



Australian Government

PMBPROD430B Trial a new die/tool

Revision Number: 1

PMBPROD430B Trial a new die/tool

Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This competency covers the trialing of a new die or tool. It is intended to be applied to 'high pressure' dies such as might be used for injection or blow moulding.

This competency is typically performed by technicians working either independently or as part of a work team.

Application of the Unit

Application of this unit

This competency applies to technicians who are involved in the trialing of dies. The key factors are the monitoring of the production process and identifying routine problems.

The technician will:

- check job sheets for work to be done
- conduct pre-start checks
- start up and shut down of equipment
- monitor equipment during production process
- identify routine production problems and notify appropriate persons.

It does not apply to situations such as rotational moulding or composites (see *PMBPROD431A*).

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites

This unit has **no** prerequisites.

Employability Skills Information

Employability Skills

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT ELEMENT	PERFORMANCE CRITERIA
1. Prepare for trial to procedures.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide. 1.1 Gather all relevant information available at the enterprise. 1.2 Confirm machine/equipment suitability. 1.3 Confirm die/tool state. 1.4 Confirm raw materials readiness.
2. Set die/tool and machine.	2.1 Fit and set up die/tool. 2.2 Set up process conditions. 2.3 Set control panel to cycle time, temperatures and heating/cooling rates as required. 2.4 Dry cycle machine and die according to procedures.
3. Trial die/tool, interpret data and adjust operation to procedures.	3.1 Carry out trial procedures in a systematic manner to meet trial objectives. 3.2 Identify and record variations from normal. 3.3 Monitor control panel and interpret test results for fluctuations, variations and trends. 3.4 Determine process limitations with respect to product and production specifications. 3.5 Adjust controls to ensure parameters are maintained to job specifications. 3.6 Check that process operation has improved. 3.7 Continue analysing data and making adjustments until desired level of process operation is achieved and product is within specifications. 3.8 Shut down equipment as required. 3.9 Record trial results.
4. Rectify equipment and quality problems.	4.1 Identify range of faults that will affect product and production specifications. 4.2 Determine changes required to tooling and equipment to meet product and production specifications. 4.3 Make sure appropriate records related to machinery and equipment are maintained to enterprise standards. 4.4 Identify and rectify problems that are within area

ELEMENT	PERFORMANCE CRITERIA
ELEMENT	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
	of responsibility. 4.5 Report problems that are outside area of responsibility to appropriate personnel.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.

Knowledge and understanding of the materials, equipment and process sufficient to recognise and rectify potential problems. Knowledge of organization 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.

Understanding of the polymer/process interactions.

Application of the knowledge of managing risks using the hierarchy of controls applied to the process. Application of approved hazard control, safety procedures, the use of PPE in relation to handling materials, equipment operation and cleanup.

Knowledge as a basis for solving processing and material problems, including:

- product specifications and limitations
- production equipment capability
- types and grades of materials and their limitations
- die or tool conditions and operational limitations
- use of ancillary equipment.

Language, literacy and numeracy requirements

This unit requires high levels of numeracy and literacy with the ability to interpret technical specifications and reports. Advanced numeracy allowing the calculation and interpretation of statistics, product formulae and process conditions is also required.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for this training package.

Overview of assessment

A holistic approach should be taken to the assessment.

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- understand procedures and know the importance of critical material properties and quantities
- recognise potential situations requiring action and then in implementing appropriate action.

Consistent performance should be demonstrated. For example, look to see that:

- new or un-tried dies/tools are tested thoroughly
- product quality and output standards are met consistently
- problems are anticipated from process observations

- problems are efficiently resolved
- the process runs consistently and smoothly.

Assessment method and context

It is preferred that assessment takes place on industrial equipment in a work-like environment. Competence in this unit may be assessed:

- on a processing plant, allowing for operation under all normal and a range of abnormal conditions
- in a situation allowing for the generation of evidence of the ability to recognise, anticipate and respond to problems
 - by using a suitable simulation and/or a range of case studies/scenarios
 - through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.

Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

Specific resources for assessment

This section should be read in conjunction with the range of variables for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. Where reference is made to industry codes of practice and/or Australian/international standards, the latest version must be used.

Context

This competency unit includes the use of injection moulding, blow moulding and similar equipment. This competency applies to all plastic and rubber processes which involve a die or tool. It applies to situations such as injection or blow moulding dies. It does not apply to situations such as rotational moulding or composites (see *PMBPROD431A*).

Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Die

A former used to give the required shape to the product and which is used under pressure. Dies are typically used in the extrusion, injection, blow moulding and general rubber sectors. Dies used which are not subject to pressure are referred to as 'moulds' in this Training Package.

Simple die

A two plate die including any ejection system operating in the mould open axis, but excluding moulds with molten material retained within the mould between cycles. Products are simple, straight drawn items. Typical features may include: force, cavity, back plates, support plates, cold runner, sprue, nozzle seat, locating ring-tab, sub, fan, diaphragm and direct gating, ejector pins and sleeves, ejector plate and stripper plate, simple drilling for mould cooling.

Advanced die

A two or three plate die with one or more product forming components which move in a direction other than the mould open axis, and which are driven by the mould rather than external actuation. Excludes moulds which retain molten material within the mould between cycles. Typical features may include: sliding blocks or cores actuated by skew pins or cams; baffled, spiral, tube, and heat pipe cooling systems; rising cores; and internally actuated unscrewing systems.

Complex die

Dies which use at least one external power and control source to actuate product forming components, which move in a direction other than the mould open axis, and require sequencing with the mould operation. Includes moulds which retain molten material within the mould between cycles. Typical features may include: hot runners; insulated runners; externally actuated sliding blocks, cores, and unscrewing systems; safety interlocks.

Tools and equipment

This competency includes use of equipment and tools such as:

- hand tools as required
- relevant personal protective equipment.

Hazards

Typical hazards include:

- noise, light, energy sources
- humidity, air temperatures, radiant heat
- stationary and moving machinery, parts and components.

Problems

'Anticipate and solve problems' means resolve a wide range of routine and non-routine problems, using product and process knowledge to develop solutions to problems which do not have a known solution/a solution recorded in the procedures.

Typical process and product problems may include:

- selecting the right tools for a new job
- using new and untried die or tool
- adapting the process to the new product and die/tool
- observing the process to obtain useful trial data
- comparing the product to the desired specification
- determining the cause of non-compliances.

Distinguish between causes of faults such as:

- materials/heat
- equipment adjustment/set-up

Variables

Key variables to be monitored include:

- die/tool set up and adjustment
- machine speed, cycle rate
- temperature
- product quality measures.
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Unit Sector(s)

Not applicable.