



Australian Government

PMBTECH602E Develop a new die or tool

Release: 1

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Modification History

Release 1. Unit code changed. Application changed. Elements and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMBTECH602 Develop a new die or tool.

Application

This unit covers the skills and knowledge required to develop a new die or tool to meet a specified end use.

This unit applies to an advanced technologist, technical expert, or those in similar roles, in a lead role, typically as part of a product design, development and implementation team. The technologist is not required to demonstrate 'hands-on' operation of equipment as part of this competency.

The unit principally refers to the development of a new die or tool for a specified end use using the developer's application of their significant depth and breadth of knowledge of theoretical polymers, product and processes

No licensing or certification requirements apply to this unit of competency at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

PMBTECH506E Analyse the design of products and tools for polymer injection moulding.

Competency Field

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Confirm die requirements	1.1 Communicate with customer and other key stakeholders to agree on product technical specification, product aesthetic requirements, timelines, cost, usage and other requirements 1.2 Identify tool design or product design or process issues that may be in conflict and resolve according to workplace procedures 1.3 Develop design brief, including relevant drawings, to meet needs

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	1.4 Obtain approval of total design brief from all relevant persons and according to workplace authorisation procedures
2. Develop concept design specification of new die	2.1 Select materials of construction or range of materials and grades for evaluation 2.2 Select finish for die or tool that meets design brief requirements 2.3 Design die or tool using mathematical techniques to meet specifications 2.4 Validate die design specifications against die requirements and design brief
3. Liaise with toolmaker on die manufacture	3.1 Discuss design brief and concept design with toolmaker using supporting information including tool assembly drawings 3.2 Verify understanding of die or tool requirements and ability to meet requirements 3.3 Negotiate contract to make die according to company policy and procedures 3.4 Communicate with toolmaker throughout project
4. Trial new die and assess results	4.1 Design trialling procedure that delivers required information and is compliant with workplace procedures 4.2 Ensure work health and safety requirements are stringently observed during the production process 4.3 Coordinate trial of new die/tool 4.4 Guide die trial process and interpret trial results to assess if desired outcomes are achieved 4.5 Modify and refine process to optimise use of new die or tool
5. Bring new die into standard production	5.1 Monitor initial production and adjust die, process and conditions as required ensure efficient and successful production processes 5.2 Ensure process specifications reflect optimised operation developed 5.3 Ensure workplace procedures are correct for new product 5.4 Ensure equipment and other hardware records are updated to reflect additions or changes 5.5 Ensure project records are complete and all required reports have been completed and submitted

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	5.6 Archive records according to workplace procedure

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Numeracy skills to develop and communicate die or tool specification, and record and analyse trial data.
- Reading skills to interpret required properties of new die or tool and workplace procedures.
- Writing and oral communication skills to work with stakeholders and personnel on die or tool development and manufacture, and record and report on trial results and associated procedures.

Other foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to PMBTECH602 Develop a new die or tool.

Links

Companion Volume implementation guides are found in VETNet –

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090>

Assessment Requirements for PMBTECH602E Develop a new die or tool

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit of competency, and demonstrated the ability to:

- develop at least one new die or tool, including the production of tool assembly drawings, to meet specifications and customer and stakeholder requirements.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- impact of different polymer materials, their additives and the rheological, heat and other effects of processing on design of a new die or tool
- influence of die or tool design on the operability of the process and the properties of the product
- the impact of the melt viscosity on die size and design
- runner or sprue design
- impact of die size and shape on product
- mould flow analysis
- shear stress or strain rates (viscosity)
- die or tool trialling and testing procedures
- principles of operation of all relevant equipment and processes
- differentiating features of main processes, polymer materials and materials of construction of dies or tools
- effects of variations in process, conditions and die/tool on optimisation and final properties of the product
- organisation procedures relevant to the work environment/job role
- hazards that may arise in the job or work environment and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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