PIABC LEVEL 2 DIPLOMA IN POLYMER OPERATIONS

(Qualification Number: 603/3795/3)

Qualification Specification

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PURPOSE

The regulated qualification PIABC Level 2 Diploma in Polymer Operations (QN: 603/3795/3) has been designed for learners working in the polymer operations and related sectors. The main purpose of the qualification is to provide industry specific knowledge and skills appropriate for the day-to-day activities of the polymer operations environment.

Programmes leading to the qualifications can be organised and delivered by providers who have gained centre and qualification approval from PIABC Limited (PIABC). To achieve this, they need to complete the PIABC centre and qualification approval procedures available from PIABC's website (www.piabc.org.uk). In completing the documentation and the approval visit, centres need to demonstrate their ability to deliver high quality education leading to the qualifications. The actual style of delivery is up to the centre but could include taught sessions, tutor support, distance learning, workbooks, mentor support or any other method that the centre considers appropriate. In choosing their delivery method centres are expected to employ robust quality assurance processes. PIABC will appoint its own External Quality Assurers to ensure the effective operation of these processes and the maintenance of standards of quality.

It is expected that courses leading to the qualification will take a minimum of 41 guided learning hours, which is the average hours a learner may require guidance and support from teaching, learning and assessment professional to achieve the qualification. Learners will also be expected to carry out additional reading and other work to complete each unit and prepare for assessment. It is anticipated that the qualification will require a minimum of 411 hours of total qualification time for satisfactory completion for an average learner.

This qualification has been designed to be taken alongside the Level 2 Apprenticeship Standard – Science Manufacturing Process Operative to provide the theoretical knowledge required by an apprentice. Although this standard does not require an apprentice to undertake any additional qualification to successfully show competency in the science manufacturing process operative occupation, but it an option for employers for their apprentices.

OUTCOMES

1. Provide and enhance the skills competency, knowledge and job satisfaction of learners - providing them with a means of progression to higher level job roles and qualifications.
2. Provide employers with an open and transparent basis for judging the suitability of learners for employment and promotion.
3. Facilitate job movement throughout the polymer processing industry and related sectors.

Specific outcomes for the qualification are listed under the individual unit description.

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TARGET GROUP

This Level 2 qualification is appropriate for those wanting to enhance their employment and progression opportunities in the polymer processing industry and relates sectors:

There are two broad target groups:

1. People within the industry who want to extend their knowledge and skills to gain a recognised qualification.

2. People within the industry who want to operate more professionally and effectively.

ENTRY REQUIREMENTS

There are no entry qualifications or age limits required for this qualification. But the PIABC Level 2 Diploma in Polymer Operations (QN: 603/3795/3) is intended for those learners who are new to the industry.

Assessment for this qualification is open to any learner who has the potential to reach the standards laid down for level 2 qualifications. An initial assessment of past experience and current skills, knowledge and understanding should be carried out prior to commencement, to determine suitability for this qualification.

Aids or appliances, which are designed to alleviate disability, may be used during assessment, providing they do not compromise the standard required.

PROGRAMME ORGANISATION

Programmes leading to the PIABC Level 2 Diploma in Polymer Operations (QN: 603/3795/3) can be organised and delivered by providers who have gained centre and qualification approval from PIABC. To achieve this they need to complete the PIABC centre and qualification approval procedures available from ***www.piabc.org.uk***. In completing the documentation and the approval visit, centres need to demonstrate their ability to deliver high quality education leading to the qualification. Centres are expected to employ robust quality assurance processes. PIABC will appoint its own External Quality Assurers to ensure the effective operation of these processes and the maintenance of standards of quality.

It is anticipated that the qualification will require a total qualification time of 411 hours. This includes assessment, self-study and taught hours for satisfactory completion.

The organisation of the qualification is at the discretion of the centre and will consider the aims, aspirations and experience of the learners.

Centres are encouraged to choose the most suitable curriculum model for their learners. Whilst the sequential delivery of parts of the unit is a possibility and may provide the most straightforward way of determining completion, it may be that some degree of integration of elements will occur, or that other methods of delivery are more appropriate to meet the needs of learners. It should be noted however that the whole unit and all the learning outcomes will be assessed.

Centres must ensure that adequate arrangements are in place for supporting learners. This could be either through separate tutorial sessions or through the use of time within structured study sessions.

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Centres using on-line or other forms of open learning must ensure that appropriate tutorial support is provided for learners.

The employer's engagement in learning and assessment opportunities will be paramount in securing timely achievement and a participative role should be encouraged.

In relevant circumstances, centres are recommended to provide information and guidance to their learners on the availability and type of employment the qualification may lead to and on the progression routes available for further education and training in polymer process industry and associate sectors.

EXTERNAL MODERATION

PIABC will appoint External Quality Assurers to visit centres in order to ensure the maintenance of standards of quality. The scope and frequency of assessment monitoring activities will be in part determined by the centre assessment standard strategy for this qualification. PIABC's monitoring strategy will ensure that all centre marked assessments remain fit for purpose and that criteria against which candidates' performance is differentiated are being accurately and consistently applied for this qualification regardless on assessor, candidate, or centre.

The focus of EQA for this qualification is the detailed examination of candidate evidence. The sample selection will be determined by PIABC in line with its centre assessment standard strategy and external quality assurance sampling policy for each cohort. During this exercise, the EQA will be able to agree to certification claims and sign off documentation relating to certification claims.

GUIDANCE ON LEARNING AND TEACHING STRATEGY, METHODS AND ASSESSMENT

As far as possible, it is important that the course is taught by relating the underlying theory to practical examples and applications. Two factors which will help in this regard are:

1. The use of staff with direct experience in the industry. This must, of course, be balanced against a sound understanding of the theoretical principles, as anecdotal experience alone is unlikely to meet the requirements of the course.

2. Practical and commercial examples that underpin a more theoretical understanding should be used to show the link between theory and practice. DVD illustrations of processes could also be used as part of the teaching regime. A further and invaluable source of information is the Internet and there are many web sites which demonstrate important aspects of timber processing and use. Learners should be encouraged to research this material.

3. Practical experience of workplace operations dealing with polymer processing and the individual learner's chosen pathway. It is essential that Learners are able to, and can demonstrate their skills and knowledge in their own work environment with its production pressures

Learners employed in the polymer processing industry will come to the qualification with varying levels of existing knowledge and/or practical experience of some parts of the Learning Outcomes. Training needs should be identified and gaps in knowledge and competency should be filled with a planned delivery of an individual learning plan. This should be utilised in preparing for teaching and assessment. The sharing of knowledge which has the potential to lead to a high level of understanding

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should be encouraged by the use of staff with direct experience in the polymer process industry - particularly in the individual learner's chosen pathway. This must, of course, be balanced against a sound understanding of the theoretical understanding.

Where the skills assessment is to be carried out in a "production environment" this environment must not be simulated. The assessment should take account of production pressure within a natural workplace.

The relationship between theory and practice is a theme that should be reflected in the assessments for the programme. Therefore, in structured learning and individual work, learners should be aware of the requirement to develop a theoretical understanding to their practical work and a practical application to their theoretical understanding.

Those developing learning programmes should expect to achieve all the learning outcomes. It may be useful to have workbooks for use either at home or in the workplace.

QUALIFICATION DESCRIPTION

This qualification follows the PIABC principles for designing units and qualifications and contains the features listed as follows:

- Unit reference number, title, guided learning hours, grading structure and assessment guidance.
- Each unit consist of:
    - Learning outcomes that show what the learners will be able to understand, know or demonstrate.
    - Assessment criteria that show what the learners can do or produce in order to show that they have met the learning outcome.
- To successfully complete, learners must meet all the learning outcomes and gain an overall pass for each unit.

QUALIFICATION LEVEL

PIABC Level 2 Diploma in Polymer Operations (QN: 603/3795/3) has been developed as a level 2 qualification.

The assessments for this qualification are based on the learning outcomes and assessment criteria set in a way that demonstrates that the learner can show that they have the knowledge and skills associated with a level 2 qualification.

It will prepare the learner to operate as a competent team member and will greatly assist them in their career development.

When work for this qualification is assessed, it is important to realise that evidence will be sought which demonstrates these features below.

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Level 2 Descriptor

Summary

The descriptors set out the generic knowledge and skills associated with the typical holder of a qualification at Level 2. The level descriptors are framed as outcomes and each category starts with a stem statement ("the holder can...") which then links into the outcomes associated with each level of the framework.

Knowledge descriptor (the holder...)

- Has knowledge and understanding of facts, procedures and ideas in an area of study or field of work to complete well-defined tasks and address straightforward problems.
- Can interpret relevant information and ideas.
- Is aware of a range of information that is relevant to the area of study or work.

Skills descriptor (the holder...)

- Select and use relevant cognitive and practical skills to complete well-defined, generally routine tasks and address straightforward problems.
- Identify, gather and use relevant information to inform actions.
- Identify how effective actions have been.

Source: Qualification and Component Levels - Requirements and Guidance for All Awarding Organisations and All Qualifications. Version: Ofqual/15/5774. Ofqual 2015.

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QUALIFICATION STRUCTURE

Five mandatory units must be taken by the learner.

PIABC Unit Ref.	Ofqual Unit Ref.	Unit Title	Level	GLH	Total Unit Time (hrs)	Credit
MANDATORY UNITS (41 Credits Required)						
DPO1	K/617/3072	Principles and Requirements of Polymer Processing	2	33	61	6
DPO2	M/617/3073	Health, Safety and Environmental Principles when Operating Polymer Processes	2	30	60	6
DPO3	T/617/3074	Quality, Process Control and Improvement Techniques used in Polymer Processing	2	34	71	7
DPO4	A/617/3075	Prepare, Start Up and Shut Down a Polymer Process	2	34	93	9
DPO5	F/617/3076	Basic Skills in Mathematics, Communication and Behaviour required in a Polymer Processing Environment	2	90	126	13
Qualification Level			**2**			
Total Guided Learning Hours (GLH)				**221**		
Total Qualification Time (TQT)					**411**	
Total Credit						**41**

UNIT CONTENT

MANDATORY UNITS

PRINCIPLES AND REQUIREMENTS OF POLYMER PROCESSING

PIABC Unit No: DPO1
Unit Reference No: K/617/3072
Unit Level: 2

Guided Learning Hours:33
Total Unit Time (Hours): 61
Unit Credits: 6

Overview

This knowledge-based unit introduces the learner to the polymer processing industry including products produced, processes used and materials processed.

It also explores how their production company fits into the industry including their organisational structures; individual roles within the company and company policies and procedures which relate to ethical practices and codes of conduct e.g. employment, environmental, social, etc.

The unit covers one polymer processing technique in more detail (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.) In particular; the operation of equipment used, the behaviour of the polymer material during each phase of production, the methods of machine/equipment heating and cooling, any pre-processing, process support and post processing equipment and how any ancillary support equipment is integrated and controlled in the process operation.

The unit also covers the operation and functional requirements of a typical process forming tool (e.g. mould, die, cutter, sieve, mixer, etc.) together with their key parts, their construction including materials used, any related downstream forming operations and typical service and maintenance routines.

The unit reviews the different types of polymer materials and their processing requirements for one type of polymer process including; their basic flow/processing behaviour, additives used and any preparation requirements (e.g. mixing, drying, preheating, etc.).

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In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria:

Learning outcomes: what you need to know/ understand		**Assessment criteria:** what you need to do	
1.	Understand the scope and structure of the polymer processing industry and how your production company fits into the industry.	1.1	Briefly outline the polymer processing sector including products produced, processes used, and materials processed
		1.2	Outline your polymer processing company's organisational structure explaining the different roles
		1.3	Explain your own role within your company's organisational structure
		1.4	Outline the external regulators and organisations that influence how a typical polymer processing company would operate (e.g. quality, safety, welfare, etc.)
		1.5	Briefly describe your company's policies and procedures which relate to ethical practices and codes of conduct (e.g. employment, environmental, social, etc.)
2.	Understand the operation of equipment used in one your polymer processing technique	2.1	Describe the behaviour of the polymer material during each phase of one polymer processing technique (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.)
		2.2	Identify the key parts in the construction of one type of polymer processing machine/equipment
		2.3	Describe the operation of the key parts of the equipment used for one type of polymer process
		2.4	Outline the methods of machine/equipment heating and cooling including their control for one type of polymer process
		2.5	Outline any pre-processing, process support and post processing equipment for one type of polymer process.
		2.6	Briefly describe how any ancillary support equipment is integrated into the process and controlled
3.	Know the functional requirements of a polymer processing forming tool	3.1	Identify the requirements of a forming tool (e.g. mould, die, cutter, sieve, mixer, etc.) with respect to one type of process and associated products.
		3.2	Briefly describe the key parts and the construction of a forming tool including materials they are made from.
		3.3	Describe the operation of a typical forming tool and any downstream forming operations for one type of process forming operation
		3.4	Summarise the general service and maintenance required for one type of process forming tool
4.	Know the different types of polymer materials and their processing requirements for one type of process	4.1	Summarise the main polymer materials used in one type of polymer process
		4.2	Outline the additives used with materials for one type of process
		4.3	Briefly describe any preparation requirements for the main materials e.g. mixing, drying, preheating, etc.
		4.4	Outline the basic flow/processing behaviour of polymer materials when being processed for one type of process

HEALTH, SAFETY AND ENVIRONMENTAL PRINCIPLES WHEN OPERATING POLYMER PROCESSES

PIABC Unit No: DPO2	Guided Learning Hours: 30
Unit Reference No: M/617/3073	Total Unit Time (Hours): 60
Unit Level: 2	Unit Credits: 6

Overview

This knowledge-based unit introduces the learner to the importance of health, safety and environmental issues when working in the polymer processing sector.

The unit covers the type of potential hazards, dangerous occurrences and risks associated with one type of polymer processing technique (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.) including, hazardous substances, electricity, fire, fumes, working at height, manual handling, collision with vehicles, together with managing and reducing equipment and processing hazards.

The unit also covers the importance of safe working practices and procedures including the importance of safe systems of work, standard operating procedures and permits to work and the benefits of maintaining a tidy well organised workplace.

It also covers the importance of statutory health and safety regulations codes of practice and company procedures that apply to a polymer processing activity as well as fire prevention and emergency procedures within a work area.

The unit covers safety equipment and safe handling techniques when working in a polymer processing environment, especially the different types and uses of personal protective equipment typically used in one type of polymer processing work area, the different classes of health and safety signage and the techniques used for safe manual handling.

The unit introduces the learner to environmental regulations, organisational requirements, environmental management systems and common environmental signage and notices used in the polymer processing sector. The importance of processing of polymers in an energy effective way and the benefits of processing reused polymers are also covered

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In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria:

Learning outcomes: what you need to know/ understand		**Assessment criteria:** what you need to do	
1.	Understand the type of potential hazards and risks within a polymer processing workplace	1.1	Define the terms hazard, risk and dangerous occurrences
		1.2	Outline the process for carrying out a risk assessment
		1.3	List the typical general hazards and risks associated with one type of polymer process e.g. hazardous substances, electricity, fire, fumes, working at height, manual handling, collision with vehicles
		1.4	Describe the potential equipment hazards for one type of polymer process (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.)
		1.5	Describe how equipment and processing risks for one type of polymer process are reduced/addressed
		1.6	Identify the benefits of maintaining a tidy, well organised workplace
2.	Understand the health and safety regulations, codes of practice and company procedure that apply to a polymer processing activities activity	2.1	Briefly explain the purpose and scope of the Health and Safety at Work Act 1974,
		2.2	Summarise the roles and responsibilities under the Health and Safety at Work Act
		2.3	Describe fire prevention and emergency procedures within your work area
		2.4	Briefly describe any industry Codes of Practice for health and safety within a processing activity
		2.5	Describe the terms; Safe Systems of Work, Standard Operating Procedure and Permits to Work
3.	Understand the need for safety equipment, signage and safe handling when working in a polymer processing environment	3.1	Identify the types and uses of personal protective equipment typically used in one type of polymer processing work area
		3.2	Explain why it is important to use the correct PPE
		3.3	Summarise the different classes of health and safety signage
		3.4	Describe and demonstrate safe manual handling techniques
4.	Understand environmental regulations and organisational requirements with the polymer processing industry	4.1	Briefly outline the Environmental Management Systems Standard ISO 14001 and how it relates to the polymer processing industry
		4.2	Identify and explain the purpose of common environmental signage and notices.
		4.3	Explain the benefits of processing polymers in an energy effective way
		4.4	Explain the environmental benefits of processing reused polymers

QUALITY, PROCESS CONTROL AND IMPROVEMENT TECHNIQUES USED IN POLYMER PROCESSING

PIABC Unit No: DPO3	Guided Learning Hours: 34
Unit Reference No: T/617/3074	Total Unit Time (Hours): 71
Unit Level: 2	Unit Credits: 7

Overview

This knowledge-based unit introduces the learner to the behaviour and basic control of polymer materials when they are being processed for one polymer processing technique (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.) In particular; how polymer materials flow and their processing behaviour, key parameters that need to be monitored and how equipment uses feedback and monitoring techniques (e.g. thermocouples, transducer, etc.).

The unit covers quality requirements when polymers are being processed, including the benefits of reducing waste, the explanation of key quality terms (quality assurance, quality control and quality management) the need for quality standards, working instructions and standard operating procedures. It also covers basic process fault finding, including identifying symptoms, possible cause, solutions and the knock-on effect of adjusting certain parameters.

The unit also covers the need for manufacturing process improvement techniques, including the main manufacturing quality improvement and housekeeping techniques used in polymer processing and benefits and limitations of implementing these quality improvement techniques.

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In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria:

Learning outcomes: what you need to know/ understand		**Assessment criteria:** what you need to do	
1.	Know how polymers behave and are controlled during a processing technique	1.1	Outline the basic flow/processing behaviour of a polymer material when undergoing one specific processing technique (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.).
		1.2	Identify the key process parameters that need to be monitored during processing for one processing technique.
		1.3	Briefly describe how equipment uses feedback to monitor or control key parameters e.g. thermocouples, transducer, etc.
		1.4	Describe the symptoms of the common processing faults/defects for one processing technique.
		1.5	Explain the possible causes and solutions for common processing faults/defects for one processing technique.
		1.6	Explain why adjusting one parameter in a process may affect other parameters.
2.	Understand the quality requirements when processing polymer materials	2.1	Explain the benefits of reducing non-compliant products
		2.2	Define the term ‘quality’ with regard to manufacturing.
		2.3	Describe quality assurance, quality control and quality management
		2.4	Describe the need for quality standards
		2.5	Explain the importance of standard operating procedures and work instructions.
3	Appreciate the need for manufacturing process improvement techniques	3.1	Explain the need for an organisation to continually improve
		3.2	Outline the main manufacturing quality improvement and housekeeping techniques used in polymer processing.
		3.3	List the benefits of implementing the main quality improvement and housekeeping techniques into a polymer processing workplace.
		3.4	List potential problems when implementing the main quality improvement and housekeeping techniques into a polymer processing workplace.

PREPARE, START UP AND SHUT DOWN A POLYMER PROCESS

PIABC Unit No: DPO4	Guided Learning Hours: 34
Unit Reference No: A/617/3075	Total Unit Time (Hours): 93
Unit Level: 2	Unit Credits: 9

Overview

This skills-based unit introduces the learner to starting up and shutting down one type of polymer processing technique (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.) within the limits of their authority.

The unit includes the processing preparations required and covers; identifying the work and processing instructions, identifying machine/equipment and materials required, pre-conditioning of materials and pre-setting equipment parameters, ensuring a safe working environment including the wearing of appropriate PPE and confirming that any safety and processing checks are complete.

The unit covers the starting up of a polymer processing technique in a safe and effective manner including; any purging or cleaning, integrating equipment and process setting, monitoring the quality, taking representative samples for testing, making appropriate process adjustments within the limits of authority, referring to colleagues when problems cannot be rectified, confirming the products meets specification, carrying out appropriate assembly or finishing operation and carrying out any recommended process improvement techniques.

The unit also covers the stopping or closing down of one type of polymer processing production equipment safely and effectively within the limits of authority by; isolating any material feed in the system, shutting down and securing processing equipment and any relevant ancillary equipment and services, completing any documentation accurately and clearly and ensuring the area is clean tidy and hazard free.

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In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria:

Learning outcomes: what you need to know/ understand		**Assessment criteria:** what you need to do	
1.	Be able to prepare for production start-up for one polymer processing technique, within the limits of authority	1.1	Identify precise work and processing instructions to meet production requirements for one polymer processing technique, (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.). Identify and wear appropriate PPE
		1.2	Identify machine/equipment and materials required for one type of processing technique.
		1.3	Identify and calculate material requirements for the production run, including any material preparation and purging.
		1.4	Determine and carryout any material pre-conditioning requirements.
		1.5	Determine and set any machine/equipment pre-heating and pre-process requirements.
		1.6	Identify and input pre-set process parameters and preparations prior to starting the process.
		1.7	Ensure the equipment and area is safe and ready for production set up, including any checks or measurements.
		1.8	Ensure the polymer material and any consumables met the specification, including any preparation.
2.	Be able to start up and monitor one type of polymer processing equipment and produce samples within the limits of authority	2.1	Carry out any purge/cleaning procedures and confirm the material, equipment and work area are ready for production.
		2.2	Start the production process, integrating any support and downstream equipment.
		2.3	Monitor production quality and output and introduce any secondary operations safely and effectively
		2.4	Produce representative quality samples for testing, safely and effectively
		2.5	Inspect the samples and any test results produced and make simple adjustments to the process to remedy any problems.
		2.6	Confirm sample products meet production requirements.
		2.7	Carry out appropriate assembly, finishing and packaging operations according to requirements.
		2.8	Consult with appropriate colleagues when processing problems cannot be overcome or when unauthorised to resolve.
		2.9	Carry out any recommended process improvements to enable production to meet the specification.
		2.10	Make any production/quality calculations, recording them neatly and accurately.
		2.11	Follow safe and effective systems of work

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3.	Be able to stop and close down one type of polymer processing production equipment safely and effectively within the limits of authority	3.1	Isolate any material feed systems and conditioning units.
		3.2	Close down the process safely, making best use of materials and any purging/cleaning materials
		3.3	Shutdown any relevant ancillary equipment and services.
		3.4	Secure the processing equipment and any ancillary equipment
		3.5	Process any documentation and information accurately and clearly.
		3.6	Communicate positively and appropriately with work colleagues during the process operation.
		3.7	Ensure the area is clean tidy and hazard free

BASIC SKILLS IN MATHEMATICS, COMMUNICATION AND BEHAVIOUR REQUIRED IN A POLYMER PROCESSING ENVIRONMENT

PIABC Unit No: DPO5	Guided Learning Hours: 90
Unit Reference No: F/617/3076	Total Unit Time (Hours): 126
Unit Level: 2	Unit Credits: 12

Overview

This unit introduces the learner to working as part of a team and includes: communicating effectively, the importance of punctual and reliable work behaviour, treating colleagues in an appropriate and positive manner, identifying opportunities to help colleagues when they are experiencing difficulties, checking and adapting work activities to meet goals and positively adjusting work patterns to meet changing work objectives.

The unit also introduces the learner to use a range of basic workplace communication skills including; identifying the background and key in a given subject, planning and preparing for a discussion, making relevant and logical contributions to discussions in a clear positive manner using the key topic points and ideas, also planning and preparing for written communications including the types of recipient, presenting the information in a clear, logical and coherent manner on the correct document/format.

It also introduces the use of basic workplace mathematical techniques for typical processing problems or issues including; identifying key data and suitable approaches, identify and deduce information from tables and graphs, identifying and laying out formulae in a structured way, accurately calculating solutions, carry out checks to confirm results and producing appropriate ways to represent the results clearly and accurately including the use of tables and graphs.

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In order to gain this unit, the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria:

Learning outcomes: what you need to know/ understand		**Assessment criteria:** what you need to do	
1.	Be able to work effectively with colleagues in a polymer processing workplace	1.1	Communicate clearly and politely with colleagues and visitors to the work area
		1.2	Treat colleagues in an appropriate manner which promotes goodwill and respect.
		1.3	Promptly and willingly meet reasonable requests from colleagues
		1.4	Recognise colleagues experiencing work difficulties and offer assistance.
		1.5	Monitor and adjust work patterns to meet agreed schedules, ensuring punctual and reliable work behaviour.
		1.6	React positively to adjustments and changes to work demands
2.	Be able to use a range of communication skills effectively in the work place	2.1	Recognise the main issues and background in a given subject for discussion
		2.2	Prepare and explore for the discussion, identifying the main points and ideas
		2.3	Identify and use the main topic points and ideas
		2.4	Make relevant and logical contributions to discussions in a clear positive manner
		2.5	Identify the key information for a written communication including the method and recipients
		2.6	Present the information in a clear, logical and coherent manner on the correct document/format
3.	Be able to use mathematical techniques in practical workplace applications	3.1	Recognise the mathematical approach and key data for a given problem/issue to be resolved
		3.2	Identify and obtain necessary information to tackle the problem/issue
		3.3	Extract and interpret information from tables and graphs where appropriate
		3.4	Select and layout the mathematical solution/ formulae in an organised way
		3.5	Calculate the solution using appropriate formulae
		3.6	Produce appropriate diagrams/sketches to represent information where applicable
		3.7	Carry out appropriate checking procedures to confirm the outcome
		3.8	Present the conclusions in an appropriate format to the applicable recipients clearly and accurately

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ASSESSMENT AND GRADING

MANDATORY UNITS (DPO1, DPO2 and DPO3)

These units are assessed by completing assignments which are set, internally assessed and internally quality assured by the centre.

The assignments should be designed for a holistic approach to the assessment and confirm learners have a full contextualised understanding of all the assessment criteria.

Assignments must incorporate aspects and examples of the learner's own production environment; including policies, procedures, processes, equipment, and materials used. (Production environments must not be simulated for this unit).

Centre assignments and their management will be externally quality assured by PIABC. For each cohort a sample selection of each unit will be external quality assured by PIABC. The sample selection will be determined by PIABC in line with its centre assessment standard strategy and external quality assurance sampling policy. This will be undertaken before qualification certification. PIABC's centre assessment standard strategy will ensure that all centre devised and marked assessments remain fit for purpose and that criteria against which candidates' performance is differentiated are being accurately and consistently applied for this qualification.

These units have no grading; learners need to pass all the assessment criteria.

The pass threshold of these mandatory units is not subject to change.

MANDATORY UNIT (DPO4)

This unit should be predominantly assessed over time by natural observation in a production environment; this and other forms of supportive evidence should confirm ongoing and consistent competence over time. The Learner will successfully complete all the assessment criteria.

The Learner will be assessed on one type of polymer processing technique (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.).

The production environment for a polymer processing technique must not be simulated

The observations and any supporting evidence are internally assessed and internally quality assured by the Centre. For each cohort a sample selection of each unit will be external quality assured by PIABC. The sample selection will be determined by PIABC in line with its centre assessment standard strategy and external quality assurance sampling policy. This will be undertaken before qualification certification. PIABC's centre assessment standard strategy will ensure that all centre devised and marked assessments remain fit for purpose and that criteria against which candidates' performance is differentiated are being accurately and consistently applied for this qualification.

The Centre's assessments will be externally quality assured by PIABC.

This unit has no grading; learners need to pass all the assessment criteria.

The pass threshold of this mandatory unit is not subject to change.

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MANDATORY UNIT (DPO5)

This unit should be predominantly assessed over time by natural observation in a polymer production environment; this and other forms of supportive evidence should confirm ongoing and consistent competence over time. The Learner will successfully complete all the assessment criteria.

The production environment for a polymer processing technique (e.g. extrusion, injection moulding, transfer moulding, material mixing/preparation, finishing/assembly operations, etc.) must not be simulated.

The evidence can be generated holistically from activities and assignments within other units, particularly DP04.

Assignments must incorporate aspects and examples of the learner's own production environment; including, procedures, processes, documentation, equipment, materials used, etc

Learners who have successfully achieved Functional Skills level 1 in maths or equivalent can use this as APA (Accreditation of Prior Achievement) towards Learning Outcome 2.

Learners who have successfully achieved Functional Skills level 1 in maths or equivalent can use this as APA (Accreditation of Prior Achievement) towards Learning Outcome 3.

The observations and any supporting evidence are internally assessed and internally quality assured by the Centre.

The Centre's assessments will be externally quality assured by PIABC. For each cohort a sample selection of each unit will be external quality assured by PIABC. The sample selection will be determined by PIABC in line with its centre assessment standard strategy and external quality assurance sampling policy. This will be undertaken before qualification certification. PIABC's centre assessment standard strategy will ensure that all centre devised and marked assessments remain fit for purpose and that criteria against which candidates' performance is differentiated are being accurately and consistently applied for this qualification.

This unit has no grading; learners need to pass all the assessment criteria.

The pass threshold of this mandatory unit is not subject to change.

QUALIFICATION GRADING

This is qualification is graded pass or fail only.

The overall grading structure for the qualification is not subject to change.

QUALIFICATION CERTIFICATION

To achieve the full qualification, PIABC Level 2 Diploma in Polymer Operations (QN: 603/3795/3), learners need to successfully gain the 41 credits by completing the five mandatory units.

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REGULATORY INFORMATION

Countries offered in:	England
Subject/sector area:	4.2 Manufacturing Technologies
Qualification operational start date:	31 October 2018
Qualification review date:	31 October 2021
Applicable age ranges (years):	16-18, 18+

GLOSSARY

Term	**Definition**
Learning outcome	This describes what a learner needs to know, understand or do as a result of the process of learning.
Assessment criteria	These are the requirements learners are expected to meet to demonstrate that a learning outcome has been achieved.
Centre	The organisation that is approved by PIABC for the purposes of preparing learners for assessment.
Guided Learning Hours (GLH)	GLH is the average hours a learner may require guidance and support from teaching, learning and assessment professional to achieve the qualification.
Total Qualification Time (TQT)	This is an indication of the minimum length of time it would take the average learner to complete their qualification.

FURTHER INFORMATION

Please contact PIABC Limited directly at:
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