knowledge and Understanding of Insulation and Building Treatments

The aim of this learning outcome is to provide the learners with the skills and knowledge to take measures to reduce the risk of damage to the building and surrounding areas when preparing, applying, installing and finishing insulation and building treatments. Learners need to understand the importance, impact and consequences related to protective measures. The learner must: • identify how the methods of work are completed to meet the specification. • identify how work is carried out and how issues are considered and reported to maintain a safe, healthy and sustainable area of work. • Know how to work safely with / around machinery and in close proximity to Plant. • be able to explain why it is important to take protective measures when preparing, applying, installing and finishing insulation and building treatments. • be able to identify the impact and / or consequences of taking or failing to take protective measures. • identify the **post insulation checks** needed when completing work**.** • identify the importance of leaving a clean, clear and safe area on the completion of work.
Scope of Training The Scope of Training identifies areas that must be covered during the delivery of this unit. This is the minimum that is expected but tutors are expected to include other areas, knowledge of which will benefit their learners, based on location, types of work available and from the tutor's own professional experience. **Assessment:** The Assessment is a multiple choice test

Requirements		
Construction documentation	Drawings (2D and 3D drawings, BIM related models, Site and location plans, Assembly plans, Section plans) Method statements	Official guidance Current legislation Regulations governing buildings Data sheets Incident books

	Standards Risk assessments Manufacturer's information	Schedules Codes of practice
Organisational procedures	Site rules and induction Traffic management Site lighting Protecting the public Health and safety policy CDM Safe systems of work	Material storage and waste management, Welfare Administration Disciplinary procedure Environmental policy Statutory legislation
Types of construction	Civil engineering Commercial Residential Healthcare Retrofit	Rail Industrial Renovation Rejuvenation
Building design	Timber frame Solid brick wall Traditional build Fabric building Historic buildings Earth Sheltered Metal based accommodation	Modular building Flat slab construction Hybrid construction High rise accommodation Timber building Steel frame Underground / Basement
Pre-installation checks	Suitable access Property suitability Structural integrity Dampness Decay / defects Vents and adequate ventilation Services (gas, electric, water, media cables)	Architectural features Vegetation Rainwater goods Loose surface finishes External cracking Water ingress Damp proof course
Defects and requirements	Heat loss / retention Water / moisture ingress Water / moisture retention Condensation	Weather resistance Salt contamination Structural defects Damaged services
Insulation and building treatment measures and methods.	Cavity wall insulation Hybrid insulation Joist level insulation Rafter level insulation Under floor insulation Horizontal DPM Tape and Joint Anchorage Spray	Vertical DPM EWI IWI Specialist render finishes Park Home insulation Room in roof Acoustic Moisture testing
Inhibit the commencement of work	Condition of building fabric Identification of any areas of potential water penetration Mould or evidence of condensation. Moisture content of the timber frame and dry rot	Condition of windows and doors Condition of roof Installation issues Drainage and down pipes Presence of protected species Identification of heritage section of building / significance

	Woodworm	
Post installation checks	Compliance with specifications, Resistance to water penetration, Anchorage, Standard of finish Reaction of materials	Fixing, Vents, Services (gas, electric, water, Media cables) Client satisfaction
Unintended consequences	The existence of thermal bridges Thermal bypassing Water ingress Ventilation issues	Condensation risk Impacts on neighbouring properties Insulation fitting and placement for different insulation types Mould and fungal decay
Specialist skills and knowledge	Fire safety Electrical Media cables Signal receiving equipment Junction boxes Asbestos Archaeological	Radon Heritage Ecology Ventilation Flue Building control Planning officers
Existing guarantees and warranties	Wall ties Windows Cills Doors	Damp proof course Renders Tyrolean coatings Silicone weatherproof coatings
Damage	By general workplace activities Other occupations Incorrect application	Adverse weather conditions The public Animals / wildlife
Elements of a building	Roofs Walls including internal and external finishes Floors Windows and doors	Chimneys and fireplaces Flues and combustion ventilation Fabric interfaces Existing services Loft space
Energy efficiency measures	Insulation LED lightbulbs Energy efficient heating system Regular maintenance on all energy using items Energy usage plan for occupants	Multi glazed windows Regulated energy use Energy usage recording Retrofit Sensor activating lighting system Ventilation
Hazards	Slips, trips and falls Working at height Confined spaces Manual handling Cuts and abrasions Dust inhalation Heat	Hazardous substances Fire Electrical equipment and leads Plant and equipment Chemical injuries Fumes
Equipment	Scaffold Working platform Pencil Plumb bob Dust sheets	Sweeping brush Step ladder Hop up Door / window covers Ladder

	Floor protector rolls Cloths / rags	
Materials	Masking tape Adhesive Vapour barrier Sealants Plaster board Render Plaster	Disposable covers Insulation rolls Nails Insulation boards Screws Mechanical fixings Adhesive Timber Cement
Personal protective equipment	Steel toe-capped boots Gloves Goggles Hard hat	High-visibility clothing Respiratory protection Hearing protection Skin protection
Protection	Signage PPE Barriers LEV Plastic/hessian sheeting Masking materials Public protection equipment	

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