



As of 1 August 2022, the English and maths requirements for on-programme and new apprentices undertaking level 2 apprenticeships have changed and are detailed as part of the [apprenticeship funding rules](#). These requirements supersede the current wording in this apprenticeship standard and EPA plan.

ST0333/AP01

APPRENTICESHIP STANDARD FOR COMMERCIAL THERMAL INSULATION OPERATIVE Level 2

End-point assessment plan

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Summary of Assessment

This apprenticeship is for L2 Thermal Insulation Operatives. Typically Thermal Insulation Operatives apply specialist insulation materials and cladding for the prevention of heat loss and heat gain, energy efficiency and personnel protection either on a construction site or within a workshop. This hands-on role is crucial to ensuring the successful delivery of complex projects and the current ageing workforce provides the opportunity for a secure, fulfilling, long-term career for apprentices.

Successful achievement of this L2 Apprentice Standard enables the apprentice to take the next steps in their career as it demonstrates:

- that the apprentice is able to competently work as a thermal insulator on a diverse number of locations including, Process Plants, Commercial Construction sites or Shipyards.

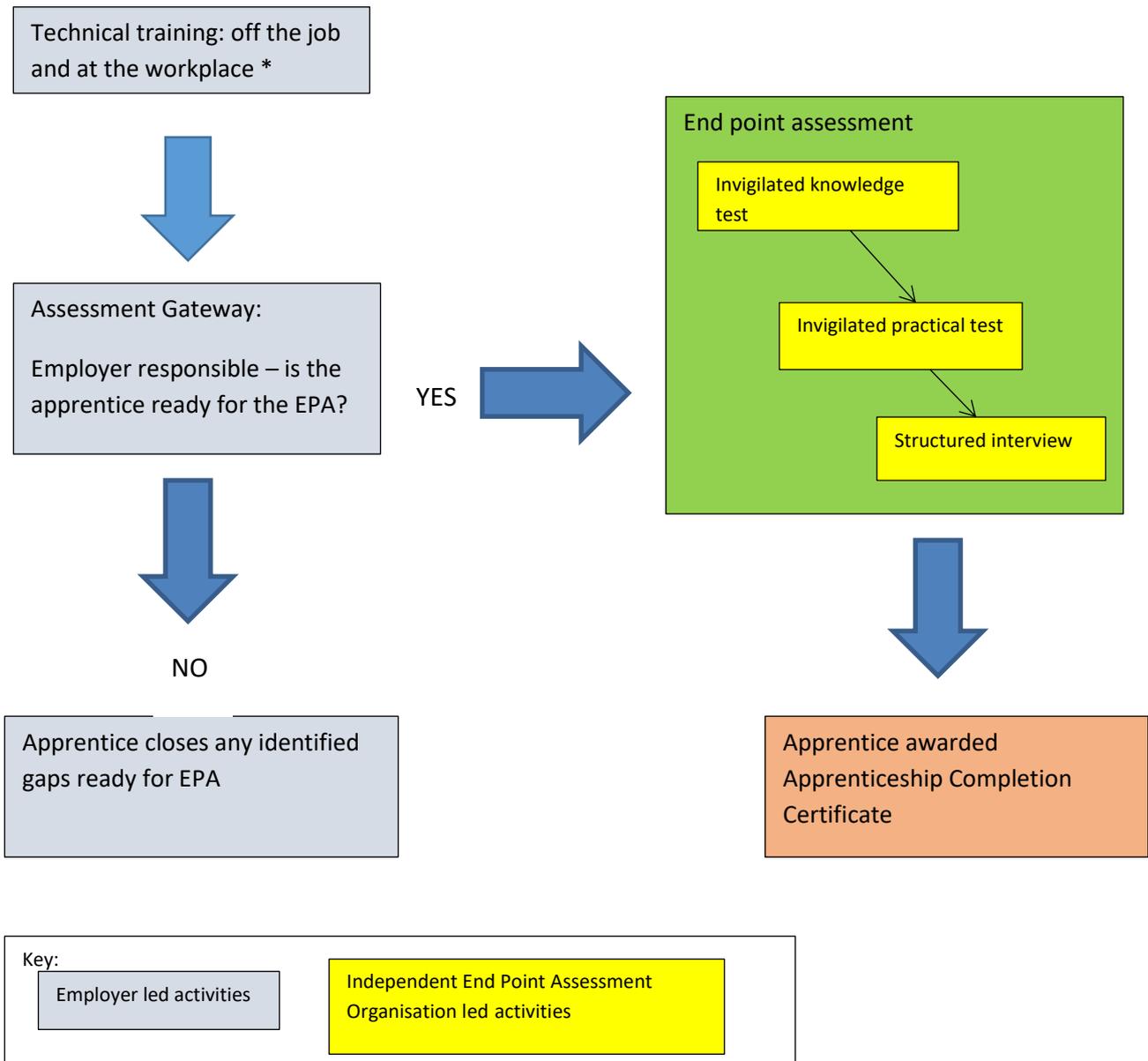
The apprenticeship is expected to typically take 18 months to complete. It is recommended that the apprentice's progress is assessed throughout the apprenticeship to ensure the apprentice is progressing as required. A final gateway assessment will be undertaken by the employer taking into account the views of the Training Provider to assess that the apprentice has achieved the necessary skill level and is ready to be put forwards for the final End Point assessment (EPA).

There is a mandatory, synoptic EPA that typically takes place after at least 12 months of training. The aim of this is to comprehensively establish if the apprentice has achieved the technical skills, knowledge and behaviours listed in the Apprenticeship Standard (Annex 1).

It comprises:

1. a theoretical, paper based, applied knowledge test using multiple choice questions
2. an observed individual practical test to evaluate the apprentice's practical skill
3. a structured interview focused on assessing the apprentice's occupational behaviours and application of technical skills and knowledge.

Commercial Thermal Insulation Operative Apprenticeship overview



*including achievement of L1 English and maths and completion of the test for L2 English and maths

Assessment Overview

	Assessment method	Focus of assessment	Assessed by	Feedback
Final Gateway Review	Review and discussion	Skills Knowledge Behaviours Sector specific knowledge Confirmation that the Portfolio of Evidence from the workplace has been completed	The employer taking into account the views of the Training Provider on the Register of Apprenticeship Training Providers	Progress to End-point assessment (EPA) or Resubmit

	Assessment method	Focus of assessment	Assessed by	Grading
EPA	Knowledge Test	Knowledge, skills and behaviours as detailed in Annex 1	End-Point Assessment Organisation**	Fail Pass
	Practical Test	Knowledge, skills and behaviours as detailed in Annex 1	End-Point Assessment Organisation**	Fail Pass Distinction
	Structured interview	Skills, Knowledge and Behaviours as detailed in Annex 1	End-Point Assessment Organisation **	Fail Pass Distinction

**End-point Assessment Organisations (EPAOs) must meet the criteria set by the Education and Skills Funding Agency's (ESFA) for entry on to their Register of End-point Assessment Organisations (RoEPAO) and the requirements set out in Annex 2.

On programme assessment

The purpose of the on-programme assessment is to ensure that the apprentice is developing and progressing and provides a framework within which the apprentice is supported by the Employer for whom they work. It is recommended that each apprentice has regular reviews, usually every 12 weeks. The employer will monitor the development of the Portfolio of Evidence from the workplace.

The Portfolio of Evidence will include evidence that demonstrates the apprentice's knowledge, skills and behaviours (KSBs) as shown in Annex 1

- Evidence must be mapped against the KSBs
- Evidence must relate to work completed by the apprentice
- Examples of evidence can include:
 - Products produced by the apprentice

- Observations of the apprentice at work
 - Work documentation e.g. docket, specifications
 - Witness statements
 - Recorded questions/answers/ workbooks
 - Taped evidence (video or audio)
 - Photographic evidence
- This is not a definitive list; other relevant evidence sources are permissible. The portfolio should typically contain 30 pieces of evidence. The Portfolio of Evidence does not need to be submitted to the EPAO in advance of the EPA. The apprentice will take the Portfolio of Evidence to the EPA and can refer to it in the structured interview. The portfolio will not be assessed by the EPAO.

Assessment gateway

Once the apprentice has completed their technical and occupational training, achieved Level 1 English and maths and taken the test for Level 2 English and maths and completed their Portfolio of Evidence the employer, taking into account the views of the Training Provider, will undertake a Gateway Review. This is to ensure that the apprentice has made significant progress in terms of knowledge, skills and behavioural development and is therefore ready for the synoptic EPA. This Gateway Review is to determine if the apprentice is able to successfully demonstrate their ability to work as a Commercial Thermal Insulation Operative.

The employer, taking into account the views of the Training Provider, has overall responsibility for this review. Following the review the apprentice will either progress to the EPA or be given feedback which will identify what additional progress needs to be made.

End-point assessment

What is being assessed?

This synoptic EPA assesses the apprentice's ability to apply the knowledge, skills and behaviours learnt as detailed in the Standard (see Annex 1). All EPAs must be carried out by, and administered in accordance with an End-Point Assessment Organisation from the Register of Apprentice Assessment Organisations (RoEPAO). The EPAO is expected to develop the assessment tools, materials and marking guides for delivery of the EPA, these must be in line with the Standard.

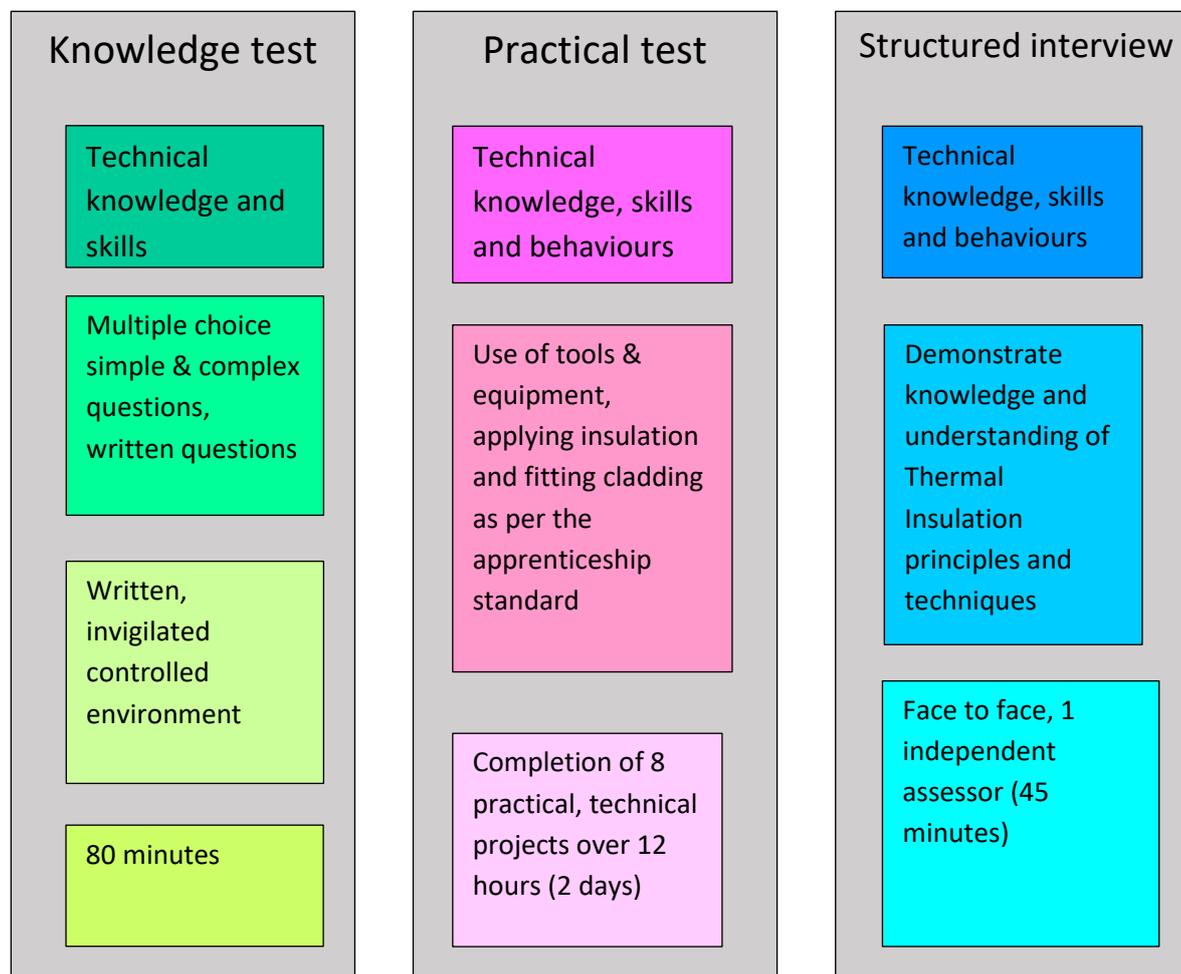
A candidate must pass all three components in the correct sequence of this synoptic EPA in order to achieve the Apprenticeship. If the apprentice fails a component then he/she should undertake further training before retaking. The paper based knowledge test must be passed first before the apprentice progresses because this is fundamental to the apprentice being able to competently work as a Thermal Insulation Operative. If the candidate fails the paper based knowledge assessment by 5 points or less below the pass mark they will be given the opportunity to re-sit, on the day of the EPA. If the failure is more than 5 points below the pass mark the EPA will be postponed and a date for a re-sit agreed following analysis of the failure. If the candidate fails the Practical Test a training needs analysis will be carried out, a training proposal developed in conjunction with the Training Provider

and the Employer and a retake of the Practical Test scheduled. The Structured Interview will only take place upon successful completion of the Knowledge Test and the Practical Test.

Successful achievement of the EPA will lead to final certification of the apprenticeship and demonstrate that the apprentice is able to competently undertake the occupation of Commercial Thermal Insulation Operative.

The EPA utilises the following assessment tools: knowledge test; practical test; structured interview. Each component focuses on assessing a different aspect of an apprentice's overall competence.

End Point Assessment



Knowledge test

This provides each apprentice with an opportunity to demonstrate the knowledge, skills and understanding required. The knowledge test will be available at fixed points. The apprentice takes a paper based or electronic knowledge test in a controlled and invigilated environment. The knowledge test will be developed by the End-Point Assessment Organisation, and a randomly selected bank of questions will be used at each EPA. The independent assessor or a competent invigilator will invigilate the knowledge test and will meet the requirements of the EPAO. It is a closed book test with no supporting documents allowed. The apprentice must pass this element of the EPA in order to move on to the practical test. It is expected that the test is marked by the EPAO Assessor using marking tools developed by the EPAO.

The knowledge test assesses the apprentice's ability to apply his or her knowledge consisting of simple multiple choice, complex multiple choice questions and 2 written questions. These will be scenario based with 10 complex multiple choice questions and 20 simple multiple choice questions, allowing 80 minutes in total, 20 minutes for the multiple choice questions and 60 minutes for the 2

written answers. There will be a maximum score of 20 marks for the written questions and the candidate must score a minimum of 6 marks for each question to pass this section of the test. A minimum of 10 marks must be achieved from the complex multiple choice questions and a minimum of 10 marks from the simple multiple choice questions. The minimum score in each section must be achieved in order to pass the Knowledge Test. Complex multiple choice questions require more than 1 correct answer to be selected from 5 options and will score 2 marks each. The 20 simple multiple choice questions require 1 answer to be selected from 5 options with 1 mark each. The 2 written answers should include a minimum of 3 out of 5 key areas listed in the Knowledge Test Grading section. This test will include questions on the application of Knowledge and Skills mapped in Annex 1.

Practical test

It is critical that the apprentice is able to demonstrate that they can apply their technical skills, technical knowledge and related behaviour with minimal supervision. This test will take place in a controlled environment. The independent assessor must meet the requirements of the EPAO. It will be a practical test and will take no more than 12 hours split over 2 consecutive days. The test will consist of 8 tasks to include:

- Applying the appropriate insulation to 7 different pipework/ductwork rigs
- Fitting insulation to a 300mm Vessel

The tasks will be undertaken in examination conditions in the bespoke Thermal Insulation workshop at the assessment centre using industry standard equipment and materials. This practical test will assess the apprentice's ability to:

- identify and correctly use tools and equipment including: Dividers, Mole grips, Drills and Safe Blades
- apply insulation materials to cylindrical and flat surfaces
- fit pre-formed sheet metal and/or other finishes from existing templates, for insulation protection
- safely move, handle and store resources
- competently erect and dismantle portable scaffold towers
- work safely at heights
- to interpret and use relevant product information and design specifications
- calculate quantity, length and area of materials to be used in order to minimise wastage of resources
- identify the characteristics, qualities, uses, sustainability, limitations and defects associated with different types of insulation materials such as mineral wool, glass fibre, cellular glass, nitrile rubber etc.
- to joint, seal, weatherproof and fit materials in accordance with BS 5970:2012. Thermal insulation of pipework, ductwork, associated equipment and other industrial installations in the temperature range of -100°C to +870°C.

A complete list of areas assessed is detailed in Annex 1.

Structured interview

The structured interview takes place after successful completion of the knowledge test and the practical test.

The interview is carried out by an independent assessor from the EPAO.

Topics covered during the Structured Interview will include:

- the application of cladding
- different types of insulation material
- Health and Safety
- types of fixings, eg screws, nuts, rivets
- external influences
- PPE
- team working.

The structured interview will focus on assessing the Apprentice's application of knowledge, skills, and behaviours (see Annex 1). The structured interview will take 30 - 45 minutes and will work as follows:

- the apprentice can prepare in advance by reviewing the Apprenticeship Standard
- the apprentice should expect to discuss evidence of his/her work contained within their Portfolio of Evidence from the workplace so the interviewer can ascertain the apprentice's role in completing the work, what barriers they overcame etc.
- it will enable the apprentice to showcase how he/she combines technical skills, knowledge and behaviours in order to carry out his/her occupational role effectively.

An evaluation sheet will be completed for the apprentice by the independent assessor. On completion of the interview, the interviewer will review the scores and provide a final score for the structured interview.

End-point: Grading Levels

Grading Levels

The apprenticeship for Thermal Insulation Operatives has three possible overall grades: Fail, Pass and Distinction.

The final apprenticeship grade is based on performance across the Knowledge Test, the Practical Test and the Structured Interview. The grading rules are applied, as detailed below to award a final fail, pass, or distinction.

To achieve a pass grade the apprentice must achieve at least a pass in each of the three independent end-point assessment components. The decision on the overall grade awarded to the apprentice is made by the EPAO. In the event of an appeal against the grade awarded, the EPAO will operate an appeals procedure.

To achieve a distinction grade the apprentice must achieve at least a distinction in the Practical Test

and a distinction in the Structured Interview and a pass in the Knowledge Test.

If an apprentice has to re-sit any component, the maximum grade they will achieve is a Pass/Fail. However, there may be extenuating circumstances where a re-sit/retake is arranged and a Distinction achieved. The extenuating circumstances will be agreed and formerly verified between the End Point Assessment Organisation.

Knowledge Test Grading

This component will be graded Pass / Fail. In order to achieve a Pass grade the apprentice will have to achieve 32 marks out of total of 60. 10 marks are required from the simple multiple choice questions, 10 marks from the complex multiple choice questions, and a total of 12 marks are required from the 2 written questions.

The marks for the two selected written questions (see below) will be allocated from a list of key areas provided by the EPAO. 2 marks will be allocated for each relevant key area used up to a maximum of 10 marks per question. Half marks may be gained for partial answers.

Practical Test Grading

This component will be graded Pass / Distinction/ Fail

FAIL	PASS	DISTINCTION
<p>The apprentice is unable to complete the following tasks:</p> <ul style="list-style-type: none"> ➤ identify and correctly use tools and equipment ➤ demonstrate safe working practices and does not use the appropriate PPE throughout the task ➤ apply insulation materials to cylindrical and flat surfaces pipework within the allocated time or to the expected standard ➤ fit pre-formed sheet metal and/or other finishes from existing templates, for insulation protection ➤ erect and dismantle portable scaffold towers and work safely at height ➤ safely move, handle and store resources ➤ interpret and use relevant product information and design specifications ➤ calculate quantity, length and area of materials to be used in order to minimise wastage of resources ➤ identify the characteristics, qualities, uses, sustainability, limitations and defects associated with different types of insulation materials such as mineral wool, glass fibre, cellular glass, nitrile rubber etc. ➤ joint, seal, weatherproof and fit materials in accordance with BS 5970:2012. Thermal insulation of pipework, ductwork, associated equipment and other industrial installations in the temperature range of -100°C to +870°C. 	<p>The apprentice has demonstrated the ability to:</p> <ul style="list-style-type: none"> ➤ identify and correctly use tools and equipment ➤ demonstrate safe working practices including being risk aware and helping to reduce risks by checking information and uses the appropriate PPE throughout the task ➤ apply insulation materials to cylindrical and flat surfaces pipework within the allocated time or to the expected standard ➤ fit pre-formed sheet metal and/or other finishes from existing templates, for insulation protection ➤ erect and dismantle portable scaffold towers and work safely at height ➤ safely move, handle and store resources ➤ interpret and use relevant product information and design specifications ➤ calculate quantity, length and area of materials to be used in order to minimise wastage of resources ➤ identify the characteristics, qualities, uses, sustainability, limitations and defects associated with different types of insulation materials such as mineral wool, glass fibre, cellular glass, nitrile rubber etc. ➤ joint, seal, weatherproof and fit materials in accordance with BS 5970:2012. Thermal insulation of pipework, ductwork, associated equipment and other industrial installations in the temperature range of -100°C to +870°C. 	<p>The apprentice has met all Pass criteria and has also:</p> <ul style="list-style-type: none"> ➤ demonstrated detailed knowledge of safe working practices by identifying all 5 simulated hazards and producing an action plan to remove and / or mitigate the hazards ➤ demonstrated advanced technical knowledge of a wide range of insulation materials and cladding by selecting the correct materials and cladding methods for all tasks set by: <ul style="list-style-type: none"> ○ installing insulation and cladding which is 100% waterproof, finishing cladding with straight seams, fitting cladding with accurate swaging, fitting cladding with equally spaced fixings, fitting correctly staggered joints and accurately cutting transitions.

Structured Interview Grading

Apprentices will need to demonstrate the following characteristics in order to meet the stated grades.

FAIL	PASS	DISTINCTION
<p>The apprentice has not met the pass criteria 1.</p>	<p>The apprentice meets at least six of the knowledge, skills and behaviours identified in Annex 1 and:</p> <ul style="list-style-type: none"> ➤ is able to describe an example of the implementation of each skill area raised by the assessor using evidence from their portfolio to exemplify their response ➤ is able to answer every question accurately describing the processes, information, specifications, procedures, hazards, risks and standards relevant to the knowledge component questions raised by the assessor ➤ is able to describe an example or examples of exhibiting the behaviours raised by the assessor, drawing on evidence from their portfolio which exemplify all the sub-elements of the behaviour components listed in the standard 	<p>The apprentice meets all of the pass characteristics for the knowledge, skills and behaviours identified in Annex 1 and in addition, the apprentice provides real examples and explains them in sufficient detail to demonstrate knowledge and ability to apply skills and behaviours shown in Annex 1, with particular emphasis on:</p> <ul style="list-style-type: none"> ➤ the competent, application of appropriate insulation within minimal tolerances in compliance with Industry Standard (BS 5970:2012) ➤ responses are considered and use an extensive range of examples and experiences

Consistency

End-Point Assessment Organisations will ensure that all assessment methods are designed to produce assessment outcomes that are consistent and reliable, allowing fair and proper comparison between apprentices employed in different types and sizes of organisation. In order to ensure consistency in assessment and marking the EPAOs must: use the marking guidance and templates for each element of the EPA; train their independent assessors in using these marking templates; ensure the independent assessors are using the marking templates and schemes in accordance with the guidelines set and in a consistent manner.

Components of EPA	Ensuring consistency in marking
Knowledge test	A marking guide will be created for the Knowledge Test.
Practical test	A marking guide will be created, outlining what is expected and setting parameters for how many marks to give for what.
Structured interview	An evaluation sheet will be provided that sets out questions to ask and the interviewer should annotate a copy of this to indicate what knowledge, skills and behaviours have been evidenced. This must include guidance on what evidence is needed in relation to marks awarded to the apprentice. The evaluation sheets will be marked in accordance with the marking scheme and the final mark awarded.

Independence

The EPA will be undertaken by independent assessors who are employed by EPAOs that have been approved on the RoEPAO. All Employers large and small will have access to the organisations on the RoEPAO and those on the RoEPAO must offer EPA that small companies are able to access.

Organisations that can provide the EPA will meet the requirements set out in Annex 2, and the independent assessors that they use will have no relationship with the apprentice i.e. they will not have been involved in their training, assessment or employment at any previous point in the apprenticeship. They will be impartial.

EPA: summary of roles and responsibilities

Organisation	Role
Employer	<ul style="list-style-type: none"> ➤ Decides when the Apprentice is ready to take the EPA
Training Provider	<ul style="list-style-type: none"> ➤ Support Employers to identify, appoint and mentor apprentices ➤ Work with Employers to develop and review training programme content ➤ Provide on-programme training in Thermal Insulation ➤ Develop training programmes that meet and deliver the Knowledge, Skills and Behaviours set out in the Apprentice Standard ➤ Review the apprentice's development of Technical Knowledge, Skills and Behaviours and provide feedback to the apprentice and Employer throughout the training, as appropriate.
Independent End Point Assessment Organisation	<p>End point assessment tools and materials:</p> <ul style="list-style-type: none"> ➤ Develops the tools and materials to deliver the EPA ➤ Has expertise in developing tests and assessments ➤ Develops marking guides to ensure consistency in marking different apprentices by different assessors <p>Capability and governance:</p> <ul style="list-style-type: none"> ➤ Has current technical and sector knowledge and understanding ➤ Has robust governance, including leadership and management arrangements ➤ Develop and manage a complaints and appeals procedure ➤ Attends End Point Assessment Organisation meetings and meets requirements as set out by the External quality organisation ➤ Runs annual assessment training and annual refresher workshops to ensure consistent application of the marking and grading structure by the independent assessors ➤ Has in place a process to review and quality check the application of the marking and grading structure used by the independent assessors <p>Delivery of the EPA</p> <ul style="list-style-type: none"> ➤ Ensures the location and access to equipment for each element of the EPA meets the requirements set out in this plan ➤ Provide pre-notification of EPA dates (exact details to be agreed with the Employer when contracted) ➤ Is able to verify the candidates' identities ➤ Ensure the tests take place in a controlled environment without distractions ➤ Invigilates, manages, delivers, marks and reports on all components of the EPA ➤ Awards the final grade to the apprentice (notifies the apprentice and the Employer) ➤ Keeps a record of the apprentice, Employer, grade and date of award ➤ Has an appeals procedure.

Quality assurance

Internal quality assurance

Quality assurance of the EPA will be undertaken through the EPAO meeting the following requirements:

1. the capability to identify, quality assure and use independent assessors that meet the requirements detailed in Annex 2
2. has an internal quality management system and quality control procedures
3. develops and provides a marking and grading structure and related guidance which enables standardisation and consistency in marking for all components of the EPA and the attainment of a pass and distinction
4. provides initial and subsequent annual training for independent assessors on the EPA, applying the grading and how to report and communicate the final grading decisions
5. holds quarterly standardisation events for independent assessors to ensure consistent application of the marking and grading assessment guidance
6. ensures EPAO staff and assessors are trained in assessment and moderation processes and undertake regular continuing professional development.

External quality assurance

Ofqual will carry out external quality assurance for this standard

Implementation

Affordability	It is anticipated that the EPA will not represent more than 20% of the apprenticeship funding band 9 of £9 000.
Volumes	Anticipated volumes for 2017/18 starts are: 100 This is subject to positive economic conditions and the go-ahead for major UK projects in infrastructure, energy and construction.

Annex 1 Assessment Methods mapped against the standard

Knowledge Components	Assessment Method(s)		
	Knowledge Test	Structured Interview	Practical Test
Knowledge of the varying weather conditions of the site and how this can affect the working environment and the working conditions of all co-workers on the site, safe working and other relevant legislation	x	x	
Ability to communicate accurately and effectively with others and comply with instructions.	x		
Demonstrate how to interpret and use relevant product information and design specifications.			x
Able to calculate quantity, length and area of materials to be used in order to minimise wastage of resources.	x		x
Identify the characteristics, qualities, uses, sustainability, limitations and defects associated with different types of insulation materials such as mineral wool, glass fibre, cellular glass, nitrile rubber etc.			x
Demonstrate how to joint, seal, weatherproof and fit materials in accordance with BS 5970:2012. Thermal insulation of pipework, ductwork, associated equipment and other industrial installations in the temperature range of -100°C to +870°C.	x	x	x
Demonstrate an understanding of the importance of, and need for, the correct use of Personal Protective Equipment (PPE).	x	x	x
Understand the basic risks in a refurbishment environment and in particular the risks associated with the handling of asbestos.	x	x	
Skill Components	Assessment Method(s)		
	Knowledge Test	Structured Interview	Practical Test
Be able to identify and correctly use tools and equipment including: Dividers, Mole grips, Drills and Safe blades.	x		x
Demonstrate the ability to comply with all organisational security, safety arrangements and procedures.	x	x	

Demonstrate the ability to competently apply insulation materials to cylindrical and flat surfaces.	x		x
Be able to competently fit pre-formed metal cladding/and or other finishes for insulation protection.	x		x
Demonstrate how to safely move, handle and store resources.	x	x	x
Competently erect and dismantle portable scaffold towers and work safely at heights to comply with The Work at Height Regulations which requires all persons working at height to be competent using the relevant equipment and correct personal safety apparatus.	x	x	
Ability to work reliably and safely, sometimes without close supervision, to approved industry standards and safe working practices.		x	x
Able to work effectively and efficiently, both individually and as part of a team, maintaining effective relationships with colleagues and the public.	x	x	
Act professionally, demonstrating a positive, dependable and responsible attitude	x	x	x

Behaviours Components	Assessment Method(s)		
	Knowledge Test	Structured Interview	Practical Test
Be able to act professionally demonstrating a positive, dependable and responsible attitude.		x	
Be risk aware and help reduce risks by checking information.	x	x	x
Display a self-disciplined, self-motivated, proactive approach to work understanding individual personal limitations.		x	
Be receptive to feedback, willing to learn new skills.		x	
Be adaptable and able to adjust to change as required.		x	
Be prepared to make a personal commitment and be able to commit to the objectives of the employer and to the wider professional standards of the industry.		x	

Annex 2 Requirements for Independent End Point Assessment Organisation and their Independent Assessors

Independent End Point Assessment Organisations (EPAOs) must be on the Register of Apprentice End Point Assessment Organisations. The EPAO must maintain a register of independent assessors for the EPA and commit to ensuring that the independent assessors are competent to deliver the role they provide in the EPA. The assessors must receive training to ensure they assess the apprentices against the requirements of the Apprentice Standard in a consistent manner.

The following recommendations are made as a basis for the selection of those suitable to be invigilators, who will be independent assessors, for the knowledge test and practical test:

- be independent from the Apprentice they are assessing i.e. not their trainer or line manager
- have integrity

The following recommendations are made as a basis for the selection of suitable independent assessors for the structured interview:

- be independent from the Apprentice they are assessing, the Employer company and not their trainer or line manager
- have integrity
- be a qualified Thermal Insulator with at least 5 years experience at an Advanced Craftsman grade
- have good interpersonal skills
- have effective communication skills
- have a thorough technical knowledge of what constitutes effective performance and good working practices in the occupational context
- are technically knowledgeable in Thermal Insulation, with an appropriate technical qualification or a relevant Vocational Qualification and equivalent technical experience.