



Glass Training Ltd

Glass Manufacturing Level 2

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Glass Manufacturing Level 2

Glass Manufacturing Level 2

Introduction to the Qualification

Who is this qualification for?

This qualification is aimed at those who undertake activities in the glass manufacturing sector. This includes the receiving and batching of raw materials before they are processed, and the control of heating equipment to melt and form glass from the raw materials. It is not expected that candidates working in glass manufacturing all do the same activities: the qualification is structured to ensure that there is a high degree of flexibility in the qualification, although there are common units in the mandatory section of the qualification. The standard covers the most important aspects of the job. This qualification is at Level 2, and should be taken by those who are fully trained to deal with routine assignments. Candidates should require minimum supervision in undertaking the job.

A further qualification that covers Glass Manufacturing at Level 3 is also available.

Candidates for this qualification will primarily be:

- working in glass making factories
- working with raw materials, melted glass materials, or semi-finished products

Candidates are likely to have jobs entitled:

- Batch Plant Operator
- Bottle Maker
- Fibre Glass Maker
- Forming Operator
- Furnace Operator
- Glass Maker
- Glass Manufacturer
- Glass Shop Operator
- IS Machine Operator
- Machine Operator
- Melting Operator
- Process Operator
- Tank Operator

What is required from candidates?

Candidates should achieve all 3 mandatory units listed below, plus 4 of the optional units. Candidates should prove that they can achieve all the statements listed for each element. Guidance on the evidence that will be acceptable is contained in the introduction to each unit.

Mandatory Units (all 3 units to be taken)

Unit 1 Maintain health and safety within the working environment

Unit 2 Contribute to the work of others

Unit 3 Prepare and operate equipment

Optional Units (any 4 units to be taken)

Unit 4 Handle materials

Unit 5 Check the quality of products

Unit 6 Process products and materials by applying coatings or treatments

Unit 7 Receive glass raw materials for manufacturing operations

Unit 8 Prepare glass raw materials for manufacturing operations

Unit 9 Control the flow of glass raw materials through the melting process

Unit 10 Control the operating conditions within the melting process

Unit 11 Control melted glass within the forming process

Unit 12 Form glass products

Unit 13 Anneal glass products and materials

Unit 1

Maintain health and safety within the working environment

Commentary

This unit covers the broad requirements of health and safety within the working environment. The first element deals mainly with preventative activities. It covers the need to follow health and safety guidelines and ensuring that the work area is free from hazards. The second element deals with coping in an emergency. The candidate is expected to ensure that medical assistance is summoned, and that the emergency services are called where necessary.

Unit 1 **Maintain health and safety within the working environment**

Element 1.1 **Maintain the health and safety of individuals**

What you should be able to do:

- a) Follow the regulations and guidelines for health and safety protection at all times
- b) Ensure the immediate work area is free from health and safety hazards
- c) Identify promptly any health and safety hazards and report them to an appropriate authority
- d) Take suitable action to prevent harm to individuals
- e) Adopt safe working practices
- f) Use safety equipment and personal protective equipment correctly
- g) Follow manufacturers' and other relevant instructions relating to the safe use of equipment and materials
- h) Inform visitors to the work area of health and safety procedures
- i) Prevent unauthorised access to hazardous areas

What you should know:

Health and safety

- 1. *What are the relevant health and safety regulations and guidelines*
- 2. *What health and safety hazards can be found in the workplace*
- 3. *Who should be informed of health and safety hazards*
- 4. *What are safe and unsafe working practices*
- 5. *What type of safety equipment and personal protective equipment should be used in different situations*

Equipment

- 6. *Where to obtain information on the safe use of equipment*

Visitors

- 7. *What are the health and safety procedures for visitors*
- 8. *Who is authorised to enter hazardous areas*

Unit 1 Maintain health and safety within the working environment

Element 1.2 Minimise injury to individuals and damage to property in an emergency

What you should be able to do:

- a) Summon medical assistance in the event of any injury or potential injury to others
- b) Give priority to the prevention of injury to people over damage to property
- c) Carry out emergency procedures according to standard operating procedures
- d) Alert the appropriate emergency services and provide them with the information that they require
- e) Ensure emergency equipment is applied by trained personnel wherever possible
- f) Prevent unauthorised access to dangerous areas
- g) Report clearly accidents and emergencies in the appropriate information systems

What you should know:

Health and safety

- 1. *What type of injuries could occur*
- 2. *How to summon medical assistance*
- 3. *Who are the qualified first-aiders that are available*
- 4. *What are the standard operating procedures for different types of emergency*
- 5. *How to alert the emergency services, and what type of information will need to be provided*
- 6. *What are the evacuation procedures for workers and visitors, and where should people gather*
- 7. *Who is authorised to enter dangerous areas*
- 8. *What are the accident reporting procedures*

Emergency equipment

- 9. *Which equipment should be used for different types of emergency*
- 10. *Who is authorised to use emergency equipment*

Information systems

- 11. *What information systems should be used*
- 12. *Why it is important to use the information systems*

Unit 2

Contribute to the work of others

Commentary

This unit covers the need to go beyond the immediate requirements of the job, and to view work as more than just utilising technical skills. The first element covers the need to keep costs down by minimising the wastage of resources that are used during the work. It is important that equipment is used economically, that components are not damaged, and that materials are used in the correct quantities. Surplus materials are retained wherever possible. The second element is concerned with obtaining and providing information to ensure that people have all the information required to undertake work correctly. The final element covers developing and maintaining good working relationships within the organisation, especially with colleagues, but also importantly with customers.

Unit 2 Contribute to the work of others

Element 2.1 Minimise the wastage of resources

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Transport and store materials carefully to avoid unnecessary damage
- c) Ensure suitable quantities of materials are used during work activities
- d) Salvage surplus materials for further processing wherever possible
- e) Use equipment efficiently and carefully in accordance with standard operating procedures and manufacturers' instructions
- f) Maintain equipment according to standard operating procedures
- g) Minimise expenditure on non-essential items wherever this does not affect quality
- h) Ensure work activities that are undertaken are within one's own competence
- i) Identify and pass on potential improvements to work activities to the appropriate people

What you should know:

Health and safety

- 1. *What are the relevant health and safety responsibilities and obligations*
- 2. *What are the relevant health and safety procedures that need to be followed*

Materials

- 3. *How different types of material should be transported and stored*
- 4. *What quantity of materials should be used for different work activities*
- 5. *What materials can be salvaged, and how are they salvaged*

Equipment

- 6. *What equipment to use for different work activities*
- 7. *How to operate different types of equipment*
- 8. *How to avoid damaging equipment through incorrect use*
- 9. *What are the maintenance requirements of different types of equipment*

Standard operating procedures

- 10. *What are the standard operating procedures for different activities*
- 11. *How to obtain information on the standard operating procedures*

Unit 2 Contribute to the work of others

Element 2.2 Obtain and provide information

What you should be able to do:

- a) Identify the most appropriate sources of information
- b) Record information in the appropriate information systems
- c) Provide information to other people as soon as possible after they have requested it
- d) Ensure information provided to other people is accurate and contains sufficient detail to meet their requirements
- e) Provide information in a way that is appropriate to the person requesting it
- f) Identify any problems relating to the exchange of information and deal with them according to standard operating procedures
- g) Exchange information according to standard operating procedures

What you should know:

Information systems

1. *What information systems should be used*
2. *Who needs information, and for what purpose*
3. *What are the most appropriate sources for different types of information*
4. *What are the procedures for exchanging different types of information*
5. *What are the consequences of exchanging inaccurate or incomplete information*

Standard operating procedures

6. *What are the standard operating procedures for different activities*
7. *How to obtain information on the standard operating procedures*

Problems

8. *What are the types of problems that could occur*
9. *How can different types of problem be resolved*

Unit 2 Contribute to the work of others

Element 2.3 Develop and maintain good working relationships

What you should be able to do:

- a) Treat people in a way that maintains good working relationships
- b) Bring to the attention of colleagues information that might have an immediate effect on their work
- c) Carry out requests from other people promptly without holding up the course of the work
- d) Refer requests that cannot be met to an appropriate person
- e) Make available to others the resources that are required to achieve work activities
- f) Treat people's property with care and respect, and comply with security procedures wherever necessary
- g) Restrict any adverse impact of own work on other people
- h) Report problems in working relationships that cannot be resolved to an appropriate authority as soon as possible

What you should know:

Working relationships

1. *Why it is important to develop good working relationships with colleagues and customers*
2. *What are the security procedures for dealing with property*
3. *Who should be informed of problems in working relationships*
4. *What are the grievance and disciplinary procedures that are available*

Unit 3 Prepare and operate equipment

Commentary

This unit covers the preparation and operation of equipment. The equipment is used to undertake work activities, and the candidate is expected to be able to prepare it for operation. The candidate has to monitor the equipment during operation and identify any indications of a malfunction or poor performance. In addition, the candidate has to ensure the equipment is clean and clear from obstructions, although candidates will not undertake routine or emergency maintenance of the kind carried out by maintenance engineers.

Unit 3 Prepare and operate equipment

Element 3.1 Prepare equipment for operations

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Identify and confirm the specification for the work being undertaken
- c) Select the equipment that is suitable and confirm that it is available and safe for use
- d) Prepare the equipment correctly
- e) Start up and shut down the equipment safely, systematically, in accordance with standard operating procedures
- f) Identify any problems relating to the equipment and deal with them according to standard operating procedures

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Work

4. *How to confirm the correct specifications for the work being undertaken*
5. *What level of detail is required in a specification*
6. *What equipment, materials, and work procedures should be used for different jobs*

Equipment

7. *Where to obtain information on the safe use of equipment*
8. *What equipment to use for different work activities*
9. *How to avoid damaging equipment through incorrect use*
10. *How different types of equipment can be prepared for different requirements*
11. *What type of problems can occur with the equipment, and what are the standard operating procedures for dealing with them*

Unit 3 Prepare and operate equipment

Element 3.2 Operate the equipment

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Operate the equipment according to standard operating procedures and manufacturers' instructions
- c) Ensure monitoring and control systems are fully functional
- d) Remove immediately any items liable to damage the equipment
- e) Clear the equipment of debris, dirt, and other materials that affect its ability to operate correctly
- f) Identify any problems relating to the equipment and deal with them according to standard operating procedures
- g) Record information on the operation of the equipment in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Equipment

3. *How to operate different types of equipment*
4. *What are the maintenance requirements of different types of equipment*
5. *What are the different monitoring methods for different types of equipment*
6. *What type of items could damage the equipment*
7. *What type of problems can occur with the equipment, and what are the standard operating procedures for dealing with them*

Information systems

8. *What information systems should be used*
9. *Why it is important to use the information systems*

Unit 4 Handle materials

Commentary

This unit covers handling materials. The candidate has to identify what type and quantity of materials are required, and then locate them. The candidate will have to handle the materials safely, and position them for use in their work activities.

Unit 4 Handle materials

Element 4.1 Locate materials

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Confirm the requirements for materials
- c) Identify the correct location for materials
- d) Check that the materials match their markings
- e) Identify any problems relating to the locating of materials and deal with them according to standard operating procedures
- f) Record information on the location of materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Materials

3. *What are the different types of material that are used*
4. *What are the identification markings for the range of materials on the site*
5. *What are the normal locations of materials, and what are the potential alternative locations when these are not available*
6. *How to check that the materials match their markings*
7. *What type of problems can occur with the materials, and what are the standard operating procedures for dealing with them*

Information systems

8. *What information systems should be used*
9. *Why it is important to use the information systems*

Unit 4 Handle materials

Element 4.2 Handle and position materials

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Handle materials in a way that prevents damage to them and their surrounding environment
- c) Position materials according to standard operating procedures
- d) Use handling equipment that is suitable, and minimise wear and tear on the equipment
- e) Identify any problems relating to the handling of materials and deal with them according to standard operating procedures
- f) Record information on the handling of materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Materials

3. *What are the different types of material that are used*
4. *How different types of material should be handled*
5. *Where to position different types of material*
6. *What is the type of damage that can occur as a result of handling materials incorrectly*
7. *Which handling equipment should be used, and what are its capabilities and capacities*
8. *What authority or licences are necessary to use the handling equipment*
9. *What type of problems can occur with the materials, and what are the standard operating procedures for dealing with them*

Information systems

10. *What information systems should be used*
11. *Why it is important to use the information systems*

Unit 5 Check the quality of products

Commentary

This unit is concerned with checking the quality of products. Candidates need to be able to check the specifications of the products being produced and identify any problems as they occur. They need to be able to detect any obvious variations, eg defects in the production process that could adversely affect the product. They should then take the appropriate action and report the variations to the appropriate people.

Unit 5 Check the quality of products

Element 5.1 Check the specifications of a product

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Examine the product with the correct inspection equipment
- c) Ensure the inspection equipment is functioning correctly
- d) Obtain the correct specification for the product
- e) Check that the product is within the range provided in the specification
- f) Ensure the results are recorded correctly in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Products

3. *How to confirm the specification of products*
4. *What type of problems can occur with the products, and what are the standard operating procedures for dealing with them*

Equipment

5. *What is the correct equipment for inspecting different types of product*
6. *How to know whether the inspection equipment is functioning correctly*

Information systems

7. *What information systems should be used*
8. *Why it is important to use the information systems*

Unit 5 Check the quality of products

Element 5.2 Detect a variation in the quality of a product

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Examine the product for variations in quality using the correct procedures
- c) Ensure the inspection equipment used is appropriate and adjusted correctly
- d) Obtain the correct specification for the product
- e) Identify correctly any variation between the quality of the product and the specification
- f) Ensure results are recorded correctly in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Products

3. *What are the variations that could occur in a product*
4. *What are indications that the variations exist*
5. *What type of problems can occur with the products, and what are the standard operating procedures for dealing with them*

Equipment

6. *What is the correct equipment for inspecting different types of product*
7. *How to know whether the inspection equipment is correctly adjusted*

Information systems

8. *What information systems should be used*
9. *Why it is important to use the information systems*

Unit 6

Process products and materials by applying coatings or treatments

Commentary

This unit covers the processing of products and materials by applying coatings or treatments. This involves preparing the products and materials for the application of the coating or treatment, and ensuring the correct type and quality are available. The candidate then uses the appropriate equipment to coat or treat the products and materials in a way that enables the product to meet the specification. The candidate also has to identify any problems with the process and take the appropriate action.

Unit 6 Process products and materials by applying coatings or treatments

Element 6.1 Prepare products and materials for processing

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Identify and confirm the specification for the preparation of the products and materials
- c) Ensure the products and materials are available for processing
- d) Select the correct type, quantity, and quality of products and materials to be used during the preparation
- e) Prepare the products and materials correctly according to schedule and standard operating procedures
- f) Identify any problems relating to the products and materials and deal with them according to standard operating procedures
- g) Store the prepared products and materials in an appropriate place

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Processing

3. *What type of processing is undertaken*
4. *What preparation equipment should be used*
5. *What are the preparation processes that should be applied to different products and materials*
6. *What is the correct type, quantity, and quality of products and materials that are to be used in different processes*
7. *What are the appropriate storage areas for products and materials before and after processing*
8. *What type of problems can occur with processing, and what are the standard operating procedures for dealing with them*

Unit 6 Process products and materials by applying coatings or treatments

Element 6.2 Apply coatings or treatments to products and materials

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Confirm the methods for coating or treating the products and materials
- c) Apply coatings or treatments according to specifications
- d) Check the application of the coating or treatment to ensure it meets the specification
- e) Ensure products are correctly removed after the coating or treatment process
- f) Identify any problems relating to the coating or treatment of products and materials and deal with them according to standard operating procedures

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Coating or treating

3. *What are the methods for coating or treating different products and materials*
4. *What preparation equipment should be used*
5. *What is the correct type, quantity, and quality of materials that are to be used in different coating or treatment processes*
6. *How to check the application of coatings or treatments*
7. *How to remove coated or treated products and materials correctly*
8. *What type of problems can occur with coatings and treatments, and what are the standard operating procedures for dealing with them*

Unit 6 Process products and materials by applying coatings or treatments

Element 6.3 Finish products and materials to protect coatings or treatments

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Finish the coating or treatment of the products and materials by using the appropriate methods and materials
- c) Prepare the products and materials for further activities according to specification
- d) Store the products and materials correctly in the appropriate locations
- e) Identify any problems relating to the coating or treatment of products and materials and deal with them according to standard operating procedures
- f) Record information on the coating or treatment of products and materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Coating or treating

3. *How to finish different types of products and materials after coating or treatment*
4. *What other activities could follow the coating or treatment of the products and materials*
5. *What are the recommended schedules for controlling the condition of the coated or treated products and materials*
6. *What are the appropriate storage areas for products and materials before and after coating or treatment*
7. *What type of problems can occur with coating or treating, and what are the standard operating procedures for dealing with them*

Information systems

8. *What information systems should be used*
9. *Why it is important to use the information systems*

Unit 7

Receive glass raw materials for manufacturing operations

Commentary

This unit covers the receiving of glass raw materials prior to their use in glass manufacture. The materials are delivered to the site of the glass manufacture and the candidate has to ensure they are handled correctly and delivered to the correct location. The raw materials then have to be retrieved from within the site, and relocated for their consumption in glass manufacturing operations. The stock levels of raw materials also have to be monitored.

Unit 7 Receive glass raw materials for manufacturing operations

Element 7.1 Receive delivery of glass raw materials

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Ensure the raw materials that are received meet the specified requirements of the organisation
- c) Ensure the raw materials are handled in an appropriate manner and according to current health and safety requirements
- d) Ensure the raw materials are delivered to the appropriate location according to schedule
- e) Ensure the raw materials are delivered in a way that prevents damage to them and their surrounding environment
- f) Record information on the delivery of the raw materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Glass raw materials

3. *What are the different types of raw materials that are used in glass manufacture*
4. *How different types of raw materials should be handled*
5. *What are the normal locations of raw materials, and what are the potential alternative locations when these are not available*
6. *What are the identification markings for the range of raw materials on the site*
7. *Which handling equipment should be used, and what are its capabilities and capacities*
8. *How different types of raw materials should be transported and stored*

Information systems

9. *What information systems should be used*
10. *Why it is important to use the information systems*

Unit 7 Receive glass raw materials for manufacturing operations

Element 7.2 Retrieve glass raw materials within the site

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Confirm the requirements for the raw materials to be retrieved
- c) Ensure the raw materials are retrieved according to standard operating procedures
- d) Identify any problems in the location of the raw materials and take appropriate corrective action
- e) Take appropriate action to deal with any contamination of raw materials discovered during retrieval
- f) Record information on the retrieval of raw materials in the appropriate information systems

What you should know:

Health and safety

- 1. *What are the relevant health and safety responsibilities and obligations*
- 2. *What are the relevant health and safety procedures that need to be followed*

Glass raw materials

- 3. *How different types of raw materials should be transported and stored*
- 4. *What type of raw materials are required for different jobs*
- 5. *What type of contamination can occur with different types of raw materials*
- 6. *What action is necessary to deal with the different types of contamination*
- 7. *What type of problems can occur with the raw materials, and what are the standard operating procedures for dealing with them*

Information systems

- 8. *What information systems should be used*
- 9. *Why it is important to use the information systems*

Unit 7 Receive glass raw materials for manufacturing operations

Element 7.3 Monitor the stock level of glass raw materials within the site

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Identify the raw materials that are used during work
- c) Ensure stock levels are maintained at sufficient levels to meet the requirements of the work
- d) Identify any unusual levels of raw materials usage and promptly inform the appropriate people
- e) Handle raw materials in an appropriate way according to current health and safety requirements
- f) Report any raw materials that are positioned in inappropriate locations
- g) Record information on the stock levels of raw materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Raw materials

3. *What type of raw materials are required for different jobs*
4. *What quantity of raw materials should be used for different work activities*
5. *What are the stock levels that should be maintained*

Information systems

6. *What information systems should be used*
7. *Why it is important to use the information systems*

Unit 8

Prepare glass raw materials for manufacturing operations

Commentary

This unit covers the preparation of glass raw materials prior to their use in glass manufacture. The raw materials need to be prepared so that a batch can be created ready for use in the melting process. The preparation could consist of sorting and adjusting the moisture level, while during the batch process the materials are mixed and blended.

Unit 8 Prepare glass raw materials for manufacturing operations

Element 8.1 Prepare glass raw materials

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Confirm the quality of the raw materials before preparing them
- c) Ensure the raw materials are transferred to the preparation equipment at the appropriate rate
- d) Prepare the raw materials according to schedule and standard operating procedures
- e) Ensure the raw materials are correctly prepared according to requirements
- f) Ensure the raw materials are delivered to the appropriate storage area and are ready for processing
- g) Record information on the preparation of raw materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Raw materials

3. *What are the different types of raw materials that are used*
4. *How different types of raw materials should be handled*
5. *What are appropriate conditions for storing raw materials*
6. *What are the methods for confirming the quality of raw materials*
7. *What are the preparation processes that should be applied to different raw materials*

Equipment

8. *What preparation equipment should be used*
9. *How to operate different types of preparation equipment*

Standard operating procedures

10. *What are the standard operating procedures for different activities*
11. *How to obtain information on the standard operating procedures*

Information systems

12. *What information systems should be used*
13. *Why it is important to use the information systems*

Unit 8 Prepare glass raw materials for manufacturing operations

Element 8.2 Batch glass raw materials

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Ensure the batch equipment is appropriate for the manufacturing requirements
- c) Ensure the raw materials are batched correctly and are suitable to requirements
- d) Ensure the raw materials are efficiently transferred between the batch processes
- e) Observe all procedures relating to the storage of the batch materials
- f) Record information on the batching of raw materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Raw materials

3. *What are the different types of raw materials that are used*
4. *How to ensure the raw materials are batched correctly and are suitable to requirements*
5. *How raw materials should be efficiently transferred between different batch processes*

Equipment

6. *What batch equipment should be used*
7. *How to operate different types of batch equipment*

Information systems

8. *What information systems should be used*
9. *Why it is important to use the information systems*

Unit 9

Control the flow of glass raw materials through the melting process

Commentary

This unit covers the control of the flow of glass raw materials through the melting process. The flow has to be monitored through the melting equipment, so that any problems can be quickly identified. In addition, the flow itself has to be controlled to ensure the glass is being manufactured at the correct rate.

Unit 9 Control the flow of glass raw materials through the melting process

Element 9.1 Monitor the supply of glass raw materials into the melting process

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Ensure the rate of supply of raw materials meets specifications
- c) Inspect the feeding equipment regularly and correctly identify any malfunctions and obstructions
- d) Measure accurately the operating temperature and identify any variations from specifications
- e) Monitor the supply of raw materials according to standard operating procedures
- f) Identify any problems relating to the supply of raw materials and deal with them according to standard operating procedures
- g) Record information on the supply of raw materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Glass raw materials

3. *What are the different types of raw materials that are used*
4. *What are the specifications for the rate of supply of the raw materials*
5. *What are the methods for accurately measuring the operating temperature and what are the parameters for it*

Equipment

6. *What equipment to use for different work activities*
7. *How to operate different types of equipment*
8. *What type of malfunctions and obstructions can occur in the feeding equipment*
9. *What type of problems can occur with the equipment, and what are the standard operating procedures for dealing with them*

Information systems

10. *What information systems should be used*
11. *Why it is important to use the information systems*

Unit 9 Control the flow of glass raw materials through the melting process

Element 9.2 Control the flow of melted glass

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Control the flow of melted glass according to standard operating procedures
- c) Adjust the flow rate of the melted glass correctly to meet production requirements
- d) Identify any variations from the specified flow rate and rectify them without disruption to the manufacturing process
- e) Identify any problems relating to the melting process and deal with them according to standard operating procedures
- f) Record information on the flow of melted glass in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Melted glass

3. *How to adjust the flow of melted glass*
4. *What is the correct flow rate of melted glass for different production requirements*
5. *What type of variations to the flow rate can occur and how should they be rectified*
6. *What type of problems can occur with the melted glass, and what are the standard operating procedures for dealing with them*

Information systems

7. *What information systems should be used*
8. *Why it is important to use the information systems*

Unit 10

Control the operating conditions within the melting process

Commentary

This unit covers the control of the operating conditions within the melting process. This includes controlling the temperature, pressure, and other conditions within the melting process. The conditions will depend on the melting equipment that is being used, but whatever is used requires control and monitoring to ensure the glass that is produced meets the specifications set for it.

Unit 10 Control the operating conditions within the melting process

Element 10.1 Control the temperature of materials and equipment

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Ensure temperatures are measured accurately according to schedule
- c) Identify correctly any variations from specifications
- d) Ensure fuel flow rates and ratios are measured accurately according to schedule
- e) Continually maintain the supply of heat to achieve the optimum temperature for production requirements
- f) Control the temperature of materials and equipment according to standard operating procedures
- g) Identify any problems relating to the control of temperature and deal with them according to standard operating procedures
- h) Record information on the control of temperature in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Temperatures

3. *What are the methods for measuring temperatures, and what are the schedules that need to be met*
4. *What are the fuel flow rates and ratios that should be achieved*
5. *What are the optimum temperatures for different types of production requirement*
6. *What type of problems can occur with the control of temperature, and what are the standard operating procedures for dealing with them*

Information systems

7. *What information systems should be used*
8. *Why it is important to use the information systems*

Unit 10 Control the operating conditions within the melting process

Element 10.2 Control operating conditions within the melting equipment

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Ensure the operating conditions are measured according to specified schedules
- c) Identify correctly any variations in operating conditions from specifications and take appropriate action to rectify the condition
- d) Monitor and control the appropriate operating conditions to achieve optimum performance
- e) Control the operating conditions according to standard operating procedures
- f) Identify any problems relating to the control of operating conditions and deal with them according to standard operating procedures
- g) Record information on the control of operating conditions in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Operating conditions

3. *What are the methods for measuring operating conditions, and what are the schedules that need to be met*
4. *What is the appropriate action to take to deal with different types of variation in operating conditions*
5. *What are the optimum operating conditions for different types of production requirement*
6. *What type of problems can occur with the control of operating conditions, and what are the standard operating procedures for dealing with them*

Information systems

7. *What information systems should be used*
8. *Why it is important to use the information systems*

Unit 10 Control the operating conditions within the melting process

Element 10.3 Implement emergency procedures to control melting equipment

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Identify promptly any critical variations from specifications and implement emergency procedures to minimise the effects
- c) Identify hot spots and glass leaks immediately and report them to the appropriate people
- d) Ensure glass leakage is stopped as soon as possible, and minimise the wastage of glass
- e) Stabilise the conditions within the melting equipment as soon as possible using the appropriate methods
- f) Take emergency actions according to standard operating procedures
- g) Record information on the implementation of emergency procedures in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Emergency procedures

3. *What are the emergency procedures that should be taken*
4. *What are the critical variations from specified parameters that require immediate action*
5. *How to identify hot spots and glass leakage*
6. *How to stop glass leakage and minimise the wastage of glass*
7. *What are the methods for stabilising the conditions in melting equipment*

Standard operating procedures

8. *What are the standard operating procedures for different activities*
9. *How to obtain information on the standard operating procedures*

Information systems

10. *What information systems should be used*
11. *Why it is important to use the information systems*

Unit 11

Control melted glass within the forming process

Commentary

This unit covers the control of melted glass within the forming process. The forming process can be any process that leads to solid glass products being produced from the glass, and can include flat glass, fibre glass, containers, tableware, tubes, and rods. The flow of melted glass has to be monitored through the forming equipment, so that any problems can be quickly identified. In addition, the flow itself has to be controlled to ensure the formed glass is being manufactured at the correct rate.

Unit 11 Control melted glass within the forming process

Element 11.1 Monitor the supply of melted glass into the forming process

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Ensure the rate of supply of the melted glass meets specifications
- c) Inspect the equipment regularly and correctly identify any malfunctions and obstructions
- d) Measure accurately the operating temperatures and identify any variations from specifications
- e) Monitor the supply of the melted glass according to standard operating procedures
- f) Identify any problems relating to the forming process and deal with them according to standard operating procedures
- g) Record information on the forming process in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Melted glass

3. *What are the forming processes that occur*
4. *What are the glass products that are formed*
5. *What are the specifications for the rate of supply of the melted glass*
6. *What type of malfunctions and obstructions can occur in the forming equipment*
7. *What are the methods for accurately measuring the operating temperature and what are the parameters for it*
8. *What type of problems can occur with the melted glass, and what are the standard operating procedures for dealing with them*

Information systems

9. *What information systems should be used*
10. *Why it is important to use the information systems*

Unit 11 Control melted glass within the forming process

Element 11.2 Control the transfer of melted glass through the forming process

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Control the transfer of melted glass according to standard operating procedures
- c) Adjust the transfer rate of the melted glass correctly to meet production requirements
- d) Identify correctly any variations from the specified transfer of melted glass and rectify them without disruption to the production process
- e) Identify any problems relating to the forming process and deal with them according to standard operating procedures
- f) Record information on the transfer of melted glass in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Melted glass

3. *What are the forming processes that occur*
4. *How to adjust the transfer of melted glass*
5. *What is the correct transfer rate of melted glass for different production requirements*
6. *What type of variations to the transfer rate can occur and how should they be rectified*
7. *What type of problems can occur with the melted glass, and what are the standard operating procedures for dealing with them*

Information systems

8. *What information systems should be used*
9. *Why it is important to use the information systems*

Unit 12

Form glass products

Commentary

This unit covers the forming of glass products. The forming process can be any process that leads to solid glass products being produced from the melted glass, and can include flat glass, fibre glass, containers, tableware, tubes, and rods. The forming of the products has to be carefully monitored so that any problems can be quickly identified. In addition, the flow of materials through the process has to be carefully controlled to ensure the formed glass is being manufactured correctly.

Unit 12 Form glass products

Element 12.1 Monitor the forming of glass products

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Ensure the formed glass products are measured accurately according to schedule
- c) Identify correctly any variations from specifications
- d) Monitor the forming process according to standard operating procedures
- e) Ensure the forming process meets specifications
- f) Identify any problems relating to the forming process and deal with them according to standard operating procedures
- g) Record information on the forming process in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Glass

3. *What are the forming processes that occur*
4. *What are the glass products that are formed*
5. *What are the methods for measuring formed glass products, and what are the schedules that need to be met*
6. *What type of problems can occur with the glass, and what are the standard operating procedures for dealing with them*

Information systems

7. *What information systems should be used*
8. *Why it is important to use the information systems*

Unit 12 Form glass products

Element 12.2 Control the forming of glass products

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Control the forming process according to standard operating procedures
- c) Ensure the production of formed glass meets specifications
- d) Identify correctly any variations from specifications and rectify them without disruption to the production process
- e) Identify any problems relating to the forming process and deal with them according to standard operating procedures
- f) Record information on the forming process in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Glass

3. *What are the forming processes that occur*
4. *What are the glass products that are formed*
5. *What are the methods for measuring formed glass products, and what are the schedules that need to be met*
6. *What type of problems can occur with the glass, and what are the standard operating procedures for dealing with them*

Information systems

7. *What information systems should be used*
8. *Why it is important to use the information systems*

Unit 13

Anneal glass products and materials

Commentary

This unit covers the annealing of glass products and materials. Candidates need to demonstrate their ability to anneal the glass by using the appropriate equipment and applying the correct control to maintain the required temperature gradient. The candidate then has to finish the annealing process, using the appropriate finishing processes.

Unit 13 Anneal glass products and materials

Element 13.1 Anneal glass products and materials to meet specifications

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Confirm the specifications for annealing the glass products and materials
- c) Control the condition of the glass products and materials during the annealing process
- d) Monitor the application of the annealing process to ensure it meets the specification
- e) Ensure glass products and materials are correctly removed after the annealing process
- f) Identify any problems relating to the annealing of glass products and materials and deal with them according to standard operating procedures
- g) Record information on the annealing of glass products and materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Annealing

3. *What are the specifications for annealing different glass products and materials*
4. *How to monitor the annealing process*
5. *How to remove annealed glass products and materials correctly*
6. *What type of problems can occur with the annealing process, and what are the standard operating procedures for dealing with them*

Information systems

7. *What information systems should be used*
8. *Why it is important to use the information systems*

Unit 13 Anneal glass products and materials

Element 13.2 Finish glass products and materials after annealing

What you should be able to do:

- a) Comply with health and safety requirements and procedures at all times
- b) Finish glass products and materials by using the appropriate methods and materials
- c) Prepare the glass products and materials for any further work according to specification
- d) Identify any problems relating to the annealing of glass products and materials and deal with them according to standard operating procedures
- e) Ensure the glass products and materials are stored correctly in the appropriate locations
- f) Record information on the annealing of glass products and materials in the appropriate information systems

What you should know:

Health and safety

1. *What are the relevant health and safety responsibilities and obligations*
2. *What are the relevant health and safety procedures that need to be followed*

Annealing

3. *What are the specifications for annealing different glass products and materials*
4. *What other work could follow the annealing of the glass products and materials*
5. *What are the recommended schedules for controlling the condition of the glass products and materials*
6. *Where to store the glass products and materials after annealing and finishing*
7. *What type of problems can occur with the annealing process, and what are the standard operating procedures for dealing with them*

Information systems

8. *What information systems should be used*
9. *Why it is important to use the information systems*

Glass Manufacturing Level 2
