

SIAS Qualification Specification

SIAS Level 2 Award in the Introduction to Hydrogen Safety

Qualification Number: 610/5375/2

Operational Start Date: 1st March 2025

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Version History

This is a live document and as such will be updated when required. It is the responsibility of the approved centre to ensure the most up-to-date version of the Qualification Specification is in use.

Version	Date	Comments
1.0	28/02/2025	First published
1.1	11/03/2025	Breakdown of pass mark requirements.

Introduction

Welcome to SIAS

SIAS is an Awarding Organisation regulated in England by the Office of Qualifications and Examinations Regulation (Ofqual) and in Northern Ireland by the Council for Curriculum, Examination and Assessment Regulation (CCEA Regulation).

We exist to drive positive change, and across STEM industries globally, we empower learners to achieve their full potential.

As the leading Awarding Organisation for the technical science, manufacturing, engineering and low carbon sectors, we are disrupting through innovative and collaborative approaches.

Our mission is to deliver transformational experiences and solutions that support the skills agenda.

Feedback

Customer experience and feedback is very important to us. We're always open to suggestions when it comes to enhancing and improving our services. If you have any comments or feedback on our services or products, please contact our team at info@siasuk.com or call us on 01925 515211.

About this Specification

This document has been developed to provide information for learners and centres undertaking, delivering or quality assuring this qualification.

Centre Recognition and Qualification Approval

To deliver this qualification, the centre must be recognised by SIAS.

Recognised centres must apply for approval for each qualification they intend to offer. Qualification approval must be obtained prior to conducting any learner assessments.

For details of our centre recognition and qualification approval process, visit our website or contact us at info@siasuk.com.

About this Qualification

Key Facts

Qualification Title	SIAS Level 2 Award in the Introduction to Hydrogen Safety
Qualification Number	610/5375/2
Guided Learning Hours (GLH)	8
Total Qualification Time (TQT)	16
Assessment Methods	Multiple-Choice Question Examination
Operational Start Date	1 st March 2025
Review Date	29 th February 2028
Operational End Date	-
Certification End Date	-
Regulation	This qualification is regulated by Ofqual

Qualification Objective

The SIAS Level 2 Award in the Introduction to Hydrogen Safety aims to provide learners with a foundational understanding of the hydrogen industry, including its role in the transition to a low-carbon economy and relevant legislative frameworks. Learners will develop knowledge of process design principles and safety considerations essential for hydrogen production, storage, and utilisation. Additionally, the qualification will equip learners with the ability to identify hazards, assess risks, and understand how to implement appropriate control measures to ensure safe and compliant hydrogen operations.

The qualification is aligned to the Hydrogen Skills Framework, developed by Cogent Skills on behalf of the Hydrogen Skills Alliance serving as the industry standard for hydrogen training. The qualification supports workforce development by providing individuals with the foundational knowledge needed for safe and compliant hydrogen operations, contributing to the transition to a low-carbon economy.

Entry Requirements

This qualification is available for learners aged 16+.

There are no formal entry requirements for the SIAS Level 2 Award in the Introduction to Hydrogen Safety. However, learners should have a basic understanding of English and mathematics. Centres should also ensure learners are able to complete this qualification, for example, through completing an initial assessment to ensure they can work at the appropriate level.

Recognition of Prior Learning

Recognition of Prior Learning (RPL) is the process of recognising previous, informal or experiential learning which could contribute to a qualification or unit. SIAS supports the use of RPL, and centres must work to the principles included in the SIAS RPL Policy which is available on the SIAS website. This policy should be reviewed alongside this specification and all other relevant SIAS qualification documentation.

Qualification Structure

To be awarded the SIAS Level 2 Award in the Introduction to Hydrogen Safety learners must achieve the following.

- All mandatory units contained in the table below.

Ofqual Unit reference	Unit title	Level	GLH	TQT
R/651/5070	Introduction to the Hydrogen Industry and Legislation	2	2	3
T/651/5071	Introduction to Hydrogen Properties, Process Design and Safety	2	3	6
Y/651/5072	Introduction to Hazards, Risk and Controls Associated with Hydrogen	2	3	7
TOTAL			8	16

Total Qualification Time (TQT) and Guided Learning Hours (GLH)

Note: Values for Total Qualification Time, including Guided Learning Hours, are calculated by considering the different activities that learners would typically complete to achieve and demonstrate the learning outcomes of a qualification. They do not include activities which are required by a learner's teacher based on the requirements of an individual learner and/or cohort. Individual learners' requirements and individual teaching styles mean there will be variation in the actual time taken to complete a qualification. Values for Total Qualification Time, including Guided Learning, are estimates.

Some examples of activities which can contribute to Total Qualification Time include:

- independent and unsupervised research/learning
- unsupervised compilation of a portfolio of work experience
- unsupervised e-learning
- unsupervised e-assessment practice
- unsupervised coursework
- watching a pre-recorded podcast or webinar
- unsupervised work-based learning
- all Guided Learning

Some examples of activities which can contribute to Guided Learning include:

- classroom-based learning supervised by a teacher.
- work-based learning supervised by a teacher.
- live webinar or telephone tutorial with a teacher in real time.
- e-learning supervised by a teacher in real time.

- all forms of assessment which take place under the immediate guidance or supervision of a lecturer, supervisor, tutor or other appropriate provider of education or training, including where the assessment is competence-based and may be turned into a learning opportunity.

Grading

This qualification is graded as a pass/fail.

Delivery and Assessment

Use of Language

All learners must be assessed in English unless the qualification specification states that another language will be accepted.

Progression Opportunities

Upon successfully completing this qualification, learners may wish to progress into further development and training in hydrogen technologies and safety.

Assessment Guidance

All SIAS assessments will be accessible and produce results that are valid, reliable, transparent and fair.

The SIAS Level 2 Award in the Introduction to Hydrogen Safety contains 3 mandatory knowledge units.

To achieve the qualification, learners must successfully pass the 1 assessment for the 3 mandatory units listed below.

Unit Title	Assessment Method	Set by	Marked by
Introduction to the Hydrogen Industry and Legislation	Externally set and marked multiple-choice question examination	SIAS	SIAS
Introduction to Hydrogen Properties, Process Design and Safety			
Introduction to Hazards, Risk and Controls associated with Hydrogen			

The multiple-choice question examination is available on demand through the SIAS online assessment platform. The examination can also be paper based. For any queries, please contact us at info@siasuk.com.

The assessment must be undertaken in controlled conditions. This means:

- learners must complete the assessment unaided.
- books and other training aids must not be accessed by the learners.

Learners who fail to achieve a pass will be permitted to retake the assessment twice. Learners may only seek a resit for any previously failed assessment.

Centres should have systems in place to verify a learner is ready to undertake their assessment.

Centres must ensure that no part of the assessment of a learner invigilation, is conducted by anyone with a personal interest in the assessment outcome.

Documentation to support the qualification assessment process can be accessed from the SIAS Pinnacle system.

ID requirements

It is the responsibility of the centre to have systems in place to ensure that the person taking an assessment is the person they are claiming to be. All centres are therefore required to ensure that each learner's identification is checked before they undertake the assessment.

SIAS recommends the following as proof of a learner's identity:

- a valid passport (any nationality)
- a photocard driving licence
- another photographic ID card, e.g. employee ID card, student ID card, travel card etc.

Centre Requirements

All SIAS centres must be approved by SIAS to deliver the qualification(s) they wish to offer. This is to ensure centres have the processes and resources in place to deliver the qualification(s). Further information can be found in the SIAS Centre Handbook.

When a centre applies to offer a qualification, they will need to provide evidence that they have sufficient resources and infrastructure in place for delivery of that qualification:

- evidence of staff competence and knowledge
- details of available resources

Information regarding the induction and continuing professional development must be made available to SIAS by centres through the external quality assurance process.

Tutor/Trainer Requirements

For the SIAS Level 2 Award in the Introduction to Hydrogen Safety, tutors/trainers are required to demonstrate they:

- have relevant occupational knowledge and competence in hydrogen safety.
- hold a recognised education and training qualification or equivalent training experience.
- have completed recent, relevant CPD activities for the subject area.

Evidence includes:

- CV and relevant occupational qualifications and experience.
- Up-to-date CPD Record including certification from any courses attended.

SIAS recommends that as best practice for tutors/trainers to hold or be working towards a relevant education and training qualification. These include:

- Level 3 Award in Education and Training or equivalent including Preparing to Teach in the Lifelong Sector (PTLLS), CertEd/PGCE, L4 Certificate in Education and Training, L5 Diploma in Education and Training.

Where this is not the case, SIAS will look at alternative sources of evidence for training competence, such as professional qualifications, relevant work experience or internal training records. For further guidance, please contact us.

Continuing Professional Development (CPD)

Centres are expected to support their staff, ensuring that their subject knowledge remains current and is up to date with best practice.

Quality Assurance Guidance

All SIAS qualifications require centres to have in place a robust mechanism for the quality assurance of training delivery and invigilated assessment arrangements.

External Quality Assurance

External quality assurance will be undertaken by SIAS. Centres will be required to provide documentation and other evidence to support this process upon request. Please refer to our Centre Handbook for further details.

Equality and Diversity

Delivery of SIAS qualifications must comply with equality and diversity legislation. Learners should not experience any barriers to achievement in respect of:

- Age
- Disability
- Gender
- Gender reassignment
- Marriage and civil partnerships
- Pregnancy and maternity
- Race
- Religion and belief
- Sexual orientation

Reasonable Adjustments

All learners must be treated fairly and equally and be provided with every opportunity to achieve our qualification(s). For more information or guidance, please refer to the SIAS Reasonable Adjustments Policy available on our website.

Health and Safety

SIAS are committed to ensuring the safety and wellbeing of learners. Due to the nature of some of the sectors SIAS work in, there can be a high level of risk which we expect centres to manage effectively. Centres must take appropriate measures to assess and manage these risks and implement procedures so that qualifications are delivered safely, minimising risks to learners and those involved in the assessment process as much as possible. Working environments must comply with all required health and safety standards.

Qualification Content

Unit 1: Introduction to the Hydrogen Industry and Legislation

Unit Reference	R/651/5070	
Level	2	
GLH	2	
Aim	The aim of this unit is to provide learners with a foundational understanding of the hydrogen industry, its role in the transition to a low-carbon economy, and the legal and compliance regulations associated with hydrogen production, storage, distribution, and utilisation.	
Assessment Methodology	Multiple-choice examination	
Learning Outcomes <i>The learner will:</i>	Assessment Criteria <i>The learner can:</i>	
1. Understand the current position of the hydrogen industry to meet the UK net zero targets.	1.1	State the global need for the transition to hydrogen.
	1.2	Identify the objectives of the UK low-carbon hydrogen standard.
	1.3	State the role of hydrogen and potential future uses in the UK's net zero strategy.
	1.4	Identify the benefits of using hydrogen.
2. Understand how hydrogen is produced, stored and transported.	2.1	State how hydrogen can be produced, stored and transported.
3. Know the legislation and regulatory requirements for using hydrogen in operational roles.	3.1	Identify key legislation and regulations relevant to the use of hydrogen.
	3.2	State the importance of following information, documentation, records, policies, and procedures when working with hydrogen.

Unit 2: Introduction to Hydrogen Properties, Process Design and Safety

Unit Reference	T/651/5071	
Level	2	
GLH	3	
Aim	The aim of this unit is to provide learners with knowledge and understanding of the fundamental properties of hydrogen, it's chemical characteristics and production processes, as well as the principles of process design and safety in hydrogen operations.	
Assessment Methodology	Multiple-choice examination	
Learning Outcomes <i>The learner will:</i>	Assessment Criteria <i>The learner can:</i>	
1. Understand the properties of hydrogen.	1.1	State the processes for converting gases into hydrogen.
	1.2	List the chemical properties of hydrogen.
	1.3	Identify the waste products generated during the hydrogen production process.
2. Understand the principles of compressed hydrogen storage in hydrogen operations.	2.1	Identify how hydrogen can be converted into a compressed gas form.
	2.2	Identify the material properties of hydrogen in its compressed gas form and how to store it in this state.
3. Understand the principles of liquid hydrogen storage in hydrogen operations.	3.1	State how hydrogen can be converted into a liquid form.
	3.2	Identify the material properties of hydrogen in its liquid form for storage and how to store it in this state.
4. Know how hydrogen can be converted into another chemical compound.	4.1	State how hydrogen can be converted into another chemical compound.
5. Understand process safety principles and incident prevention in hydrogen operations.	5.1	Identify safety-critical equipment and safety-critical tasks in hydrogen operations.
	5.2	Identify hazardous area classification requirements in hydrogen operations.
	5.3	Identify relevant Major Accident Scenario protocols.

Unit 3: Introduction to Hazards, Risk and Controls associated with Hydrogen

Unit Reference	Y/651/5072	
Level	2	
GLH	3	
Aim	The aim of this unit is to provide knowledge and understanding of the hazards, risks, and controls associated with hydrogen.	
Assessment Methodology	Multiple-choice examination	
Learning Outcomes <i>The learner will:</i>	Assessment Criteria <i>The learner can:</i>	
1. Understand the risks and hazards associated with hydrogen.	1.1	Identify the risks and hazards associated with hydrogen.
	1.2	Differentiate between risks and hazards associated with hydrogen.
2. Understand the pressure requirements for transporting hydrogen in gas systems and vessels.	2.1	Identify the higher pressures used for transporting hydrogen in gas systems compared to other gases.
	2.2	State how hydrogen affects the design, operation and safety considerations of pipelines and vessels used in hydrogen gas systems.
3. Know how to manage hazards associated with hydrogen.	3.1	Identify the environmental and material factors that contribute to hazards that arise from using hydrogen.
	3.2	Identify the appropriate safety zones in hydrogen hazardous areas.
	3.3	Identify the emergency procedures to ensure safe operations in hydrogen hazardous areas.
	3.4	State why ATEX-rated equipment is required within hydrogen hazardous areas.
4. Know how to manage hydrogen embrittlement.	4.1	Identify how hydrogen interacts with steel, plastics or composite materials to cause embrittlement.
	4.2	State the testing required to identify and address hydrogen embrittlement in materials.

	4.3	Identify appropriate materials that can be used to reduce the risk of hydrogen hazards caused by embrittlement.
5. Understand the interactions between hydrogen hazards and the surrounding environment.	5.1	Identify the potential impact of hydrogen hazards on nearby environments.
	5.2	State how factors in the surrounding area can influence hydrogen operations.
6. Know the appropriate control measures for managing hydrogen.	6.1	Identify control measures that are required for managing hydrogen.

Resources

SIAS provides the following additional resources for this qualification:

- Centre Qualification Guide
- Qualification Learner Logbook
- Externally Set Assessments

Appendix 1: Specimen Assessment

Specification for the SIAS-set, SIAS-marked Multiple Choice Question Examination.

Number of Questions	35 questions covering 3 units. Unit 1: 8 questions Unit 2: 12 questions Unit 3: 15 questions
Time Allowed	60 minutes
Pass Mark Requirements	Unit 1: 4 correct answers required. Unit 2: 6 correct answers required. Unit 3: 7 correct answers required. Overall pass mark: 24 out of 35
Grading	Pass or Fail

Sample questions:

Sample Question 1
What is the biggest risk when hydrogen leaks in an indoor setting?
A. It creates a strong smell, making leaks easy to detect.
B. It can accumulate near the ceiling and create an invisible fire risk.
C. It reacts with moisture in the air to form a toxic gas.
D. It rapidly freezes surrounding materials, causing structural damage.

Sample Question 2
Which statement about hydrogen embrittlement is true?
A. Hydrogen can weaken metals over time, increasing the risk of material failure.
B. Hydrogen reacts with oxygen to form a corrosive acid inside metal tanks.
C. Hydrogen deposits a visible residue that signals equipment failure.
D. Hydrogen corrosion occurs only in sealed environments.

Further Information

For information about SIAS and general enquiries please see our website: www.siasuk.com
or contact:

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