Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

POLYMER PROCESSING OPERATION

NTQF Level II

Ministry of Education
June 2013

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopian Occupational Standards (EOS) are - a core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF).They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopian Occupational Standard comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level including the Unit Codes and the Unit Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Polymer Processing Operation

Occupational Code: IND PPO

NTQF Level II

IND PP02 01 0613 Prepare Materials to Formulae	IND PP02 02 0613 Operate Ancillary Equipment	IND PP02 03 0613 Operate an Internal Mill Blender
IND PP02 04 0613 Operate Extruders	IND PP02 05 0613 Operate Mixing Equipment	IND PP02 06 0613 Operate Cable Winding Equipment
IND PP02 07 0613 Operate an Open Mill Blender	IND PP02 08 0613 Operate Granulating Equipment	IND PP02 09 0613 Operate Calendar
IND PP02 10 0613 Lay up Rubber Lining or Lag Pulleys	IND PP02 11 0613 Layout and Cut Materials	IND PP02 12 0613 Operate Bead Coiling Equipment
IND PP02 13 0613 Prepare Moulds for Composites Production	IND PP02 14 0613 Assemble Mould	IND PP02 15 0613 Operate Tyre Curing Equipment
IND PP02 16 0613 Operate Blow Moulding Equipment	IND PP02 17 0613 Operate Injection Molding Equipment	IND PP02 18 0613 Operate Rotational Moulding Equipment
IND PP02 19 0613 Operate Polystyrene Shape Moulding	IND PP02 20 0613 Operate Thermoforming Equipment	IND PP02 21 0613 Operate Blown Film Equipment
IND PP02 22 0613 Operate Filament Winding Equipment	IND PP02 23 0613 Set up and Operate Weaving Looms for Production	IND PP02 24 0613 Apply Liquid Surface Coatings
IND PP02 25 0613 Operate Printing Equipment	IND PP02 26 0613 Operate Film Conversion Equipment	IND PP02 27 0613 Check Recycle Wash Process
IND PP02 28 0613 Demould Product	IND PP02 29 0613 Repair Product Imperfections	IND PP02 30 0613 Participate in Workplace Communication
IND PP02 31 0613 Work in Team Environment	IND PP02 32 0613 Develop Business Practice	IND PP02 33 0613 Standardize and Sustain 3S

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Prepare Materials to Formulae**
Unit Code	**IND PP02 O1 0613**
Unit Descriptor	This competency covers preparing materials to formulae for production or product finishing. This competency applies to operators who assemble materials to formulae for production or production finishing. The key factors are identifying handling requirements for materials, preparing for the combination of ingredients and collecting and assembling ingredients. It is typically performed by operators working either independently or as part of a work team. It includes checking job sheets for work to be done and identifying the priority in which jobs/product will be made/completed, following approved hazard minimization procedures for any hazards connected with materials and process, using work instructions, labels and materials safety data sheets, and in accordance with occupational health and safety legislative responsibilities, collecting a range of materials and assembling them close to the start of the process and in the same sequence as the jobs are to be done checking materials to ensure no contamination, combining materials to a formulae and moving required materials into the right place by the right time.

Elements	Performance Criteria
1. Identify requirements to handle materials	1.1 Specifications for materials is read and interpreted and materials are identified. 1.2 Units of measurement and matching measuring equipment are identified. 1.3 The tolerances of measuring equipment are known and relate them to the impact of over/under measurement of ingredients on production process and quality. 1.4 ***Procedures*** are followed to identify and control ***hazards*** and ***problems***. 1.5 Workplace procedures are read and used to plan work sequence.
2. Prepare for assembly of ingredients	2.1 Equipment is calibrated and zeroed in for measurement and/or appropriate measurement scales are identified. 2.2 Required personal protection equipment and engineering controls are set up and fitted. 2.3 Equipment for dealing with emergencies are assembled. 2.4 Work area is checked for cleanliness. 2.5 Sources of potential contamination are identified and steps are taken to minimise/eliminate contamination risk.

3. Assemble ingredients	3.1 Ingredients are collected. 3.2 Ingredients are weighted/measured and other ***variables*** according to procedure. 3.3 Appropriate workplace approved sequence for combination of materials is followed. 3.4 Standard operating procedures are followed and appropriate safety measures when conducting work are observed. 3.5 For correctness of colour to standard is checked. 3.6 Action specified in procedures if materials/assembled ingredients do not appear to meet requirements is taken. 3.7 Workplace records are completed. 3.8 Unused ingredients are stored, and ***tools and equipment*** are cleaned and stored.

Variable	**Range**
Procedures	mean all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Hazards	May include but not limited to : • spills dusts/vapors • hazardous materials • manual handling hazards • Knife hazards.
Problems	May include but not limited to : • inappropriate selection of raw materials • contamination of raw materials • incorrect formulae being selected • combining inappropriate materials • variations in materials • Contamination of materials.
Variables	May include but not limited to : • mixtures and or proportions of materials to be used • mixing techniques • order of ingredient addition to the mixture • atmospheric conditions • cleanliness of the mixing area • Cleanliness of utensils.
Tools and equipment	May include but not limited to: • measurement equipments • knives and other bag opening equipments • hoists/lifting equipments not requiring any special permits or licenses

	• basic hand tools required for opening of material packaging • Relevant personal protective equipment.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • use measuring scales and equipment • locate, use, interpret and apply relevant formulae and information • maintain workplace records for materials used and mixes produced • identify and safely handle products and materials applying safety precautions appropriate to the task, including safe storage of materials. • know critical material properties and quantities • implement appropriate action on potential situations requiring action result.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.
Underpinning Skills	Demonstrate skills of: • using measuring systems, scales and calculating devices • observe storage and mixing requirements for materials to be mixed • assessing production workflow in relation to materials supply requirements • recognizing the focus of operation of work systems and equipment • identifying and correctly use equipment, processes and procedures • Planning own work, including predicting consequences and identifying improvements.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Ancillary Equipment**
Unit Code	**IND PP02 02 0613**
Unit Descriptor	This competency covers the operation of ancillary equipment which supports production operations. It applies to stand-alone items of equipment which require separate operation/ knowledge skills to the operation of the main production unit. This unit does not apply where the relevant ancillary equipment is minor and is integral to the main process. It is typically performed by all operators working either independently or as part of a work team. This competency applies to operation of equipment which enables the production process. It may be remote from the main production unit or in close proximity or attached, but is not a part of the main functions.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from standard ***procedures*** are identified. 1.2 Equipment requirements from job specifications and from verbal instructions by main machine operator are identified. 1.3 Pre-start checks in accordance with procedures are carried out.
2. Start/stop and monitor equipment	2.1 Each machine is started/stopped safely as required by production units and as specified by standard working procedures. 2.2 ***Variables*** in the operation of each ancillary unit are monitored to support the production program and control ***hazards***. 2.3 Units of equipment are paused or stopped as required, cleaned up units and made ready for restart.
3. Control standard equipment variables	3.1 Equipment functioning ***problems*** within standard expected variation limits are resolved. 3.2 Non-standard ***tools and equipments*** variations are reported.

Variable	Range
Procedures	May include but not limited to: All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Variables	May include but not limited to: • mixtures and or proportions of materials to be used • mixing techniques • order of ingredient addition to the mixture • atmospheric conditions • cleanliness of the mixing area • Cleanliness of utensils.
Hazards	May include but not limited to : • spills • dusts/vapors • slip and fall (such as due to spilt granules) • temperature • hazardous materials • manual handling hazards • Equipment operations.
Problems	May include but not limited to : • machine malfunction • Variations in materials and/or contamination of materials. • Appropriate action for problems outside of area of responsibility may be reporting to an appropriate person. • Appropriate action for solving problems within area of responsibility includes asking questions and seeking assistance from appropriate persons/sources.
Tools and equipment	May include but not limited to : • chilled water temperature control units • chilled water units • corrugators units • haul-off units • hot water or hot oil temperature control units • in-process granulating machines • polymer feedstock desiccant drying units • pressurized air supply units • product handling robotic units • product take-off conveyors • proportional polymer feed mixing hoppers/units • reinforcement filament braiding units • run-out tables • slitting units • vacuum and/or mechanical polymer loading units • vacuum calibration/sizing units • Wind-up units.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills of: • production workflow sequences • approved hazard control and safety procedures

	• using of PPE in relation to handling materials, equipment operation and cleanup • correct selection and use of equipment, materials, processes and procedures • planning own work, including predicting consequences and identifying improvements • monitoring equipment operation • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Pausing equipment, or shut down equipment in abnormal circumstances.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Materials, equipment and process sufficient to recognize material and equipment conditions which may lead to out of specification production. • Organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.
Underpinning Skills	Demonstrate skills of: • reading and interpreting typical product specifications, job sheets and material labels as provided to operators. • Writing to the level of completing workplace forms. • Basic numeracy, e.g. how to determine how many 2 kg, 3 kg and 5 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate an Internal Mill Blender**
Unit Code	**IND PP02 03 0613**
Unit Descriptor	This competency covers the gathering of materials and operation of internal mill blending equipment. This competency applies to operators who collect, blend and prepare rubber compounds for further production processes such as calendaring, extrusion and ultimately tyre building, moulding, rubber lining, roller building and conveyor belt manufacture. The key factors are the blending and mixing of the right materials at the right time and ensuring there is no contamination of the materials. It is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements are identified from production plan or request (recipe card). 1.2 ***Tools and equipment*** and materials are checked including base raw materials, additives and curatives and accelerators meet requirements for job(s). 1.3 Task sequences as per procedures, including noting times for checks of product quality are planned. 1.4 Non-conformity in materials is identified. 1.5 Requirements which may not be in accordance with usual practice are recognized. 1.6 Questions are asked to appropriate person to confirm unusual practice. 1.7 ***Hazards*** associated with the job are identified and appropriate action is taken. 1.8 Other pre-operational checks are performed in accordance with procedures.
2. Check process set-up	2.1 Safety gates and guards are checked in position and working. 2.2 Materials are checked if they are correct. 2.3 Control panel is checked to ensure all ***variables*** settings are within procedures guidelines. 2.4 Pre-start checks are completed.
3. Weigh materials	3.1 Scales are checked if they are zeroed in correctly. 3.2 Dust and rubbish in scales and feed mechanisms are minimized.

4. Operate equipment to procedures	4.1 Machine is started safely and correctly in accordance with procedures. 4.2 To ensure mixing is occurring appropriately according to equipment operating temperature, speed, amperages and pressures are checked. 4.3 Control panel is monitored in accordance with procedures. 4.4 Logs and records are completed as required. 4.5 Dump mill operators are notified when the cycle is close to completion. 4.6 Machine cycle is paused and emergency stop, as required is performed.
5. Liaise with dump mill operator	5.1 Dump mill operator is advised that compound/batch is being made. 5.2 Ensure that batch is sampled and correctly labeled. 5.3 Any non-routine process or product events are communicated to required personnel.
6. Respond to routine problems in accordance with procedures	6.1 Known faults that occur during the operation are recognized. 6.2 Causes of routine faults are identified and action is taken. 6.3 ***Problems*** are logged as required. 6.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Tools and equipment	May include but not limited to: • hoppers and other material feeding equipment • manual hoists/lifting equipment not requiring any special permits or licenses • bung spanners and similar • bale hooks • basic hand tools required for opening of material packaging • Relevant personal protective equipment.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Hazards	May include but not limited to: • restricted spaces • heat • hazardous chemicals • dust/fumes • moving machinery hazards • manual handling hazards and knife hazards.

Variables	May include but not limited to: • mixtures and or proportions of materials to be used • mixing techniques • order of ingredient addition to the mixture • atmospheric conditions • cleanliness of the mixing area and utensils.
Problems	May include but not limited to: • contamination of materials and/or additives • non adherence to recipe mix or sequence specifications • incorrect machine set-up • inadequate/excessive mixing time • float pressure • out of specification product • Incorrect quantity of materials and/or additives. • Interchanging of compound accompany slips.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • apply required skills and knowledge to operate an internal mill blender • apply approved procedures. • perform consistently. For example, look to see that production standards are met consistently.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. For example • organizations procedures, relevant regulatory requirements and the ability to implement them within appropriate time constraints and work standards • managing risks using the hierarchy of controls applied to operate an internal mill blender. • approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operation of an internal mill blender and its main components sufficient for the consistent production of quality products including: • production workflow sequences and materials demand • reasons for checking process control panels and reporting readings which are outside normal range of process variability. • accurately monitoring equipment operation and product quality • potential effects of variations in materials, quantities, temperature and equipment etc in relation to quality of product

	• correct selection and use of equipment, materials, processes and procedures • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements. • identifying factors which may affect product quality or production output and appropriate remedies. hazard policies and procedures • issue resolution procedures • guidelines relating to the safe use of machinery and equipment • quality assurance procedures (where existing) • security procedures • waste, pollution and recycling management processes • emergency procedures • reporting of accidents and incidents within regulatory requirements and following workplace procedures. • appropriate workplace language and communication technologies • manufacturer specifications • supplier and/or client instructions • materials safety data sheets.
Underpinning Skills	Demonstrate skills to: • plan own work including predicting consequences and identifying improvements. • identify the role friction plays in the blending of product • describe causes and effects of variations in blended batches • identify and describe own role and the roles of others involved in the open mill blender process. • read and interpret typical product specifications, job sheets, basic machine control panels and material labels as provided to operators. • write required to the level of completing workplace forms. • basic numeracy required to measure quantities of raw materials, additives, etc, to be blended calculate volumes from formulae measure and extract an exact quantity of compound from the mixed product for a sample to be tested.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Extruders**
Unit Code	**IND PP02 04 0613**
Unit Descriptor	This competency covers the routine operation of extrusion equipment. It applies to extrusion processes for pipe, sheet, profile, treads, sidewalls, bladder slugs, apex, tapes, film, cable and rod and the extrusion of both plastics and rubber. This competency applies to all work environments and sectors within the plastics, rubber and cable making sectors. It includes the operation of all relevant ancillary equipment where that equipment is integral to the extrusion process. The key factors are the making of products to meet quality standards and workplace requirements.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements are identified from production plan or request. 1.2 Products, materials and equipment meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions are asked to appropriate person to confirm unusual practice. 1.5 Housekeeping is ensured to meet the requirements. 1.6 Hazards associated with the job are identified and appropriate action is taken. 1.7 Other pre-operational checks are performed in accordance with ***procedures***.
2. Operate extruder to procedures	2.1 Process is operating within required limits is checked. 2.2 Products in specification and to required quality standard is checked. 2.3 Product is consistently ready for next operation is ensured. 2.4 Supply of material(s) is maintained as required. 2.5 ***Variables*** are measured and recorded. 2.6 Logs and records are completed as required. 2.7 Other materials are collected and segregated scarped and trimmed as required. 2.8 ***Tools and equipments*** and work area are kept clean. 2.9 Machine cycle is paused and emergency stop, as required is performed.

3. Change product/grade while operating as required	3.1 Outgoing grade/product is run downed/purged to procedures. 3.2 Changes specified in procedures for oncoming product/grade are made. 3.3 Oncoming ***materials***/grade are introduced and oncoming product is checked. 3.4 Other actions as specified in procedures is undertaken.
4. Respond to routine problems to procedures	4.1 Known faults that occur during the operation are recognized. 4.2 Causes of routine faults are identified and taken action. 4.3 ***Problems*** are logged as required. 4.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Products	May include but not limited to: • rod • sheet • film • profile • tread profile • Cable • sidewalls • bladder • slugs • apex • tapes
Hazards	May include but not limited to: • vapors • burns • moving equipment • hazardous materials • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Variables	May include but not limited to: • differences between actual and set temperatures • speeds, including screw speed and haul-off • colour and uniformity • surface finish and appearance • product finished thickness • product width

	• product length • output rate • Product integrity and general conformance to specification/sample.
Tools and equipment	May include but not limited to: • extruder equipment and components such as main drive, gearbox, thrust assembly, adapter, gate, breaker plate, screen pack, doser, screws, barrel, heaters, thermocouples • extruders, either single or twin screw • extrusion dies - rod, sheet, film, pipe, profile, tread profile and cable auxiliary equipment - water pump, feeders, hopper loader, pelletiser, dehumidifiers, etc • tools and equipment for taking samples • Relevant personal protective equipment.
Materials	Most plastic and rubber materials, including compounded PVC fed to the extruder as pellets. It does not apply to dry blended PVC powder
Problems	May include but not limited to: • equipment malfunction • variations in materials • contamination of materials or additives • temperature/speed variations • routine product extrusion faults - dimensions, surface appearance, colour, deformations • Incorrect quantity of materials.

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • recognize the importance of material properties and qualities • apply approved procedures • take appropriate action to resolve faults or report faults to appropriate personnel • explain and implement emergency shutdown procedures. • extrusion production standards are met consistently • upstream and downstream communication is timely and effective operating procedures and work instructions are read and interpreted correctly • problems are identified and appropriate action is taken (i.e. the problem is fixed or reported) • all safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.

	• managing risks using the hierarchy of controls applied to the extrusion process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, tools and equipments operation and clean-up. • production work-flow sequences and materials demand • reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitoring tools and equipment operation and product quality • potential effects of variations in raw materials and tools and equipment operation in relation to quality of product • relationship between the type of extruder and the materials being extruded • processing behaviour of polymers and the role of additives • waste management and knowing the importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • explain the effect of unauthorized or emergency shutdown in relation to safety and production requirements • identify factors which may affect product quality or production output and appropriate remedies. • planning own work, including predicting consequences and identifying improvements • identifying when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identifying and describing own role and role of others involved directly in the extrusion process. • reading and interpreting typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • writing to the level of completing workplace forms. • basic numeracy skills, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Underpinning Skills	• apply knowledge of the materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • apply organization procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • apply knowledge of managing risks using the hierarchy of controls applied to the extrusion process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and clean-up.

	• identify and explain production work-flow sequences and materials demand • explain and apply the reasons for checking process control panels and reporting readings which are outside of normal range of process variability • monitor equipment operation and product quality • identify the potential effects of variations in raw materials and equipment operation in relation to quality of product • relate type of extruder and the materials to be extruded • process behaviour of polymers and the role of additives • implement waste management and knowing the importance of reusing non-conforming products wherever possible • select and use of equipment, materials, processes and procedures • explain the effect of unauthorized or emergency shutdown in relation to safety and production requirements • Identify factors which may affect product quality or production output and appropriate remedies. • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identify and describe own role and role of others involved directly in the extrusion process. • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy skills, E.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Mixing Equipment**
Unit Code	**IND PP02 05 0613**
Unit Descriptor	This competency covers the operation of mixing equipment to prepare materials to specification. This competency applies to the processes required to mix materials to specification using mixing equipment. Materials may be any resin, multi-part mix or blend requiring specified quantities of raw materials and additives to meet a specification or recipe. It also includes the operation of all relevant additional equipment where that equipment is integral to the mixing process.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from production plan or request are identified. 1.2 Product, materials and equipment meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person is asked to confirm unusual practice. 1.5 ***Hazards*** associated with the job are identified and appropriate action is taken. 1.6 Other pre-operational checks in accordance with ***procedures*** are performed.
2. Start up equipment to procedures	2.1 Pre-start checks is conducted. 2.2 Up mixing equipment is started up.
3. Operate mixing equipment to procedures	3.1 Process is operating within required limits is checked. 3.2 Materials are in specification and to required quality standard is checked. 3.3 Supply of material(s) is maintained as required. 3.4 Logs and records are completed as required. 3.5 Other materials are collected and segregated scrapped and trimmed as required. 3.6 ***Tools and equipment*** and work area are kept clean. 3.7 Machine cycle is paused and emergency stop, as required is performed.

4. Respond to routine problems in accordance with procedures	4.1 Recognise known faults that occur during the operation are recognized. 4.2 causes of routine faults are identified and action is taken. 4.3 ***problems*** are logged as required. 4.4 non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Hazards	May include but not limited to: • hazardous materials and vapors • temperature • manual handling • Stationary and moving machinery, parts and components.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Tools and equipment	May include but not limited to: • measurement devices (such as measuring flasks, containers, weighing machines, scales or meters) • mixing or blending equipment (such as stirrers, paddle, propeller or other driven mixer) • Relevant personal protective equipment.
Problems	May include but not limited to: • incorrect machine settings (such as temperatures) • incorrect measurements of materials • Damaged tools and equipment and components of. • Poor blending of raw materials. • poor surface finish • poor colour dispersion • Bubbles in mixture.

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • operate mixing equipment • apply approved procedures. Perform consistently. For example, look to see that: • mixing production standards are met consistently • all safety procedures are adhered to.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.

	• managing risks using the hierarchy of controls applied to the mixing process. • approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operating mixing equipment and main components sufficient for consistent production of quality products including production workflow sequences and materials demand • reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitoring equipment operation and product quality • potential effects of variations in raw materials and equipment operation in relation to quality of product • processing behaviour of polymers and the role of additives • processing behaviour of polymers and the role of additives • waste management and knowing the importance of reusing non-conforming products wherever possible • waste management and knowing the importance of reusing non-conforming products wherever possible • explain the effect of unauthorized or emergency shutdown in relation to safety and production requirements • identifying factors which may affect product quality or production output and appropriate remedies. • planning own work, including predicting consequences and identifying improvements • identifying when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identifying and describe own role and role of others involved directly in operating mixing equipment.
Underpinning Skills	Demonstrates skills to: • apply operations of materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • apply organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • apply managing risks using the hierarchy of controls applied to the mixing process. • apply approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operate mixing tools and equipment and main components sufficient for consistent production of quality products including demand materials as per production workflow

	sequences. • know reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitor tools and equipment operation and product quality • identify potential effects of variations in raw materials and equipment operation in relation to quality of product • identify processing behaviour of polymers and the role of additives • know waste management and the importance of reusing non-conforming products wherever possible • explain the effect of unauthorized or emergency shutdown in relation to safety and production requirements • Identify factors which may affect product quality or production output and appropriate remedies. • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identify and describe own role and role of others involved directly in operating mixing equipment. • read and interpret typical product specifications, job sheets and material labels as provided to operators.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Cable Winding Equipment**
Unit Code	**IND PP02 06 0613**
Unit Descriptor	This competency covers the operation of cable winding tools and equipment for storing of products on reels and spools and the resolving of routine problems to procedure. This competency applies to all cable winding operations within the plastics, rubber and cable making sectors. This competency applies to operators who organize the storage of finished products and/or raw materials for production, post production and dispatch. The key factors are identifying of products, storing of products/materials on reels and spools and keeping appropriate records.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan are identified. 1.2 Product, materials and ***tools and equipment*** requirements for job(s) are identified. 1.3 ***Hazards*** are identified associated with the job and appropriate action is taken. 1.4 Supervisor/appropriate person if requirements are not in accordance with usual practice are checked with.
2. Conduct pre-start checks as required	2.1 Safety gates, guards and emergency stops are in position and working is checked. 2.2 Raw materials are checked if they are correct. 2.3 Other pre-start checks to ***procedures*** are undertaken.
3. Check winding equipment setup	3.1 Observe spool condition are observed and tagged and returned non-conforming spools to procedures. 3.2 Winding equipment settings and adjustments, spool size and length settings to procedures are checked. 3.3 Ensure product is checked for conformity with quality requirements. 3.4 Non-conforming products are tagged and dealt with to procedures. 3.5 Product through the equipment is threaded and fed on to the spool. 3.6 Appropriate fixing devices, methods or materials are used. 3.7 Tensions are adjusted and laying pattern to procedures is checked.

	3.8 Emergency cut-off switches and other safety devices to procedures are checked.
4. Operate equipment	4.1 Machine is started safely and correctly when required. 4.2 Product/process is checked within required limits. 4.3 Product is checked in specification. 4.4 Supply of material(s) is maintained as required. 4.5 Logs and records are completed when required. 4.6 Equipment and work area are cleaned up to procedures. 4.7 Equipment is paused, or equipment is stopped in an emergency, to procedures.
5. Monitor winding machine operation	5.1 Winding machine operations noting cooling line temperatures, amperages, tensions, colour, thickness and product integrity compared to product specification are monitored. 5.2 Sections of product requiring repair are identified and procedures to remedy the fault are followed. 5.3 Adjustments are made to remedy faults and non-conformity to specifications where applicable. 5.4 Material for reprocessing are collected and reused where possible, and dealt with waste and scrapped to procedures. 5.5 Equipment cleanup, lubrications, adjustments and waste management to procedures are completed.
6. Complete work process	6.1 Product is cut and secured free ends. 6.2 Reel using appropriate manual handling techniques is removed and set down. 6.3 Reel and transport without damage to materials, personnel or equipment is relocated. 6.4 New spool and recommence product winding operations is fitted.
7. Respond to routine problems to procedures	7.1 known faults that occur during the operation are recognized. 7.2 Causes of routine faults are identified and actions are taken. 7.3 ***Problems*** are logged as required. 7.4 non-routine process and quality problems are identified and appropriate action is taken.

Variable	Range
Variables	May include but not limited to: • differences between actual and set conditions (Eg speeds, temperature) • product colour, uniformity, surface condition and appearance • output rate • Product integrity and general conformance to specification.
Tools and equipment	May include but not limited to: • reels and spools used in storing cable • mechanical handling equipment • computers • traverse controls • hand tools and safety equipment • mechanical and computerized measuring devices • relevant personal protective equipment • cable (Eg power, single cable, multi-core) • Other relevant winding/cables/products.
Hazards	May include but not limited to: • moving equipment, cable and reels • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • incorrect reel/spool size and winding speed • quality problems and equipment failure.

Evidence Guide	
Critical Aspects of Competence	Demonstrate skills and knowledge to: • recognize the importance of material properties and qualities • apply approved procedures • take appropriate action to resolve faults or report faults to appropriate personnel • explain and implement emergency shutdown procedures • Perform consistently. For example, look to see that: ➢ cable winding production standards are met consistently ➢ upstream and downstream communication is timely and effective ➢ operating procedures and work instructions are read and interpreted correctly ➢ problems are identified and appropriate action is taken (i.e. the problem is fixed or reported) ➢ all safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Materials, equipment and process sufficient to recognize out-of-specification products, process problems and materials faults.

	• organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the polystyrene shape moulding process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • cable winding equipment and main components sufficient for consistent production of quality products including: ➢ The function of winding equipment machine components and the materials used ➢ The impact of winding machine cooling temperatures, tension, wind off speed on product quality and product output ➢ The effect of unauthorized shutdown of equipment on the winding process.
Underpinning Skills	Demonstrates skills to: • plan own work including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the injection moulding process. • read and interpret typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • Write the level of completing workplace forms. • Basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate an Open Mill Blender**
Unit Code	**IND PP02 07 0613**
Unit Descriptor	This competency covers the operation of open mill blenders, banbury dump mills and similar equipment. This competency applies to operators who use open mill blenders/mixers to compound rubber. This competency is typically performed by operators working in the rubber industry.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plans of workplace ***procedures*** are identified. 1.2 Product, materials and tools and equipments meet requirements for job(s) are checked. 1.3 ***Hazards*** are recognized and necessary steps to ensure safety is implemented. 1.4 Questions of appropriate person to confirm usual practice is asked. 1.5 Housekeeping is ensured to requirements. 1.6 Hazards associated with the job are identified and appropriate action is taken. 1.7 Other pre-operational checks are performed in accordance with workplace procedures.
2. Check process set-up	2.1 Safety gates and guards are checked in position and working. 2.2 Materials are checked if they are correct. 2.3 Pre-start checks are completed.
3. Operate open mill blender to procedures	3.2 Rubbers is banded, cut, folded and worked as needed. 3.3 Materials are added evenly at correct rate and time and blend in. 3.4 Open mill blender operations are checked. 3.5 Adjustments are made to remedy faults and non-conformity to product blend standards where applicable. 3.6 Material which is able to be reprocessed is collected and reused. 3.7 With waste and scrap are dealt with in accordance with procedures. 3.8 ***Tools and equipment*** is cleaned, adjusted and lubricated as required.

4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation is recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine problems and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • mixtures and or proportions of materials to be used • mixing techniques • order of ingredient addition to the mixture • atmospheric conditions • cleanliness of the mixing area • Cleanliness of utensils
Procedures	Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Hazards	May include but not limited to: • cuts • nip hazards • material hazards • burn and manual handling hazards
Tools and equipment	May include but not limited to: • mills • mill knifes • nip adjusting bars • bale hooks • conveyer belts • Relevant personal protective equipment
Problems	May include but not limited to: • power failures • incorrect machine adjustments • incorrect quantities of materials • incorrect blending times • equipment breakdowns • short scorch products • forming the initial band • Adjusting bank size for efficient mixing. • variations in materials • contamination of materials • Lack of homogeneous product. • Appropriate action for non-routine problems reporting to designated person or other action specified in the procedures

Evidence Guide	
Critical Aspects of Competence	Demonstrates knowledge and skills to: • operate an open mill blender. • apply approved procedures. • perform consistently. For example, look to see that: • met consistently production standards • identify problems and take appropriate actions (i.e. the problem is fixed or reported) • adhere to all safety procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. For example scorch lumps, uneven mixing or nervy slabs. • organizations procedures, relevant regulatory requirements and the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to compound materials using an open mill blender. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operation of an open mill blender and its main components sufficient for the consistent production of quality products including: • production workflow schedule and material demand • accurate monitoring of equipment operation and product quality • function and operating principles which influence the open mill blender equipment operation and product blending • impact that chemical reactions/mechanical processes have on changing the state, form and condition of the materials • purpose of developing elasticity and controlling temperatures • effects of mastication, differential speed, overheating • focus of operation of work systems and tools and equipments • correct use of equipment, processes and procedures • explain the impact of open mill blender machine speed, pressure, time and temperature have on finished product quality, production process and output • accurately monitor equipment operation and product quality • waste management and knowing the importance of reusing/working away non-conforming products wherever possible
Underpinning Skills	Demonstrate skills to: • plan own work, including predicting consequences and identifying improvements

	• identify the role that friction plays in the blending of product • describe causes and effects of variations in blended batches • Identify and describe own role and the roles of others involved in the open mill blender process. • Read and interpreting typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • Write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Granulating Equipment**
Unit Code	**IND PP02 08 0613**
Unit Descriptor	This competency covers the operation of granulation equipment. It applies to a range of plastics and rubber sections where virgin or recycled material is processed into granules for further production. This competency applies to operators who are required to apply knowledge of materials, product purpose and processes to the operation of granulation equipment. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request is identified. 1.2 Product, materials and ***tools and equipment*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions are asked to appropriate person to confirm unusual practice. 1.5 ***Hazards*** are identified associated with the job and take appropriate action. 1.6 Other pre-operational checks are performed in accordance with ***procedures***.
2. Start up granulator to procedures	2.1 Pre-start checks are conducted. 2.2 Granulator is started up.
3. Operate equipment to procedures	3.1 Process is operating within required limits is checked. 3.2 Materials are checked in specification and to required quality standard. 3.3 Materials are ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Other materials are collected and segregated scrapped and trimmed as required. 3.7 Equipment and work area are kept clean. 3.8 Machine cycle is paused and emergency stop, as required is performed.

4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation is recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • mixtures and or proportions of materials to be used • mixing techniques • order of ingredient addition to the mixture • atmospheric conditions • cleanliness of the mixing area and utensils.
Tools and equipment	May include but not limited to: • granulator equipment • auxiliary equipment (such as regrind evacuation systems, conveyors, hoppers, de-humidifiers) • magnets • screens • dust collection systems tools (such as verniers and gauges) • Relevant personal protective equipment.
Hazards	May include but not limited to: • spills • slip and fall (such as from spilt granules) • dusts/vapors • temperature • rotor speed, blades • noise • material hazards (such as additives used) • Manual handling hazards.
Procedures	May include but not limited to: All operations are performed in accordance with procedures. All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • equipment malfunction • variations in cycle time, temperature, pressure, speed • variations in materials or contamination of materials • poor maintenance of blades, screens • inconsistency in granulation • incorrect product size • incorrect weight • poor mixing off additive and raw material • Surface moisture.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate a granulating machine • Apply approved procedures. Perform consistently. For example, look to see that: • granulating production standards are met consistently • All safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • application of operating materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. For example, blade maintenance is crucial to material quality. The gap distance between rotor blades may change during normal operation. Therefore it is important to monitor the quality of granulated material and excessive amounts of fines, or plastic dust, to judge when to change rotor blades. • enterprise's standard procedures and work instructions and relevant regulatory requirements, along with the ability to implement them within appropriate time constraints and in a manner relevant to the job. • application of managing risks using the hierarchy of controls applied to the operation of granulating equipment. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operating granulating equipment and main components sufficient for consistent production of quality products including: • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitoring equipment operation and product quality • potential effects of variations in raw materials and equipment operation in relation to quality of product • processing behaviour of polymers and the role of additives • waste management and knowing the importance of reusing non-conforming products wherever possible • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements • identifying factors which may affect product quality or production output and appropriate remedies.
Underpinning Skills	Demonstrate skills to: • plan own work including predicting consequences and identifying improvements

	• identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in operating mixing equipment.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Calendar**
Unit Code	**IND PP02 09 0613**
Unit Descriptor	This competency covers the operation of calendaring equipment and the resolving of routine problems to procedure. This competency applies to operators who are required to undertake the routine operation of calendar equipment to convert plastic or rubber compound into finished or semi-finished rubber or plastic sheets. It is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request is identified. 1.2 Product, materials and ***tools and equipment*** requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks are performed in accordance with ***procedures***.
2. Start up calendaring equipment to procedure	2.1 Pre-start checks on equipment is conducted. 2.2 Calendaring equipment is started up.
3. Operate equipment to procedures	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Product is ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Other materials are collected and segregated scrapped and trimmed as required. 3.7 Equipment and work area are kept clean. 3.8 Calendar is shut down as required.

4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation are recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine problems are identified and reported to designated person.

Variable	**Range**
Variables	May include but not limited to: • operating temperatures • speed • nip settings • materials consistency • surface finish • product integrity and general conformance to specifications:
Tools and equipment	May include but not limited to: • calendar • additional equipment (such as mill knives, thickness gauges, profiling gauges/tools/jigs, nip adjusting bars, strainers and metal detector) • manual handling equipment • product take up equipment • material feeding equipment • hoists/lifting equipment not requiring any special permits or licenses • basic hand tools • Relevant personal protective equipment.
Hazards	May include but not limited to: • cuts • nip hazards • material hazards • burn hazards • manual handling hazards • Power failures.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • variations in materials • /contamination of materials • short scorch products (if rubber) • initial feeding of pelt/pig • uneven profiles • uneven colors

	• uneven surface appearance • variation in compound grain and nerve making a non-homogeneous product • Lay flat and curvature standards. • Appropriate action for non-routine problems may be reporting to designated person or other actions specified in the procedures.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate a calendar • apply approved procedures. • perform consistently. For example, look to see that ➢ calendaring production standards are met consistently ➢ all safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate Knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the calendaring process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operation of calendaring equipment and process sufficient for consistent production of quality products, including: • production workflow sequences and materials demand • calendar adjustments and their effects, such as nip, bowl speed and relative bowl speeds • reasons for checking process control panels and reporting readings which are outside of normal range of process variability • functioning of calendaring equipment, machine components and guides • accurately monitoring equipment operation and product quality • correct selection and use of equipment, materials, processes and procedures • potential effects of variations in raw materials and equipment operation in relation to product quality and production output • processing behaviour of polymers and the role of additives • effect of unauthorized or emergency shutdown in relation to safety and production requirements

	• factors which may affect product quality or production output and appropriate remedies (such as effect of foreign objects on nip area on the compounded materials) • waste management and knowing the importance of reusing non-conforming products whenever possible.
Underpinning Skills	Demonstrate skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the calendaring process. • read and interpret typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to determine the amount of compound required for the product run
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Lay Up Rubber Lining or Lag Pulleys**
Unit Code	**IND PP02 10 0613**
Unit Descriptor	This competency covers the laying-up of rubber and similar materials to line a variety of components or vessels of varying sizes, including the lagging of pulleys. This competency unit includes the use of manual handling of lining materials, the use of scaffolding and can involve activities within the definition of 'confined space'. This competency applies to a variety of internal and external work environments served by the rubber industry and includes work done in a production facility and on site. Lining materials includes rubber compounds which includes green (uncured) sheets, pre-cured rubber sheets and other polymer sheets. Lining or lagging will generally be of metal items, but may include application to composites, concrete and other non-metallic structures, vessels, pulleys or plant items. The key factors are the preparation of the surfaces to be lined/lagged and the successful application of the rubber to the surfaces without contaminating the materials.

Elements	Performance Criteria
1. Plan rubber lining or lagging work	1.1 Specifications and work order documentation are reviewed. 1.2 ***Hazards*** and risk controls, including emergency evacuation and adequate ventilation, including breathing apparatus where required are identified. 1.3 ***Variable*** measurement and work including materials, sequences, times and process stages are planned. 1.4 Minimize downtime, economically use materials and meet repair quality specifications are planned to. 1.5 ***Tools and equipments***, materials required, checking them for condition, quality and compliance tags are assembled.
2. Prepare surfaces for rubber lining or lagging	2.1 Out materials are laid out in an appropriate contamination free area. 2.2 Materials are ensured clean and free of debris and damage. 2.3 Non-conforming materials and report are identified as required. 2.4 Component, vessel or pulley are examined and ensured that the surfaces to be lined or lagged are free of defects and contaminants. 2.5 The sequence for application of the adhesives and materials are planned.

	2.6 Lining or lagging surfaces are prepared. 2.7 Surface coatings for setting time are monitored and the staggered supply of adhesives and materials, where appropriate are managed.
3. Lay up rubber lining or lagging	3.1 Adequate ventilation is provided and monitored during the laying up process are ensured. 3.2 Any confined space activity is monitored and conformed to regulations and ***procedures***. 3.3 Lining/lagging segments are positioned according to the lay-up plan. 3.4 Entrapped air is excluded and ensured complete contact between the lining/lagging and surface is obtained. 3.5 Joins are sealed and adhered properly with no gaps or overlaps are ensured. 3.6 For slips, sagging or other separation of the lining/lagging from the surface are checked. 3.7 Lining/lagging material is finished off as required at the extremities is ensured. 3.8 Rubber lining/lagging where appropriate is cured.
4. Clean work area	4.1 Tools and equipments used are cleaned, inspected and stored. 4.2 Unserviceable tools and equipments are tugged, faults are identified and relevant personnel are informed. 4.3 Work area is cleaned and returned to approved condition. 4.4 Waste or recycle are disposed according to procedures. 4.5 Appropriate workplace documentation is completed.
5. Respond to routine problems to procedures	5.1 known faults that occur during the operation is recognized. 5.2 causes of routine faults are identified and action is taken. 5.3 ***problems*** are logged as required. 5.4 non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Hazards	May include but not limited to: • spills • dusts/vapors • hazardous materials (Eg adhesives, solvents and other chemicals) • manual handling hazards • knife hazards • noxious, toxic fumes or inflammable fumes • confined spaces and working at heights.

Variables	May include but not limited to: • compatibility of materials, adhesives, solvents and cleaning agents • cleanliness and condition of lining/lagging materials • Effect of surface condition of the component on the quality of the lining/lagging.
Tools and equipment	May include but not limited to: • hand tools (Eg spanners, wrenches and hammers) • knives and other trimming devices • hoists/lifting equipment not requiring any special permits or licenses • rollers and other surface compression tools • ventilation equipment (e.g. fans) • Relevant personal protective equipment, including 'breathers' as required.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • variations in materials • incorrectly cut material shapes • contamination of materials • contamination of the surfaces to be lined or lagged • physical size and complexity of some components • entrapped air • gaps between lining segments and inappropriate laps or joins.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • recognize the importance of material properties and qualities • apply approved procedures • take appropriate action to resolve faults or report faults to appropriate personnel • Explain and implement emergency evacuation procedures. • Perform consistently. For example, look to see that: ➢ rubber lay-up production standards are met consistently ➢ communication is timely and effective ➢ work instructions are read and interpreted correctly ➢ problems are identified and appropriate action is taken (i.e., the problem is fixed or reported) ➢ All safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.

	• managing risks using the hierarchy of controls applied to the lining process. • approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and clean up. • lining/lagging operation sufficient for consistent production of quality products including: ➢ impact of incorrect or faulty materials ➢ production workflow sequences and materials demand ➢ focus of operation of work systems and equipment ➢ correct selection and use of equipment, materials, processes and procedures ➢ hazards of the materials and process and appropriate hazard control procedures especially the use of ventilation, breathing apparatus and requirements for confined space entry and emergency escape ➢ requirements of good manual handling practices ➢ Need for scaffolding and safe work practices at heights.
Underpinning Skills	Demonstrate skills to: • plan own work including predicting consequences and identifying improvements • monitor equipment operation • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identify and describe own role and role of others involved directly in the lining/lagging process. • read and interpret typical product specifications, job sheets and material labels as provided to operators. • distinguish between causes of faults such as: ➢ wrong raw materials/additives/catalyst ➢ incorrect quantity of materials/additives/catalyst ➢ Contaminated materials/additives/catalyst. ➢ Writing to the level of completing workplace forms. ➢ Basic numeracy, e.g. to interpret specifications and make and interpret measurements and shapes.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Layout and Cut Materials**
Unit Code	**IND PP02 11 0613**
Unit Descriptor	This competency covers the cutting of materials to shape and the resolving of routine problems to procedure. It applies to materials used in plastics fabrication, rubber and other manufacturing industries. This competency applies to operators who are involved in the fabrication of materials which first need to be cut into specified shapes. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request are identified. 1.2 Product, materials and ***tools and equipments*** meet requirements for job(s) are checked. 1.3 Plans, patterns, designs or specifications are interpreted. 1.4 Requirements which may not be in accordance with usual practice are recognized. 1.5 Questions of appropriate person to confirm unusual practice are asked. 1.6 Housekeeping is ensured to requirements. 1.7 ***Hazards*** are identified associated with the job and take appropriate action. 1.8 Logs and records are completed as required.
2. Conduct pre-start checks as required	2.1 Tools, jigs, fixtures and equipment ready for production are set up. 2.2 Materials, patterns and consumables required are identified. 2.3 Safety equipment is ensured available and fit for use. 2.4 Non-conformances and report are identified as required.
3. Layout materials for cutting	3.1 Pattern/specification onto material are translated. 3.2 3D or complex shapes into 2D shapes which can be cut are developed. 3.3 Material is placed and prepared for cutting.
4. Cut materials to shape	4.1 Material is cut to pattern, marking points for further processes. 4.2 With faults and non-conformances by correcting operation or adjusting equipment are dealt with as required.

	4.3 Other materials are collected and reprocessed/discarded scrapped /trimmed in accordance with workplace ***procedures***
5. Respond to routine problems in accordance with procedures	5.1 Known faults that occur during the operation are recognized. 5.2 Causes of routine faults are identified and action is taken. 5.3 ***Problems*** are logged as required. 5.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • operating temperatures • speed • nip settings • materials consistency • surface finish • product integrity and general conformance to specifications:
Tools and equipment	May include but not limited to: • guillotines, power saws, jig saws, band saws, thermal cutting devices • drilling, • hand tools as required • Relevant personal protective equipment.
Hazards	May include but not limited to: • fibers, airborne and handled • sharp edges, swarf and scrap • manual handling • cut hazards • power tools, leads and power supplies • Stationary and moving machinery, parts and components.
Procedures	All operations are performed in accordance with procedures. All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • pattern incorrect • marking errors • wear and breakage • loss of power or drives • controller sequence, timer issues • Sequencing problems.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • apply fabrication process • apply approved procedures. • perform consistently. For example, look to see that fabrication production standards are met consistently.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • enterprise's procedures, relevant regulatory requirements and the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the fabricated materials process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and clean up. • process of fabricating materials and the main components sufficient for consistent production of quality products includes: • material demand and production workflow sequences. • identifying different types of materials and their behaviour when cut and joined • identifying different cutting, forming and joining equipment and suitability for materials • accurately monitoring equipment operation and product quality • potential effects of variations in raw materials and outside variables in relation to quality of product. • waste management and knowing the importance of re-using non-conforming products wherever possible • identifying factors which may affect product quality of production output and appropriate remedies • radii of bending and related layout data • development of relevant shapes into 2D cutable shapes.
Underpinning Skills	Demonstrate skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the fabrication of materials process. • read and interpret typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • write to the level of completing workplace forms.

	• basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Bead Coiling Equipment**
Unit Code	**IND PP02 12 0613**
Unit Descriptor	This competency covers the operation of bead coiling tools and equipments and the resolving of routine problems to procedure. This competency applies to operators who are required to undertake the routine operation of bead coiling equipment.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from production plan or workplace procedures are identified. 1.2 Product, materials and ***tools and equipment*** meet requirements for job(s) are checked. 1.3 Requirements which many not be in accordance with usual practice are recognized. 1.4 Questions to appropriate person to confirm usual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are recognized and necessary steps required ensuring safety is implemented. 1.7 Other pre-operational checks in accordance with ***procedures*** are performed.
2 Start up bead coiling equipment to procedures	2.1 Pre-start checks are conducted. 2.2 Bead coiling equipment is started up.
3. Operate equipment to procedures	3.1 Machine is started safely and correctly when required. 3.2 Process is checked operating within required limits. 3.3 Products are collected and stored as required. 3.4 Product is checked in specification/to required quality standard. 3.5 supply of material(s) as required are maintained. 3.6 Logs and records are completed as required. 3.7 Other materials are collected and reprocessed/discarded scrapped/trimmed in accordance with workplace procedures. 3.8 Equipment and work area are kept clean. 3.9 Equipment is shut down as required.

4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation is recognized. 4.2 Causes of routine faults are identified and action is taken in accordance with procedures. 4.3 ***Problems*** are logged as required. 4.4 Non-routine problems are identified and reported to designated person.

Variable	**Range**
Tools and equipment	May include but not limited to: • spiral layer, band builder, johnstone slitter, apexer • hand tools used in the bead coiling process • material loading equipment used for loading of raw materials • Relevant personal protective equipment.
Hazards	May include but not limited to: • spills • slip and fall • hazardous substances • moving equipment • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • equipment malfunction • variations in temperature, pressure, speed, • variations in materials or contamination of materials • routine bead coiling faults • machine malfunction • Variations in materials and/or contamination of materials.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate bead coiling equipment • apply approved procedures. • perform consistently. e.g. to see that bead coiling production standards are met consistently.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. For example, • organizations procedures, relevant regulatory requirements and the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the bead coiling process.

	• approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operation of bead coiling equipment sufficient for the consistent production of quality products including: • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which do not conform to the work instructions • operation of bead coiling equipment and components • potential effects of variations in raw materials and equipment operation in relation to quality of product • waste management and importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • identifying factors which may affect product quality or production output and appropriate remedies • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements
Underpinning Skills	Demonstrates skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • monitor equipment operation and product quality • identify and describe own role and role of others involved directly in the bead coiling process • pause or shut down equipment in abnormal circumstances. • read and interpret typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Prepare Moulds for Composites Production**
Unit Code	**IND PP02 13 0613**
Unit Descriptor	This competency covers the demoulding and preparation of composite moulds for composites production, and the resolving of routine problems to procedure. This competency applies to the preparation of mould surfaces for gel coating or thermoforming. It includes the demoulding of a previous product or protective surface to procedures where relevant. This competency applies to operators who are involved in the preparation of mould surfaces for composites production processes such as gel coating or thermoforming.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from production plan or request are identified. 1.2 Mould, materials and ***tools and equipments*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions are asked to appropriate person to confirm unusual practice. 1.5 ***Hazards*** are identified associated with the job and take appropriate action
2. Prepare mould surfaces	2.1 Surfaces to ***procedures*** are prepared***.*** 2.2 Temporary repairs of minor mould surface defects as needed are made. 2.3 Equipment and work area are cleaned up when surface preparation is completed.
3. Apply mould release system, as required	3.1 The correct system for the job is selected. 3.2 Mould surfaces as per manufacturer specifications is applied. 3.3 The surface release system is tape-tested.
4. Mask-up mould	4.1 Suitable masking tape is selected. 4.2 Masking tape and other materials are applied.
5. Respond to routine problems to procedures	5.1 Known faults that occur during the operation are recognized. 5.2 Causes of routine faults are identified and action is taken. 5.3 ***Problems*** are logged as required.

	5.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	Range
Tools and equipment	May include but not limited to: • applicators (such as brushes, spray gun) • cleaning tools (such as plastic scrapers, buffs and polishers) • cutters • measuring devices • Relevant personal protective equipment.
Hazards	May include but not limited to: • hazardous materials and vapors • moving equipment • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • mould damage/ cracks on the mould • equipment wear and breakage • overuse of tools, requiring rework • build up on mould surface • Variations in materials or contamination of materials. • Appropriate action for non-routine problems reporting to designated person or other action specified in the procedures.

Evidence Guide	
Critical Aspects of Competence	Demonstrates knowledge and skills to: • Prepare mould surfaces from which the finished product will get released successfully • Apply approved procedures. • perform consistently so that: ➢ surface standards are met consistently ➢ All safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • materials, equipment and process sufficient to recognize conditions which may lead to out-of-specification production. For example, contaminates such as dirt, moisture or oils on the mould surface will cause surface blemishes on the product. • organizations procedures and relevant regulatory requirements, within appropriate time constraints and work standards. • Managing risks using the hierarchy of control applied to preparation of mould surfaces. Application of approved

	hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and clean up. • processes, materials and equipment used for the preparation of mould surfaces, including: • correct selection and use of equipment, tools and consumables required to deliver the specified mould surface • effects of contamination on surface quality • different mould release systems and the appropriate application techniques for each • typical problems with each mould release system • waste management and the importance of re-using non-conforming products wherever possible • factors which may affect product quality or production output and appropriate remedies (e.g. mould/tool design, resin type).
Underpinning Skills	Demonstrate skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the application process. • Interpret job specifications and recognize labels for different mould releases. • communicate work requirements with other operators.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Assemble Mould**
Unit Code	**IND PP02 14 0613**
Unit Descriptor	This unit covers the assembling and dismantling of moulds. The competency is typically performed by operators working either independently or as part of a work team. This competency applies to operators who are involved in assembling moulds for production of products, typically in the rotational moulding, urethane foam, and thermoforming and composites sector. The key factors are the selection of correct mould parts, assembling of the mould and dismantling of mould after production. It includes checking job sheets for work to be done, setting up moulds, dismantling moulds and replacing worn parts and maintaining mould part stock controls.

Elements	Performance Criteria
1. Check work requirements	1.1 The type of product required is identified. 1.2 For any special requirements is checked. 1.3 Mould parts required are recognized. 1.4 Mould and part dimensions are interpreted. 1.5 With supervisor/appropriate person if requirements are not in accordance with usual practice is checked. 1.6 Any possible ***problem*** is checked.
2. Assemble mould	2.1 Required mould parts are selected and checked. 2.2 Correct mould set-up jigs are used. 2.3 Mould as per ***procedures*** is assembled***.*** 2.4 Position of mould in relation to rest of machine is checked. 2.5 Mould will open and close is checked. 2.6 Release agents are applied. 2.7 Breather/vent systems are checked for safe functioning. 2.8 Breather/vent systems with material to avoid spillages are packed.
3. Dismantle mould	3.1 Correct mould dismantling jig, ***tools and equipments*** are used. 3.2 Mould as per work instructions is dismantled. 3.3 Mould of release agent is stripped. 3.4 Mould is cleaned to remove contaminants in accordance with procedures.

	3.5 Mould is dried out. 3.6 Mould parts are stored in appropriate place to control any ***hazard***.
4. Identify and replace worn parts	4.1 Worn parts are identified. 4.2 Condition of other mould parts is checked. 4.3 Worn mould parts are replaced. 4.4 Details of worn parts are recorded.
5. Maintain mould part stocks	5.1 Stocks of spare parts are checked. 5.2 Supervisor is advised of stock required; parts used and date of completed mould.

Variable	**Range**
Problems	May include but not limited to: • matching moulds to production requirements • servicing of moulds • recognizing parts requiring replacement • selecting correct parts for replacement • using incorrect mould parts • incorrect positioning of mould parts • Worn/damaged mould parts.
Procedures	May include but not limited to: All operations are performed in accordance with procedures. All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards. These may include: ➢ assembling cast and prefabricated moulds (typically made from metal or composite materials) ➢ using hand tools as required ➢ Interpreting production schedules/ work cards as appropriate.
Tools and equipment	May include but not limited to: • handling aid such as handcarts, hoists, jigs and gantries • pedestrian forklifts • hoists, jigs and gantries • powered equipment/aids such as sanders and sand blasting equipment • Relevant personal protective equipment.
Hazards	May include but not limited to: • noise, light, energy sources • humidity, air temperatures, radiant heat • stationary and moving machinery, parts or components • Manual handling hazards.

Evidence Guide	
Critical Aspects of Competence	Demonstrate skills and knowledge to: • recognize the importance of material properties and qualities apply approved procedures • take appropriate action to resolve faults or report faults to appropriate personnel. • perform consistently. For example, look to see that: ➢ production standards are met consistently ➢ upstream and downstream communication is timely ➢ effective operating procedures and work instructions are read and interpreted correctly ➢ problems are identified and appropriate action is taken (ie the problem is fixed or reported) ➢ all safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the moulding process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operating injection moulding equipment and main components sufficient for consistent production of quality products including: ➢ different mould part types ➢ types of releasing agents ➢ role of releasing agents and procedures • identifying factors which may affect product quality or production output and appropriate remedies • Distinguishing between causes of problems, such as use of incorrect mould parts, incorrect positioning of mould parts, worn/damaged mould parts.
Underpinning Skills	Demonstrate skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identify and describe own role and role of others involved directly in the process. • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators.

	• write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Tire Curing Equipment**
Unit Code	**IND PP02 15 0613**
Unit Descriptor	This competency covers the operation of tyre curing equipment in a tyre manufacturing plant or retreading situation where the 'green' tread is laid on the tire casing. This competency applies to operators who are involved in curing 'green' tyres and 'hot cap' retreads (i.e. retreads made using green treads), assembled from a number of intermediate components and stored. This competency is typically performed by operators working independently.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from production plan or request is identified. 1.2 Product, materials and ***tools and equipments*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions are asked to appropriate person to confirm unusual practice. 1.5 ***Hazards*** are identified associated with the job and take appropriate action. 1.6 Other pre-operational checks in accordance with ***procedures*** are performed.
2. Start up tyre curing equipment to procedures.	2.1 Pre-start checks are conducted. 2.2 Tire curing equipment is started up.
3. Operate equipment to procedures	3.1 Machine is started safely and correctly when required. 3.2 Process is checked operating within required limits. 3.3 Product is checked in specification and to required quality standard. 3.4 Product is ensured consistently ready for next operation. 3.5 Supply of material(s) is maintained as required. 3.6 Logs and records are completed as required. 3.7 Other materials are collected and segregated scrapped and trimmed as required in accordance with procedures. 3.8 Equipment and work area are kept clean in accordance with procedures.

	3.9 Machine cycle is paused and performed emergency stop to minimize hazards, as required by procedures.
4. Respond to routine problems in accordance with procedures	4.1 Known faults and ***problems*** that occur during the operation are recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 Problems are logged as required. 4.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Tools and equipment	May include but not limited to: • curing press (Eg bagomatic, collapsible bladder or shear strip, solid bladder) • ancillary equipment (Eg screens/strainers, computer data systems, ball float steam traps, condensate temperature and steam trap monitoring system, boilers, air compressors, water treatment units, control instruments) • Relevant personal protective equipment.
Hazards	May include but not limited to: • manual handling • noise • humidity • temperatures (Eg from air and steam) • fumes/vapors (Eg from curing agents) • cleaning equipment (Eg screens/strainers) • Stationary and moving machinery.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • poorly aligned guides • mould incorrectly placed on machine • poor mould closure/alignment • poorly prepared mould (dirty/mould release) • incorrect temperature settings • mould temperature/steam pressure/air blinded/waterlogged • Mould/air pressure. • contaminated green tyres • squashed or distorted green tyres • scorched rubber • curing time/cycle • product • excessive trim/spue • Out of round/eccentric.

Evidence Guide	

Critical Aspects of Competence	Demonstrate knowledge and skills to:
	• operate a tire curing machine
	• Apply approved procedures.
	• Perform consistently. For example, look to see that:
	  ➢ tire curing production standards are met consistently
	  ➢ All safety procedures are followed.

Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the tire curing process. • Approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operation of tire curing equipment and main components sufficient for consistent production of quality products including: • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitoring equipment operation and product quality • potential effects of variations in raw materials and equipment operation in relation to quality of product • processing behavior of polymers and the role of additives • waste management and knowing the importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements • identifying factors which may affect product quality or production output and appropriate remedies
Underpinning Skills	Demonstrate skills to: • Apply materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults • Apply organization procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.

	• Apply the knowledge of managing risks using the hierarchy of controls applied to the tire curing process. • Apply approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the curing process. • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • Write to the level of completing workplace forms. • Basic numeracy is, e.g. to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate blow moulding equipment**
Unit Code	**IND PP02 16 0613**
Unit Descriptor	This competency covers the operation of blow moulding equipment and the resolving of routine problems to procedure. This competency applies to all blow moulding operations within the plastics and rubber sectors. It includes the operation of all relevant additional equipment where that equipment is integral to the blow moulding process.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from production plan or request are identified. 1.2 Product, materials and equipment meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions are asked to appropriate person to confirm unusual practice. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks in accordance with ***procedures*** are performed.
2. Start up blow moulding equipment to procedures	2.1 Pre-start checks are conducted. 2.2 ***Tools and equipment*** are started up safely and 'dry run' to warm hydraulics and components to operating temperature before production, as required. 2.3 Condition of equipment is checked and raw materials are introduced as required.
3. Operate blow moulding equipment to procedures	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Product is ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Other materials are collected and segregated scrapped and trimmed as required. 3.7 Equipment and work area are kept clean. 3.8 Machine cycle is paused and emergency stop is performed, as required.

4. Respond to routine problems to procedures	4.1 Likely faults that occur during the operation are identified. 4.2 Causes of routine faults are identified and action is taken in accordance with procedures. 4.3 Make sure appropriate records and log books of equipment operations are maintained to meet procedures. 4.4 non-routine ***problems*** are identified and reported to designated person.

Variable	**Range**
Hazards	May include but not limited to: • spills • dusts/vapors • slip and fall (such as due to spilt granules) • temperature (such as due to heated moulds) • hazardous substances (including decomposing polymer during start up and shut down) • moving equipment (such as moving moulds, robots and ancillary equipment) • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Tools and equipment	May include but not limited to: • bottom blow, top blow, needle blow, tail to tail blow, parison • pre-blow and pre-squeeze, parison stretching and parison orientation type machines • ancillary equipment (such as chillers/cooling towers, die heating equipment, hopper driers, mixing hoppers, dehumidifying driers, air compressors, dosing machines, colour blending equipment and conveyors) • hand tools used in the blow moulding process • material loading equipment used for loading of raw materials • Relevant personal protective equipment.
Problems	May include but not limited to: • equipment malfunction • variations in temperature, pressure, speed, inflation • variations in materials or contamination of materials • incorrect quantity of materials/additives • die damage • routine blow moulding faults (e.g. wall thinning, holes, poor surface finish, warping, poor colour dispersion, ejection damage, colour contamination, black spots and other defects) • machine malfunction • Die/tooling problems.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate a blow moulding machine • apply approved procedures. • perform consistently that blow moulding production standards are met consistently.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. For example, the product may not be fully inflated, leading to undersized and malformed product. Blow pressure may be insufficient or the compressed air supply may be partially blocked. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. For example action must only be taken if the parison mass varies by more than 2 grams. • managing risks using the hierarchy of controls applied to the blow moulding process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • materials demand and production workflow sequences • the reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitoring equipment operation and product quality • purpose and requirements of 'dry running' before starting production • potential effects of variations in raw materials and equipment operation in relation to quality of product • processing behaviour of polymers and the role of additives • waste management and knowing the importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements • identifying factors which may affect product quality or production output and appropriate remedies.
Underpinning Skills	Demonstrate skills to: • plan own work, including predicting consequences and identifying improvements

	• identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the blow moulding process. • read and interpret typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, (e.g. to determine that two 25 kg bags are needed for a requirement for 50 kg).
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Injection Moulding Equipment**
Unit Code	**IND PP02 17 0613**
Unit Descriptor	This competency covers the operation of injection moulding equipment and the resolving of routine problems to procedure. This competency applies to operators who are required to undertake the routine operation of injection moulding equipment.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from production plan or request are identified. 1.2 Product, materials and ***tools and equipments*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks in accordance with ***procedures*** are performed.
2. Operate injection molding equipment to procedures	2.1 Process is checked operating within required limits. 2.2 Product is checked in specification and to required quality standard. 2.3 Product is ensured consistently ready for next operation. 2.4 Supply of material(s) is maintained as required. 2.5 Logs and records are completed as required. 2.6 Other materials are collected and segregated scrapped and trimmed as required. 2.7 Equipment and work area are kept clean. 2.8 Machine cycle is paused and emergency stop is performed, as required.
3. Respond to routine problems to procedures	3.1 Known faults that occur during the operation are recognized. 3.2 Causes of routine faults are identified and action is taken.

	3.3 ***Problems*** are logged as required. 3.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Tools and equipment	May include but not limited to: • injection moulding machines (such as electrical, mechanical, electromechanical and hydraulic) • components of injection moulding machines (such as base, material supply systems, barrel and screw plastification unit, injection units) • dies/tools (such as pneumatic, or hydraulic actuation of cores, slides ejector systems) • ancillary equipment (such as chillers, die heating equipment, hopper driers, mixing hoppers, dehumidifying driers, air compressors, dosing machines, blending and mixing equipment and conveyors where they are integral to the operation of the injection molders) • hand tools used in the injection moulding process • material loading equipment used for loading of raw materials • Relevant personal protective equipment.
Hazards	May include but not limited to: • spills • dusts/vapors • slip and fall (such as due to spilt granules) • temperature (such as due to heated barrel, nozzle and hot runner moulds) • hazardous substances (including decomposing polymer during start up and shut down) • moving equipment (such as moving moulds, robots and ancillary equipment) • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • equipment malfunction • variations in cycle time, temperature, pressure, speed • variations in materials or contamination of materials • Die/tooling problems such as damage to die. • short moldings • flash • sink marks • voids • burn marks

	• splay/splash marks/silver streaking • blistering • flow marks • poor surface finish • weld lines • poor colour dispersion • colour contamination • black spots • Ejection damage. • Appropriate action for non-routine problems reporting to designated person or other action specified in the procedures.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate an injection moulding machine • Apply approved procedures. • meet consistently Injection moulding production standards.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the injection moulding process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operation of injection moulding equipment and main components sufficient for consistent production of quality products including: • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitoring equipment operation and product quality • potential effects of variations in raw materials and equipment operation in relation to quality of product • processing behavior of polymers and the role of additives • waste management and knowing the importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures

	• effect of unauthorized or emergency shutdown in relation to safety and production requirements • factors which may affect product quality or production output and appropriate remedies.
Underpinning Skills	Demonstrate skills to: • plan own work including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the injection moulding process. • read and interpret typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • Write to the level of completing workplace forms. • Basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Rotational Moulding Equipment**
Unit Code	**IND PP02 18 0613**
Unit Descriptor	This competency covers the operation of equipment, including both rotating and 'rock and roll' modes, and the resolving of routine problems to procedure. This competency applies to operators who are required to undertake the routine operation of rotational moulding equipment. The key factors are the making of products to meet quality standards and workplace requirements. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request are identified. 1.2 Product, materials***, tools and equipment*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions are asked to appropriate person to confirm unusual practice. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks is performed in accordance with ***procedures***.
2. Operate rotational moulding equipment to procedures	2.1 Process is checked operating within required limits. 2.2 Product is checked in specification and to required quality standard. 2.3 Product is ensured consistently ready for next operation. 2.4 Supply of material(s) is maintained as required. 2.5 Products are demouled and stored as required 2.6 Logs and records are completed as required. 2.7 Other materials are collected and segregated scrapped and trimmed as required. 2.8 Equipment and work area are kept clean. 2.9 Machine cycle is paused and emergency stop is performed as required.

3. Respond to routine problems to procedures	3.1 Known faults that occur during the operation are recognized. 3.2 Causes of routine faults are identified and action is taken. 3.3 ***Problems*** are logged as required. 3.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • procedures for removing, fitting and setting moulds • materials used in the rotational moulding process • process temperatures • cleanliness • Characteristics of melt flow.
Tools and equipment	May include but not limited to: • hand tools • material loading equipment used for loading of raw materials • Relevant personal protective equipment.
Hazards	May include but not limited to: • spills • noise, light, energy sources • humidity, air temperature, radiant heat, hot moulds • hazardous substances • stationary and moving machinery, parts and components • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • equipment malfunction • variations in temperature, pressure, rotation • variations in materials or contamination of materials • mould damage • routine rotational moulding faults • machine malfunction • mould/tooling problems • Variations in materials and/or contamination of materials.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • recognize the importance of material properties and qualities • apply approved procedures • take appropriate action to resolve faults or report faults to appropriate personnel

	• explain and implement emergency shutdown procedures. • Perform consistently. For example, look to see that: ➢ rotational moulding production standards are met consistently ➢ upstream and downstream communication is timely ➢ effective operating procedures and work instructions are read and interpreted correctly ➢ problems are identified and appropriate action is taken (ie the problem is fixed or reported) ➢ all safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • materials, equipment and process sufficient to recognise out of specification products, process problems and materials faults. • procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • operation of rotational moulding equipment and components • effects of shrinkage on material colour • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which do not conform to the work instructions • approved hazard control and safety procedures and the use of PPE in relation to handling materials • equipment operation and cleanup • potential effects of variations in raw materials and equipment operation in relation to quality of product • waste management and importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • planning own work, including predicting consequences and identifying improvements • monitoring equipment operation and product quality • identifying when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identifying and describe own role and role of others involved directly in the rotational moulding process • identifying factors which may affect product quality or production output and appropriate remedies • using PPE, safely handle products and materials, read relevant safety information and apply safety precautions appropriate to the task • pausing equipment, or shut down equipment in abnormal circumstances

	• explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements • distinguishing between possible causes of routine rotational moulding faults such as: incorrect quantity of materials; contaminated materials/additives; equipment faults; mould damage; temperature/time faults; rotation speed/motion problems; wrong raw materials/additives; incorrect quantity of materials/additives; machine failure.
Underpinning Skills	Demonstrates skills to: • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Polystyrene Shape Moulding Equipment**
Unit Code	**IND PP02 19 0613**
Unit Descriptor	This competency covers the operation of polystyrene shape moulding equipment and the resolving of routine problems to procedure. This competency applies to operators who are required to undertake the routine operation of polystyrene shape moulding equipment. It is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request are identified. 1.2 Product, materials and ***tools and equipment*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks are performed in accordance with ***procedures***.
2. Start up shape moulding equipment	2.1 Pre-start checks on equipment is conducted. 2.2 Shape moulding equipment is started up.
3. Operate equipment to procedures	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Product is ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed when required. 3.6 Other materials are collected and segregated scrapped and trimmed as required. 3.7 Equipment and work area are kept clean. 3.8 Machine cycle is paused and emergency stop is performance, as required.

4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation is recognized. 4.2 Causes of routine faults in accordance with procedures are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine problems are identified and reported to designated person.

Variable	**Range**
Variables	May include but not limited to: • procedures for removing, fitting and setting moulds • materials used in the rotational moulding process • process temperatures • cleanliness • characteristics of melt flow.
Tools and equipment	May include but not limited to: • polystyrene shape moulding machine • components of shape moulding machine (such as prefoamer, storage hopper, moulding tool) • additional equipment (e.g. vacuum system) • manual handling aids (such as hand carts and trolleys) • basic hand tools and other bag opening equipment (eg knives) • hoists/lifting equipment not requiring any special permits or licenses • Relevant personal protective equipment.
Hazards	May include but not limited to: • spills • dusts/vapors • slip and fall • temperature • hazardous substances • moving equipment • Manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • equipment malfunction (e.g. mould damage) • variations in temperature, pressure, speed • variations in materials or contamination of materials • Appropriate action for non-routine problems reported to designated person or other action specified in the procedures.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • apply the required skills and knowledge to operate polystyrene shape moulding equipment • apply approved procedures. • consistent performance should be demonstrated. For example, look to see that: • polystyrene shape moulding production standards are met consistently • all safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements, within appropriate time constraints and work standards. • Managing risks using the hierarchy of controls applied to the polystyrene shape moulding process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which do not conform to the work instructions • potential effects of variations in raw materials and equipment operation in relation to quality of product • waste management and importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • accurately monitoring equipment operation and product quality • effect of unauthorized or emergency shutdown in relation to safety and production requirements • factors which may affect product quality or production output and appropriate remedies • processing behaviour of polymers and the role of additives.
Underpinning Skills	Demonstrates skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the polystyrene shape moulding process.

	• read and interpret typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate thermoforming equipment**
Unit Code	**IND PP02 20 0613**
Unit Descriptor	This competency covers the operation of thermoforming equipment and the resolving of routine problems to procedure. This competency applies to all thermoforming operations within the plastics and rubber sectors. It includes the operation of all relevant additional equipment where that equipment is integral to the thermoforming process

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements from production plan or request are identified. 1.2 Product, materials and ***tools and equipment*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 ***Hazards*** are identified associated with the job and take appropriate action. 1.6 Other pre-operational checks in accordance with ***procedures*** are performed.
2. Start up thermoforming equipment to procedures	2.1 Pre-start checks are conducted. 2.2 Thermoforming equipment is started up.
3. Operate equipment to procedures	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Product is ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Equipment and work area are kept clean. 3.7 Other materials are collected and segregated scraped and trimmed as required. 3.8 Machine cycle is paused and perform emergency stop is performed as required.

4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation is recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine problems are identified and reported to designated person.

Variable	**Range**
Tools and equipment	May include but not limited to: • heaters • mould • stacker • winder • granulator • conveyors and chutes • hand tools used in the thermoforming process • Relevant personal protective equipment
Hazards	May include but not limited to: • spills • dusts/vapors • slip and fall (such as due to leaks) • temperature (such as from ovens) • hazardous substances • moving equipment (such as opening the tool/mould cavity) • Manual handling hazards
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Problems	May include but not limited to: • equipment malfunction • variations in temperature (such as uneven oven temperatures) • pressure • speed (such as cycle times) • variations in sheet or contamination of sheet • product tool damage • machine malfunction • mould/tooling problems • Variations in materials and/or contamination of materials. • wall thinning • pin holes • poor surface finish • poor colour dispersion • stacking damage • colour contamination • black spots

	• scorching • shrinkage • Uneven stretching

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate an thermoforming machine • apply approved procedures. • Perform consistently. For example, look to see that: ➢ thermoforming production standards are met consistently. ➢ all safety procedures are followed
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Operate materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. For example, clamp frames are commonly used to hold heated sheet in place around the perimeter of each individual mould cavity creating. Therefore, clamp pressure should be monitored so that uniform parts are created and variation between cavities is reduced. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. For example, when monitoring process conditions, action should be taken when there is more than 10% shrinkage of the sheet during heating. • managing risks using the hierarchy of controls applied to the thermoforming process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which are outside of normal range of process variability • accurately monitoring equipment operation and product quality • potential effects of variations in raw materials and equipment operation in relation to quality of product • processing behaviour of polymers and the role of additives • waste management and importance of reusing non-conforming products wherever possible • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements • correct selection and use of equipment, materials, processes and procedures • Identifying factors which may affect product quality or production output and appropriate remedies

Underpinning Skills	Demonstrates skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the thermoforming process. • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to read and interpret temperature and pressure gauges, add weights and interpret graphs
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Blown Film Equipment**
Unit Code	**IND PP02 21 0613**
Unit Descriptor	This competency covers the operation of blown film equipment and the resolving of routine problems to procedure in the production process. This competency applies to operators who are required to undertake the routine operation of blown film equipment in the production process. The key factors are the making of products to meet quality standards and workplace requirements. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request identified. 1.2 Product, materials and ***tools and equipment*** meet requirements for job(s) checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks in accordance with ***procedures*** are performed.
2 Start up blown film equipment to procedures	2.1 Pre-start checks are conducted. 2.2 Blown film equipment is started up.
3. Operate blown film equipment	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Product is ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Other materials are collected and segregated scrapped and trimmed as required. 3.7 Equipment and work area are kept clean.

	3.8 Machine cycle is paused and emergency stop is performed, as required.
4. Respond to routine problems to procedures	4.1 Known faults that occur during the operation are recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***problems*** are logged as required. 4.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • equipment pressures and temperatures • material specifications • ambient temperature
Tools and equipment	May include but not limited to: • extruder • bubble guides and rollers • film rollers, slitting, trimming and winding gear • coolers, heaters and ancillary equipment • hand tools, knives, adjustment tools • relevant personal protective equipment • Treatment unit.
Hazards	May include but not limited to: • high air velocities • high voltage corona treatment systems • sharp knives • high towers manual handling • fumes, humidity, air temperatures, radiant heat, hot dies • Stationary and moving machinery, parts and components.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • extruder control • contamination • alignment and control of trimming and winding gear • Raw material contamination, wrong grade, variations of polymer properties.

Evidence Guide	
Critical Aspects of Competence	Demonstrate skills and knowledge to: • identify critical materials properties and blown film process characteristics in relation to the process requirements and the end product • apply approved procedures

	• take appropriate action to resolve faults or report faults to appropriate personnel • Explain and implement emergency shutdown procedures. • Consistent performance should be demonstrated. In particular look to see that • production standards are met consistently • upstream and downstream communication is timely and effective operating procedures and work instructions are read and interpreted correctly • problems are identified and appropriate action is taken (i.e., the problem is fixed or reported) • All safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • Procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.
Underpinning Skills	Demonstrates skills to: • operate blown film equipment and components; • produce workflow sequences and materials demand; • check process control panels and reporting readings which do not conform to the work instructions; • approve hazard control and safety procedures and the use of PPE in relation to handling materials, • Read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • Write to the level of completing workplace forms. • Basic numeracy, e.g., to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Filament Winding Equipment**
Unit Code	**IND PP02 22 0613**
Unit Descriptor	This competency covers the operation of filament winding equipment for composite products and the resolving of routine problems to procedure in the production process. This competency applies to operators who are required to undertake the routine operation of filament winding equipment. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request are identified. 1.2 Product, materials and ***tools and equipment*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action 1.7 Other pre-operational checks are performed in accordance with ***procedures***.
2. Conduct pre-operational checks as required	2.1 Safety equipment is checked in place and working. 2.2 Moulds, closures and fitting to procedures are checked 2.3 Moulds for cracks, chips marks and cleanliness are checked. 2.4 Materials, including fibers, resins, and additives are checked and released agents are corrected. 2.5 Other pre-operational checks are undertaken in accordance with procedures.
3. Operate equipment to procedures	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Products are collected and stored as required. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required.

	3.6 Waste and other materials are collected and segregated scraped as required. 3.7 Equipment and work are kept clean. 3.8 Machine cycle is paused and performed emergency stop as required.
4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation are recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine problems are identified and reported to designated person.

Variable	**Range**
Variables	May include but not limited to: • operating temperatures • speed • colour • cycle time • output rate • product weight • Product integrity and general conformance to specification/sample.
Tools and equipment	May include but not limited to: • filament winding equipment and its major components • hand tools used in the this process • material loading equipment used for loading of filament spools and resins • Relevant personal protective equipment. • Tool bar, industrial blade, spacer and bobbin.
Hazards	May include but not limited to: • spills • dusts/vapors • slip and fall • temperature (such as heat from curing oven) • hazardous substances • moving equipment (such as removing the mandrel using an extractor carriage) and manual handling hazards.
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • equipment malfunction • variations in process conditions • variations in materials or contamination of materials

	• equipment, tool, die damage • machine malfunction • mould/tooling problems • Variations in materials and/or contamination of materials. • voids • holes • poor surface finish • colour contamination • release from mandrel damage • Routine product faults. • Appropriate action for non-routine problems reporting to designated person or other action specified in the procedures.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate a filament winding machine • apply approved procedures. • perform consistently. For example, look to see that filament winding production standards are met consistently.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment, and process sufficient to recognize out of specification products, process problems and materials faults. For example, the impregnated fibers need to be consistently laid onto the mandrel to ensure a strong, uniform finished product. Therefore, the fiber bandwidth diameter needs to be monitored. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the filament winding process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which do not conform to the work instructions • accurately monitoring equipment operation and product quality • potential effects of variations in raw materials and equipment operation in relation to quality of product • waste management and importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • identifying factors which may affect product quality or

	production output and appropriate remedies • setting up dies, mandrels or formers • using of composites materials, including release agents, resins and fibbers • operating equipment, including PLC controls • curing of products, including application of wraps, heat or pressure.
Underpinning Skills	Demonstrates skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the process. • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • numeracy to the level of reading tables of figures and graphs (and applying the resultant information), using formula percentages/ratios to determine the required mass of an additive (catalyst, pigment etc.) for a given amount of resin, and similar manipulations and interpretation.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Title: Polymer Processing Operation Level II	
Unit Title	**Set Up and Operate Weaving Looms for Production**
Unit Code	**IND PP02 23 0613**
Unit Descriptor	This unit covers the skills and knowledge required to set up and operate weaving looms in polymer fabric production including set up for production changes and the conduct of sample runs.

Element	Performance Criteria
1. Conduct sample run on new product and organize sample quality testing	1. 1. ***Loom*** is set up and operated in accordance with manufacturer and workplace instructions to produce a specified sample of a new design or product. 1. 2. Sample is produced and tested, or the test is organized, in accordance with workplace procedures to ensure required standards of quality are met. 1. 3. Test results are interpreted to determine adjustment requirements.
2. Set up weaving loom	2.1 ***Product specifications*** are interpreted correctly in relation to loom setting requirements. 2.2 Loom is set in accordance with product specifications, loom manufacturer instructions and workplace ***regulatory requirements***. 2.3 Loom is operated in accordance with manufacturer and workplace instructions to produce a specified sample. 2.4 Loom is set to run at optimum quality and efficiency levels. 2.5 ***Electronic process*** monitoring is set safely and to the correct functions if applicable.
3. Supervise loom operation	3.1 Loom started and stopped safely without creating faults. 3.2 Loom is set to produce required quantity and quality of product. 3.3 Weaving operators are instructed on any special operating requirements and ***OHS practices*** implementation. 3.4 Assistance is provided to loom operators as required.
4. Readjust machine settings to meet requirements	4.1 Adjustment changes are assessed in accordance with product and loom specifications. 4.2 Loom specifications are changed and recorded to meet product requirements. 4.3 Appropriate production personnel are informed for the availability of the new loom set-up. 4.4 Loom is monitored during production process.

5. Maintain records	5.1 Records are maintained and reports prepared, where necessary.

Variable	Range
Looms	May include but not limited to: • weaving looms • any ancillary machine typically used in the weaving sector concerned for example loading and unloading equipment • microprocessor or computer controlled looms • both production and service equipment used in the enterprise • all shuttle types
Product specifications	May include but not limited to: • quality name • pick-up • width • length • density
Regulatory requirements	All work must comply with relevant Federal and Regional State legislative or regulatory requirements.
Electronic process	May include but not limited to: • horseshoe wire • knock offs • photo cells • micro switches • fiber optics • missing end detectors (med)
OHS practices	May include but not limited to: • manual handling techniques • standard operating procedures • personal protective equipment • safe materials handling • taking of rest breaks • ergonomic arrangement of workplaces • following marked walkways • safe storage of equipment • housekeeping • reporting accidents and incidents • other OHS practices relevant to the job and enterprise

Evidence Guide	
Critical Aspects of Competence	Demonstrates knowledge and skills to: • interpret production specifications accurately • set loom correctly • operate loom safely and correctly • perform sample runs

	• arrange or conduct testing of sample • make appropriate readjustments • apply workplace health and safety policies in production operations • maintain accurate records
Underpinning Knowledge and Attitudes	• fiber types and their method of production • fiber parameters • tape denier • warping methods • fiber conditioning • fabric types • design types • set construction • warp tying methods • loom components • weaving process and the various types of weaving • factors affecting loom performance, i.e. fiber strength, fiber width, elongation and denier. • setting up and adjustment requirements for the range of machines and equipment used in the enterprise • machine manufacturer specifications • safety and environmental aspects of relevant enterprise activities • OHS practices, including hazard identification and control measures • quality practices • workplace practices • recording and reporting practices
Underpinning Skills	Demonstrates skills to: • set and operate machines • operate primary mechanisms, e.g. weft insertion, pick-up, let off and take up • test, analyze and prepare samples • differentiate between constructions • differentiate between types of weaves • draw up a simple range of patterns • read, interpret and follow information on work specifications, standard operating procedures and work instructions and other reference material • maintain accurate records • communicate within the workplace • sequence operations • meet specifications • clarify and check task-related information • carry our work according to OHS practices
Resources	Access is required to real or appropriately simulated situations,

Implication	including work areas, materials and equipment, and to Information on workplace practices and OHS practices.
Methods of Assessment	Competence may be accessed through: • Interview / Written Test • Observation / Demonstration and Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Apply Liquid Surface Coatings**
Unit Code	**IND PP02 24 0613**
Unit Descriptor	This competency covers the application of surface coatings by hand, spray gun or immersion and the resolving of routine problems to procedure. This competency applies to operators who are required to apply surface coatings to products by hand, spray gun or immersion. It is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request are identified. 1.2 Appropriate ***tools and equipments***, or techniques and materials to be used are selected and checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm non standard job specifications are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks are performed in accordance with ***procedures***
2. Start up surface coating equipment to procedures	2.1 Pre-start check on equipment is conducted. 2.2 Coating equipment to procedures is started.
3. Apply surface coating	3.1 Process is checked operating within required limits. 3.2 Coating is checked in specification and to required quality standard. 3.3 Supply of material(s) is maintained as required. 3.4 Waste and other materials are collected and segregated scrapped as required. 3.5 Logs and records are completed as required. 3.6 Equipment and work area are kept clean. 3.7 Equipment is shut down as required.
4. Respond to routine problems in accordance with procedures	4.1 Known faults that occur during the operation are recognized. 4.2 Causes of routine faults are identified and action is taken.

	4.3 ***Problems*** are logged as required. 4.4 Non-routine problems are identified and reported to designated person.

Variable	**Range**
Variables	May include but not limited to: • spray patterns • materials consistency • finished colour • surface finish • product integrity and general conformance to specifications • coating viscosity • Solvent/thinner blends ratios
Tools and equipment	May include but not limited to: • coating equipment (such as brushes, spray guns film coaters, immersion equipment) • additional equipment (such as vapors extraction, application booths) • manual handling aids (such as hand carts, trolleys) • hoists/lifting equipment not requiring any special permits or licenses • Relevant personal protective equipment
Hazards	May include but not limited to: • spills and splashes • toxic fumes or vapors • hazardous materials • manual handling hazards and flammable vapors
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Problems	May include but not limited to: • incorrect selection of materials • variations in materials • contamination of materials or product surface • inappropriate application of coatings • dust and other contamination • drying rates • film thickness variation • film application rates • coverage and opacity • Products with surface or other faults. • Appropriate action for non-routine problems may be reporting to designated person or other action specified in the procedures

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate surface coating equipment • apply approved procedures. • perform consistently. For example, look to see that: • surface coating production standards are met consistently • all safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures, quality requirements and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • managing risk using the hierarchy of controls applied to the coating process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup • operating surface coating process and equipment sufficient for consistent production of quality products • materials demand and production workflow sequences • correct selection and use of equipment or tool/s, materials, processes and procedures • accurately monitoring equipment operation and product quality • reasons for checking process control panels and reporting readings which are outside of the normal range of process variability • identifying factors which may affect product quality or production output and appropriate remedies • potential effects of variations in materials and equipment operation in relation to quality of product • processing behaviour of polymers and the role of additives • effect of unauthorized or emergency work stoppage in relation to safety and production requirements • waste management and knowing the importance of reusing non-conforming products wherever possible • basic pre-blending of materials • application of coatings.
Underpinning Skills	Demonstrates skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identify and describe own role and role of others involved

	directly in the coating process • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Printing Equipment**
Unit Code	**IND PP02 25 0613**
Unit Descriptor	This competency covers the operation of printing equipment and the resolving of routine problems to procedure in the production process. This competency applies to operators who are required to undertake the routine printing on products. The key factors are the making of products to meet quality standards and workplace requirements. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request are identified. 1.2 Product, materials and ***tools and equipment*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other Pre-operational checks are performed in accordance with ***procedures***.
2 Start up printing equipment to procedures	2.1 Pre-start checks are conducted. 2.2 Printing equipment is started up.
3. Operate printing equipment to procedures	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Product is ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Other materials are collected and segregated scrapped and trimmed as required. 3.7 Equipment and work area are kept clean. 3.8 Machine cycle is paused and performed emergency stop, as required.

4. Respond to routine problems in accordance with procedure	4.1 Known faults that occur during the operation are recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • printing time cycles • types of printing media • surface checking and preparation • Location of print media on product
Tools and equipment	May include but not limited to: • process equipment and its major components • hand tools used in the this process • material loading equipment used for loading of raw materials • Relevant personal protective equipment
Hazards	May include but not limited to: • spills • dusts/vapors • slip and fall • hazardous substances particularly solvents and flammables • moving equipment • manual handling hazard
Procedures	All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Problems	May include but not limited to: • printing equipment malfunction • variations in process conditions such as temperature, humidity variations in materials or surface preparation/condition or contamination of materials/surface to be printed • printing equipment damage • Print register. • routine product faults such as unclear/incomplete printing, colour variation, drying time variation • printing machine malfunction • Variations in materials/surface to be printed and/or contamination of materials/surface

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • recognize the importance of material properties and qualities • apply approved procedures

	• take appropriate action to resolve faults or report faults to appropriate personnel • explain and implement emergency shutdown procedures. • perform consistently. For example, look to see that: ➢ production standards are met consistently ➢ upstream and downstream communication is timely and effective operating procedures and work instructions are read and interpreted correctly ➢ problems are identified and appropriate action is taken (i.e. the problem is fixed or reported) ➢ All safety procedures are followed
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • operation of printing equipment and main components sufficient for consistent production of quality products • operating of process equipment and components • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which do not conform to the work instructions • approved hazard control and safety procedures • use PPE in relation to handling materials, equipment operation and cleanup • safely handle products and materials • reading relevant safety information and apply safety precautions appropriate to the task • potential effects of variations in raw materials and equipment operation in relation to quality of product • waste management and importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • planning own work, including predicting consequences and identifying improvements • monitoring equipment operation and product quality • identifying when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identifying and describe own role and role of others involved directly in the process • identifying factors which may affect product quality or

	production output and appropriate remedies • pausing or shut down equipment in abnormal circumstances • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements • Distinguishing between possible causes of routine faults such as: incorrect printing ink; incorrect quantity of ink; variations in/contamination of ink and or surface to be printed; equipment faults; mould/ die/tool damage • variations in ambient conditions such as temperature and humidity; machine failure
Underpinning Skills	Demonstrate skills to: • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write is required to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Operate Film Conversion Equipment**
Unit Code	**IND PP02 26 0613**
Unit Descriptor	This competency covers the operation of plastic film conversion equipment and the resolving of routine problems to procedure. This competency applies to operators who are required to undertake the routine operation of plastic film rewinding, cutting and sealing equipment. The key factors are the making of products to meet quality standards and workplace requirements. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from production plan or request are identified. 1.2 Product, materials and ***tools and equipments*** meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm unusual practice are asked. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and take appropriate action. 1.7 Other pre-operational checks are performed in accordance with ***procedures***.
2. Start up film conversion equipment to procedures	2.1 Pre-start checks are conducted. 2.2 Film conversion equipment is started up.
3. Operate film conversion equipment to procedures	3.1 Process is checked operating within required limits. 3.2 Product is checked in specification and to required quality standard. 3.3 Product is ensured consistently ready for next operation. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Other materials are collected and segregated scrapped and trimmed as required.

	3.7 Equipment and work area are kept clean. 3.8 Machine cycle is paused and performed emergency stop, as required.
4. Respond to routine problems to procedures	4.1 Known faults that occur during the operation are recognized. 4.2 Causes of routine faults are identified and action is taken. 4.3 ***Problems*** are logged as required. 4.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • machine cycle times • temperature variations • guillotine settings • product dimensions • moisture content • Permeability • Perforation
Tools and equipment	May include but not limited to: • hand tools used in the film conversion process • material loading equipment used for loading of raw materials • Relevant personal protective equipment
Hazards	May include but not limited to: • cut hazards • nip hazards • compressed air • vapors • slip and fall • temperature • hazardous substances • moving equipment • Manual handling hazards
Procedures	May include but not limited to: • All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Problems	May include but not limited to: • equipment malfunction • registration • blocking • Seal bar temperature or wear/damage • contamination

	• seal appearance • seal strength • bag dimensions • Variations in materials and/or contamination of materials

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • recognize the importance of material properties and qualities • apply approved procedures • take appropriate action to resolve faults or report faults to appropriate personnel • explain and implement emergency shutdown procedures. • perform consistently. For example, look to see that: ➢ conversion production standards are met consistently ➢ upstream and downstream communication is timely and effective ➢ operating procedures and work instructions are read and interpreted correctly ➢ problems are identified and appropriate action is taken (i.e. the problem is fixed or reported) ➢ All safety procedures are followed
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • operating film conversion equipment and main components sufficient for consistent production of quality products • sealing pressure • sealing temperature • sealing time • materials demand and production workflow sequences • reasons for checking process control panels and reporting readings which do not conform to the work instructions • approved hazard control and safety procedures and the use of PPE in relation to handling materials • equipment operation and cleanup • potential effects of variations in raw materials and equipment operation in relation to quality of product • waste management and importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures

	• planning own work, including predicting consequences and identifying improvements • monitoring equipment operation and product quality • identifying when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • identifying and describing own role and role of others involved directly in the film converting process • identifying factors which may affect product quality or production output and appropriate remedies • using PPE, safely handle products and materials, read relevant safety information and apply safety precautions appropriate to the task • pausing or shut down equipment in abnormal circumstances • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements • distinguishing between possible causes of routine conversion faults such as incorrect materials; contaminated materials; equipment faults; seal bar damage; machine failure
Underpinning Skills	Demonstrate skills to: • plan own work, including predicting consequences and identifying improvements • monitor equipment operation and product quality • use PPE, safely handle products and materials, read relevant safety information and apply safety precautions appropriate to the task • pause or shut down equipment in abnormal circumstances • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Check Recycle Wash Process**
Unit Code	**IND PP02 27 0613**
Unit Descriptor	This competency covers the use of recycle wash equipment and checking of the process. This competency applies to operators who are required to use recycle wash equipment and checking of the process. This competency is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and ***variables*** from workplace approved operating ***procedures*** are identified. 1.2 Requirements which may not be in accordance with usual practice are recognized. 1.3 Questions of appropriate person to confirm unusual practice are asked. 1.4 Housekeeping is ensured to requirements. 1.5 ***Hazards*** are identified associated with the job and take appropriate action.
2. Conduct pre-start checks to procedures	2.1 products are inspected and sampled in line with workplace procedures. 2.2 ***tools and equipments*** components and component function are checked to the required quality standard. 2.3 fluid circuits, pumps, shutoffs and control valves are checked and tested.
3. Operate recycle washer equipment in accordance with procedures	3.1 Machine is started safely and correctly when required. 3.2 Process is checked operating with required limits. 3.3 Product samples are collected and stored. 3.4 Product is checked in specification / to required quality standard. 3.5 Supply of material(s) is maintained as required. 3.6 Logs and records are completed as required. 3.7 Other materials are collected and reprocessed/discarded scrapped/trimmed in accordance with workplace procedures. 3.8 Readouts are checked against standard statistical process information and enter production data into the control system.

	3.9 Equipment and work area are kept clean. 3.10 Machine cycle is paused and performed emergency stop, as required.
4. Identify product quality requirements	4.1 Process is checked and noted conditions which may affect product quality standards. 4.2 Reports from quality inspections are interpreted and rectified or reported as appropriate equipment conditions within workplace procedures. 4.3 Authorized changes in standard operating procedures and specifications are noted and implemented.
5. Respond to routine problems in accordance with procedures	5.1 Known faults that occur during the operation are recognized. 5.2 Causes of routine faults are identified and action is taken. 5.3 ***Problems*** are logged as required. 5.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	**Range**
Variables	May include but not limited to: • temperature • pressure • time • feed rate • Clamp/press cycle.
Tools and equipment	May include but not limited to: • hand carts and trolleys and other manual handling aids • knives and basic hand tools required for opening of material packaging • hoists/lifting equipment not requiring any special permits or licenses • bung spanners and similar • relevant personal protective equipment.
Hazards	May include but not limited to: • spills • hazardous materials • moving equipment • Manual handling hazards.
Procedures	May include but not limited to: • All operations are performed in accordance with procedures. • All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Problems	May include but not limited to: • equipment malfunction • Variations in materials or contamination of materials. • incorrect raw materials/additives • Incorrect quantity of materials/additives. • Appropriate action for non-routine problems may be reporting to designated person or other action specified in procedures.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • operate recycle wash equipment • Apply approved procedures. • Perform consistently. For example, look to see that recycle wash standards are met consistently.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and materials faults. • organization procedures, relevant regulatory requirements and the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the recycle wash process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operating recycle wash equipment and its main components sufficient for consistent production of quality products • impact of incorrect or faulty materials • focus of operation of work systems and equipment • hazards of the materials and process and appropriate hazard control procedures • accurately monitoring equipment operation • identifying factors which may affect product quality or production output and appropriate remedies • explaining the effect of unauthorized or emergency shutdown in relation to safety and production requirements.
Underpinning Skills	Demonstrate skills to: • operate recycle wash equipment • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify problems, when assistance is required and who is the appropriate source for assistance

	• Identify and describe own role and role of others involved directly in the recycle wash process. • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. how to determine that two 25 kg bags are needed to make up a requirement for 50 kg.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Demould Product**
Unit Code	**IND PP02 28 0613**
Unit Descriptor	This competency covers the removal of products from moulds. This competency applies to operators who are involved in the removal of products from moulds and is typically performed by operators working either independently or as part of a work team.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements and variables from production plan or request are identified. 1.2 Product, materials and tools and equipments meet requirements for job(s) are checked. 1.3 Requirements which may not be in accordance with usual practice are recognized. 1.4 Questions of appropriate person to confirm non standard job specifications are asked. 1.5 Hazards are identified associated with the job and take appropriate action. 1.6 Other pre-operational checks are performed in accordance with ***procedures***.
2. Demould product to procedures	2.1 Mould is opened. 2.2 Product is removed in accordance with procedures. 2.3 Surface of mould is cleaned and applied release agent as required. 2.4 Supply of material(s) is maintained as required. 2.5 Logs and records are completed as required. 2.6 Waste and other materials are collected and segregated scrapped as required. 2.7 Equipment and work area are kept clean.
3. Respond to routine problems in accordance with procedures	3.1 Known faults that occur during the operation are recognized. 3.2 Causes of routine faults are identified and action is taken. 3.3 ***Problems*** are logged as required. 3.4 Non-routine process and quality problems are identified and appropriate action is taken.

Variable	Range
Variables	May include but not limited to: • temperature • pressure • time • feed rate • Clamp/press cycle.
Tools and equipment	May include but not limited to: • use of handling aid (e.g. handcarts, hoists, jigs and gantries) • pedestrian forklift • hand tools (e.g. applicators, dispensers, measuring devices, cutters and cleaning utensils) • Relevant personal protective equipment.
Hazards	May include but not limited to: • handling moulds/products not cooled properly • manual handling • noise • light • energy sources • humidity • air temperatures • radiant heat • Stationary and moving machinery, parts or components.
Procedures	May include but not limited to: • All operations are performed in accordance with procedures. • All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Problems	May include but not limited to: • badly prepared mould • leakage/spillage of raw materials • incorrect quantity of materials • contaminated materials/additives • equipment faults • Mould damage. • malformed product • damage of product on removal • cracking • warping • Poor surface finish.

Evidence Guide	
Critical Aspects of Competence	Demonstrate skills and knowledge to: • operate demoulding equipment

	• Apply approved procedures. • Perform consistently. For example, look to see that: ➢ demoulding standards are met consistently ➢ All safety procedures are followed.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out-of-specification products, process problems and materials faults. For example, demoulding temperature is dependent on the type of resin used for moulding of the product. Therefore, care needs to be taken to ensure the resin used is known and the correct temperature is chosen for demoulding. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • managing risks using the hierarchy of controls applied to the demoulding process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup. • operation of demoulding equipment and main components sufficient for consistent production of quality products • materials demand and production workflow sequences the potential effect of variations on demoulding products such as temperature • accurately monitoring equipment operation and product quality • waste management and knowing the importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • Identify factors which may affect product quality or production output and appropriate remedies.
Underpinning Skills	Demonstrates skills to: • plan own work, including predicting consequences and identifying improvements • identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe role and role of others involved directly in the process. • Operate of demoulding equipment. • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators. • write to the level of completing workplace forms. • basic numeracy, e.g. to determine that two 25 kg bags are needed to make up a requirement for 50 kg.

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Repair Product Imperfections**
Unit Code	**IND PP02 29 0613**
Unit Descriptor	This competency covers the repair of product imperfections during or after production. This competency applies to operators who conduct repairs to products following the manufacturing process. The key factors are the identification of the fault and the degree of its reparability, selecting an appropriate repair product or process and making the necessary repairs.

Elements	Performance Criteria
1. Identify damage and select materials and repair process	1.1 Product specifications and work order documentation are interpreted. 1.2 Product faults are identified and decisions as to the feasibility of the repair in terms of the intended use of the product and the quality specifications are made. 1.3 Technology appropriate for the repair is selected. 1.4 Appropriate repair materials are identified and matched to fault and repaired method. 1.5 Materials and tools are assembled and checked for suitability for purpose. 1.6 Manufacturer information and safety advice on products are located and used to plan work. 1.7 Order of work is planned to identify required work sequences, times, work process stages, engineering controls and personal protection ***tools and equipment***. 1.8 Repairs are designed to conform to quality specification, minimize time and economically use consumable materials.
2. Conduct repairs	2.1 Sources of contamination is identified and eliminated. 2.2 Surfaces are prepared in accordance with manufacturer instructions and workplace requirements. 2.3 Repairs in the appropriate locations are conducted and checked for conformity with job specification.
3. Clean work area and prepare products for the next process	3.1 Used equipment is cleaned and inspected for serviceable condition and stored appropriately. 3.2 Unserviceable equipment is tagged, faults are identified and appropriate personnel informed.

	3.3 Repaired products are inspected and approved for suitability, for further processing or for customer delivery. 3.4 Products which do not meet quality specifications are tagged for further repair or treatment. 3.5 Work area is cleaned and returned to approve condition.
4. Follow workplace procedures to finish product	4.1 Waste and recycling ***procedures*** are followed. 4.2 ***Hazards*** are identified associated with the job and take appropriate action. 4.3 Repaired products are assembled and sorted for delivery to other work sections in accordance with workplace procedures. 4.4 Appropriate documentation is completed.

Variable	**Range**
Tools and equipment	May include but not limited to: • hand carts and trolleys • hoists/lifting equipment not requiring any special permits or licenses • plastic or other filling compounds • basic hand tools required for cosmetic repairs of products • Relevant personal protective equipment
Procedures	May include but not limited to: • All operations are performed in accordance with procedures. • All relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards. These may include: ➢ original manufacturer instructions and guidelines for the use of repair tools or equipment ➢ relevant procedures relating to safe working practices prescribed for the equipment ➢ local OHS legislation and/or regulations ➢ site specific instructions based on production requirements
Hazards	May include but not limited to: • spills • dusts/vapors • hazardous materials • manual handling hazards
Problems	May include but not limited to: • inappropriate filling materials being selected and used • equipment failures • effect of weather on curing times.

	• variations in materials contamination of materials • separation of filling and parent materials
Variables	May include but not limited to: • understanding of the nature of the repairs to be carried out • consistency in the application of repair techniques or processes • ambient temperatures • repair material compositions and consistency • work surface cleanliness and condition

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • recognize the importance of critical material properties and quantities • maintain tools in a manner that promotes cleanliness and safety • Identify problems and take appropriate action. performance in that: • meet consistently production standards • follow all safety procedures.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • materials, equipment and process sufficient to recognize out of specification products, process problems and material faults. • organizations procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.
Underpinning Skills	Demonstrate skills to: • apply and/or explain: ➢ impact of incorrect or faulty materials; ➢ focus of operation of work systems and equipment; ➢ correct selection and use of equipment, materials, processes and procedures; ➢ hazards of the materials and process and appropriate hazard control procedures • distinguish between causes of routine finishing faults such as: ➢ wrong raw materials/additives; ➢ incorrect quantity of materials/additives/catalyst; contaminated materials/additives/catalyst; ➢ equipment malfunctions; ➢ tool slips and mould or product inclusions. • read and interpret typical product specifications, job sheets and material labels as provided to operators. • write skills to the level of completing workplace forms.

	• basic numeracy skills, e.g. how to determine that 16 units and 46 units are equal to a total of 62 units
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Participate in Workplace Communication**
Unit Code	**IND PP02 30 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

Elements	Performance Criteria
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from ***appropriate sources***. 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information. 1.3 Appropriate ***medium*** is used to transfer information and ideas. 1.4 Appropriate non- verbal communication is used. 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed. 1.6 Defined workplace procedures for the location and ***storage*** of information are used. 1.7 Personal interaction is carried out clearly and concisely.
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time. 2.2 Own opinions are clearly expressed and those of others are listened to without interruption. 2.3 Meeting inputs are consistent with the meeting purpose and established ***protocols***. 2.4 ***Workplace interactions*** are conducted in a courteous manner. 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to. 2.6 Meetings outcomes are interpreted and implemented.
3. Complete relevant work related documents	3.1 Range of ***forms*** relating to conditions of employment is completed accurately and legibly. 3.2 Workplace data is recorded on standard workplace forms and documents. 3.3 Basic mathematical processes are used for routine calculations.

	3.4 Errors in recording information on forms/ documents are identified and properly acted upon. 3.5 Reporting requirements to supervisor are completed according to organizational guidelines.

Variable	Range
Appropriate sources	May include but not limited to: • Team members • Suppliers • Trade personnel • Local government • Industry bodies
Medium	May include but not limited to: • Memorandum • Circular • Notice • Information discussion • Follow-up or verbal instructions • Face to face communication
Storage	May include but not limited to: • Manual filing system • Computer-based filing system
Protocols	May include but not limited to: • Observing meeting • Compliance with meeting decisions • Obeying meeting instructions
Workplace interactions	May include but not limited to: • Face to face • Telephone • Electronic and two way radio • Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
Forms	May include but not limited to: • Personnel forms, telephone message forms, safety reports

Evidence Guide	
Critical Aspects of Competency	Demonstrates skills and knowledge to: • Prepare written communication following standard format of the organization • Access information using communication equipment • Make use of relevant terms as an aid to transfer information effectively

	• Convey information effectively adopting the formal or informal communication
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Effective communication • Different modes of communication • Written communication • Organizational policies • Communication procedures and systems • Technology relevant to the enterprise and the individual's work responsibilities
Underpinning Skills	Demonstrate skills to: • Follow simple spoken language • Perform routine workplace duties following simple written notices • Participate in workplace meetings and discussions • Complete work related documents • Estimate, calculate and record routine workplace measures • Basic mathematical processes of addition, subtraction, division and multiplication • Ability to relate to people of social range in the workplace • Gather and provide information in response to workplace Requirements
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Work in Team Environment**
Unit Code	**IND PP02 31 0613**
Unit Descriptor	This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

Elements	Performance Criteria
1. Describe team role and scope	1.1 The ***role and objective of the team*** are identified from available ***sources of information***. 1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources.
2. Identify own role and responsibility within team	2.1 Individual role and responsibilities within the team environment are identified. 2.2 Roles and responsibility of other team members are identified and recognized. 2.3 Reporting relationships within team and external to team are identified.
3. Work as a team member	3.1 Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives. 3.2 Effective and appropriate contributions are made to complement team activities and objectives, based on individual skills and competencies and ***workplace context***. 3.3 Protocols are observed in reporting using standard operating procedures. 3.4 Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

Variable	Range
Role and objective of team	May include but not limited to: • Work activities in a team environment with enterprise or specific sector • Limited discretion, initiative and judgment maybe demonstrated on the job, either individually or in a team environment
Sources of information	May include but not limited to: • Standard operating and/or other workplace procedures

	• Job procedures • Machine/equipment manufacturer's specifications and instructions • Organizational or external personnel • Client/supplier instructions • Quality standards • OHS and environmental standards
Workplace context	May include but not limited to: • Work procedures and practices • Conditions of work environments • Legislation and industrial agreements • Standard work practice including the storage, safe handling and disposal of chemicals • Safety, environmental, housekeeping and quality guidelines

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • Operate in a team to complete workplace activity • Work effectively with others • Convey information in written or oral form • Select and use appropriate workplace language • Follow designated work plan for the job • Report outcomes
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Communication process • Team structure • Team roles • Group planning and decision making
Underpinning Skills	Demonstrate skills to: • Communicate appropriately, consistent with the culture of the workplace
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Develop Business Practice**
Unit Code	**IND PP02 32 0613**
Unit Descriptor	This unit specifies the outcomes required to establish a business operation from a planned concept. It includes researching the feasibility of establishing a business operation, planning the setting up of the business, implementing the plan and reviewing operations once commenced.

Elements	Performance Criteria
1. Identify business opportunity	1.1 ***Business opportunities*** are investigated and identified. 1.2 Feasibility study is undertaken to determine likely ***business viability***. 1.3 Market research on product or service is undertaken. 1.4 Assistance with feasibility study of ***specialist and relevant parties*** is sought as required. 1.5 Impact of emerging or changing technology including e-commerce, on business operations is evaluated. 1.6 Practicability of business opportunity is assessed in line with perceived risks, returns sought and resources available. 1.7 Business plan is completed for operation.
2. Identify personal business skills	2.1 Financial and business skills available are identified and taken into account when business opportunities are researched. 2.2 ***Personal skills/attributes*** are assessed and matched against those perceived as necessary for a particular business opportunity. 2.3 ***Business risks*** are identified and assessed according to resources available and personal preferences.
3. Plan for establishment of business operation	3.1 Business structure and operations are determined and documented. 3.2 Procedures are developed and documented to guide operations. 3.3 Financial backing is secured for business operation. 3.4 Business legal and regulatory requirements are identified and complied. 3.5 ***Human and physical resources*** required to commence business operation are determined. 3.6 Recruitment strategies are developed and implemented.

4. Implement establishment plan	4.1 Marketing of business operation is undertaken. 4.2 Physical and human resources are obtained to implement business operation. 4.3 ***Operational unit*** is established to support and coordinate business operation. 4.4 Monitoring process is developed and implemented for managing operation. 4.5 ***Legal documents*** are carefully maintained and relevant records are kept and updated to ensure validity and accessibility. 4.6 Contractual procurement rights for goods and services including ***contracts with relevant people****,* negotiated and secured as required in accordance with the business plan. 4.7 Options for leasing/ownership of business premises identified and contractual arrangements are completed in accordance with the business plan.
5. Review implementation process	5.1 Review process for implementation of business operation is developed and implemented. 5.2 Improvements in business operation and associated management process are identified. 5.3 Identified improvements are implemented and monitored for effectiveness.

Variable	**Range**
Business opportunities	May include but not limited to: • expected financial viability • skills of operator • amount and types of finance available • returns expected or required by owners • likely return on investment • finance required • lifestyle issues
Business viability	May include but not limited to: • opportunities available • market competition • timing/ cyclical considerations • skills available • resources available • location and/ or premises available • risk related to a particular business opportunity, especially

	• in regard to Occupational Health and Safety and • environmental considerations
Specialist and relevant parties	May include but not limited to: • Chamber of commerce • Financial planners and financial institution representatives, business planning specialists and marketing specialists • accountants • lawyers and providers of legal advice • government agencies • industry/trade associations • online gateways • business brokers/business consultants
Personal skills/attributes	May include but not limited to: • technical and/ or specialist skills • business knowledge and skills • entrepreneurship • willingness to take risks
Business risks	May include but not limited to: • occupational health and safety and environmental • considerations • relevant legislative requirements • security of investment • market competition • security of premises/ location • supply and demand • resources available
Human and physical resources	May include but not limited to: • software and hardware • office premises • communications equipment • specialist services through outsourcing, contracting and • consultancy • staff • vehicles
Operational unit	May include but not limited to: • office location staffed with required personnel and equipped to service and support business • home-based site or other location such as leased or owned property
Legal documents may include but not limited to:	• partnership agreements, constitution documents, statutory books for companies (Register of Members, Register of Directors and Minute Books), Certificate of Incorporation, Franchise Agreements and financial documentation, appropriate software for financial records

	• recordkeeping including personnel, financial, taxation, OHS and environmental
Contracts with relevant people	May include but not limited to: • owners, suppliers, employees, landlords, agents, distributors, customers or any person with whom the business has, or seeks to have, a performance-based relationship

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • that a business operation has been planned and implemented from initial research into feasibility of the business and completion of the plan, through to implementing the plan and commencing operations • the ability to evaluate the results of research and assess the likely viability and practicability of a business opportunity, taking into account the current business/market climate and resources available
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Federal and regional government legislative requirements affecting business operations, especially in regard to Occupational Health and Safety (OHS), Equal Employment Opportunity (EEO), industrial relations and anti-discrimination • Technical or specialist skills relevant to the business operation • Financing options • Business systems and operations • Relevant marketing, management, sales and financial concepts • Methods for researching business opportunities • Principles of risk management relevant to the business • Methods of identifying relevant specialist services to complement the business • Forms and administrative systems • Services available and charges • Planning and control systems (sales, • Advertising and promotion, distribution and logistics • Financial recording systems • Legal rights and responsibilities • Record keeping duties • Operational factors relating to the business (provision of professional services, products)
Underpinning Skills	Demonstrate skills of: • Literacy skills to interpret legal requirements, company policies and procedures and immediate, day-to-day demands • Marketing skills

	• Business planning skills • Entrepreneurial skills • Problem-solving skills • OHS skills • Time management skills • Belief in services and products offered by the business • Communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback • Technical and analytical skills to interpret business documents, reports and financial statements and projections • Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • Problem solving skills to develop contingency plans • Using computers and software packages to record and manage data and to produce reports • Literacy skills to enable interpretation of business information, numeracy skills for data analysis to aid research • Research skills to identify a business opportunity and to conduct a feasibility study • Analytical skills to assess personal attributes and to identify business risks • Observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Polymer Processing Operation Level II	
Unit Title	**Standardize and Sustain 3S**
Unit Code	**IND PP02 33 0613**
Unit Descriptor	This unit of competence covers the knowledge, skills and attitudes required by worker to standardize and sustain 3S to his/her workplace. It covers responsibility for the day- to-day operations of the workplace and ensuring that continuous improvements of Kaizen elements are initiated and institutionalized.

Elements	Performance Criteria
1. Prepare for work.	1.1 Work instructions are used to determine job requirements, including method, material and equipment. 1.2 Job specifications are read and interpreted following working manual. 1.3 ***OHS requirements***, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work. 1.4 ***Safety equipment and tools*** are identified and checked for safe and effective operation. 1.5 ***Tools and equipment*** are prepared and used to implement 3S.
2. Standardize 3S.	2.1 Plan is prepared and used to standardize 3S activities. 2.2 ***Tools and techniques*** to standardize 3S are prepared and implemented based on ***relevant procedures***. 2.3 Checklists are followed for standardize activities and ***reported*** to ***relevant personnel***. 2.4 The workplace is kept to the specified standard. 2.5 Problems are avoided by standardizing activities.
3. Sustain 3S.	3.1 Plan is prepared and followed to standardize 3S activities. 3.2 ***Tools and techniques*** to sustain 3S are discussed, prepared and implemented based on relevant procedures. 3.3 Workplace is inspected regularly for compliance to specified standard and sustainability of 3S techniques. 3.4 Workplace is cleaned up after completion of job and before commencing next job or end of shift. 3.5 Situations are identified where compliance to standards is unlikely and actions specified in procedures are taken. 3.6 Improvements are recommended to lift the level of compliance in the workplace.

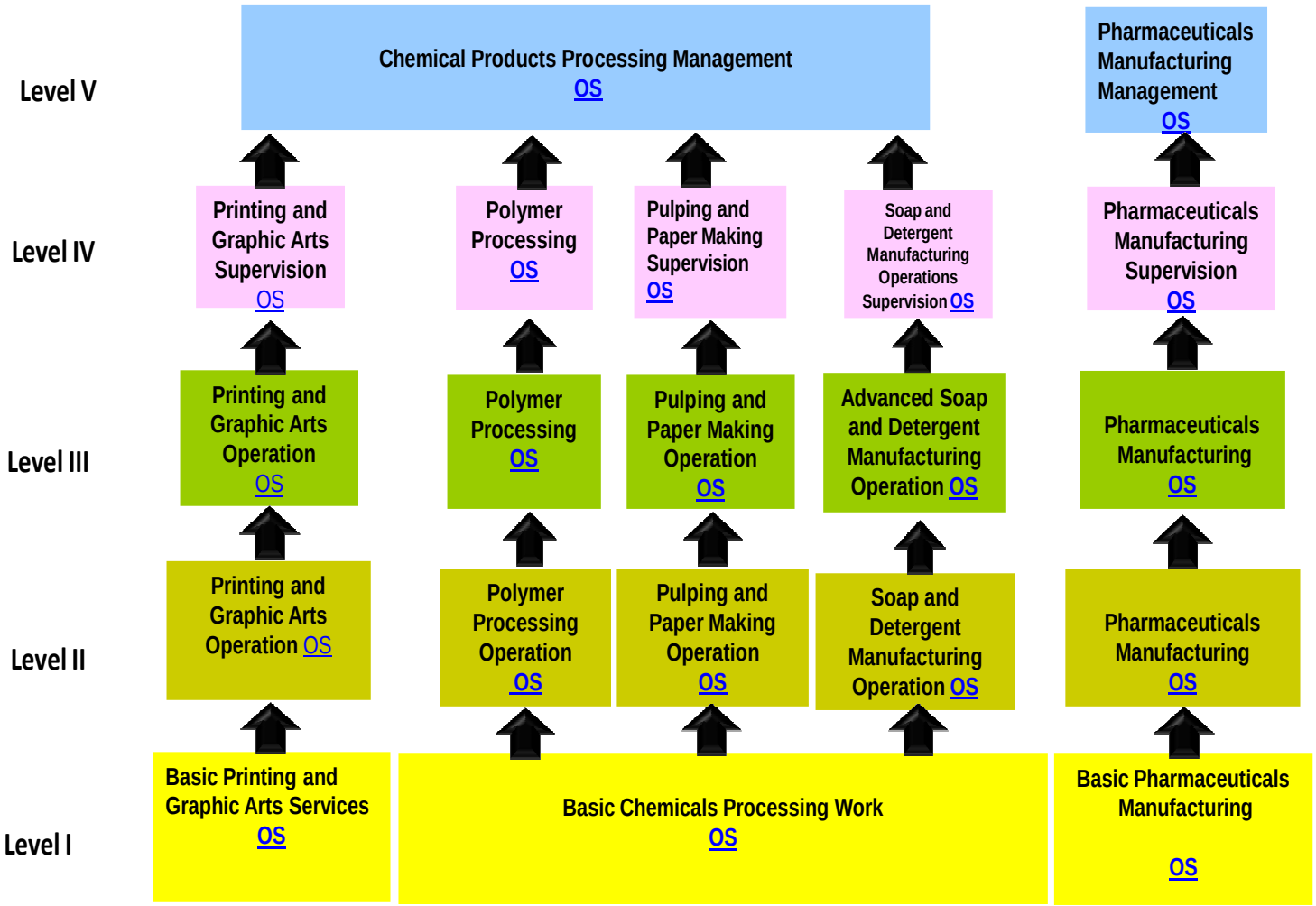
	3.7 Checklists are followed to sustain activities and reported to relevant personnel. 3.8 Problems are avoided by sustaining activities.

Variable	Range
OHS requirements	May include but not limited to: • Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances. • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices. • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization. • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
Safety equipment and tools	May include but not limited to: • dust masks / goggles • glove • working cloth • first aid • safety shoes
Tools and equipment	May include but not limited to: • paint • hook • sticker • signboard • nails • shelves • chip wood • sponge • broom • pencil • shadow board/ tools board
Tools and techniques	May include but not limited to: • 5S Job Cycle Charts • Visual 5S

	• The Five Minute 5S • Standardization level checklist • 5S checklist • The five Whys and one How approach(5W1H) • Suspension • Incorporation • Use Elimination
Relevant procedures	May include but not limited to: • Assign 3S responsibilities • Integrate 3S duties into regular work duties • Check on 3S maintenance level • OHS measures such as signage, symbols / coding and labeling of workplace and equipment • Creating conditions to sustain your plans • Roles in implementation
Reporting	May include but not limited to: • verbal responses • data entry into enterprise database • brief written reports using enterprise report formats
Relevant personnel	May include but not limited to: • supervisors, managers and quality managers • administrative, laboratory and production personnel • internal/external contractors, customers and suppliers
Tools and techniques	May include but not limited to: • 5S slogans • 5S posters • 5S photo exhibits and storyboards • 5S newsletter • 5S maps • 5S pocket manuals • 5S department/benchmarking tours • 5S months • 5S audit • Awarding system • Big cleaning day • Patrolling system may include: ➢ Top management Patrol ➢ 5S Committee members and Promotion office Patrol ➢ Mutual patrol ➢ Self-patrol ➢ Checklist patrol ➢ Camera patrol

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • Discuss the relationship between Kaizen elements. • Standardize and sustain 3S activities by applying appropriate tools and techniques.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Elements of Kaizen • Ways to improve Kaizen elements • Benefits of improving kaizen elements • Relationship between Kaizen elements • The fourth pillar of 5S • Benefits of standardizing and sustaining 3S • Procedures for standardizing and sustaining 3S activities • Tools and techniques to sustain 3S • Relevant Occupational Health and Safety (OHS) and environment requirements • Plan and report • Method of communication
Underpinning Skills	Demonstrates skills of: • improving Kaizen elements by applying 5S • standardizing and sustaining procedures and techniques to avoid problems • technical drawing • procedures to standardizing 3S activities • analyzing and preparing shop layout of the workplace • standardizing and sustaining checklists • preparing and implementing tools and techniques to sustain 3S • working with others • reading and interpreting documents • observing situations • solving problems by applying 5S • communication skills • preparing labels, slogans, etc. • gathering evidence by using different means • using Kaizen board properly in accordance the procedure • reporting activities and results using report formats
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Sector: Industry
Chemical Products Processing



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