



Australian Government

PMBPREP305 Change extrusion die and setup

Release: 1

PMBPREP305 Change extrusion die and setup

Modification History

Release 1. Supersedes and is equivalent to PMBPREP305B Change extrusion die and setup

Application

This unit of competency covers the skills and knowledge required to remove and refit dies, pins, sizing dies (calibrator), vacuum blocks and seals as used in extrusion line processes.

This unit of competency is typically performed by experienced operators or those in similar roles who are required to plan and prepare the change, select dies that match product/process specification, make the changeover and test the changeover, and fine tune settings to meet specifications.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members, team leader and supervisor, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Preparation

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Prepare to change dies or cores	1.1	Plan process for closing down machinery and inform relevant personnel
		1.2	Take last-off samples as required for die reports
		1.3	Select dies or cores to match product/process specification

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| | | 1.4 | Implement measures to control identified hazards in line with procedures and duty of care |
| 2 | Shut down extruder | 2.1 | Stop downstream equipment |
| | | 2.2 | Stop feed, drop temperatures, stop vacuum pump and purge the extruder |
| | | 2.3 | Activate isolating locks, disconnect power to heaters |
| 3 | Change set-up | 3.1 | Remove, clean and store die according to workplace procedures |
| | | 3.2 | Fit replacement die ensuring that locating devices and marks are matched and securing devices are installed and tightened to specification |
| | | 3.3 | Remove and re-fit calibrator sleeve and seals as required |
| | | 3.4 | Set heats according to pre-start procedures |
| 4 | Restart and test-run the new set-up | 4.1 | Check operation of die against product quality |
| | | 4.2 | Compare machine setting ranges against documented requirements |
| | | 4.3 | Check the first-off sample for required standards |
| | | 4.4 | Fine-tune settings and other production variables as required |
| | | 4.5 | Note variances between standard operating procedures (SOPs) and actual production run |
| | | 4.6 | Complete workplace documentation and report to appropriate personnel |
| 5 | Anticipate and solve problems | 5.1 | Recognise a problem or a potential problem |
| | | 5.2 | Determine problems needing priority action |
| | | 5.3 | Refer problems outside area of responsibility to |

appropriate person, with possible causes

- 5.4 Seek information and assistance as required to solve problems
- 5.5 Solve problems within area of responsibility
- 5.6 Follow through items initiated until final resolution has occurred

Foundation Skills

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

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

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, manual handling and hazardous materials
- Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- emergency procedures
- work instructions
- SOPs
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Tools and equipment Tools and equipment include one or more of:

- hand carts and trolleys
- hoists/lifting equipment not requiring any special permits or licences
- basic hand tools
- hand tools
- relevant personal protective equipment (PPE).

Hazards Hazards must be identified and controlled. Identifying hazards requires consideration of:

- weight, shape, volume of materials to be handled
- hazardous products and materials
- hot surfaces
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- heat, smoke, dust, vapours or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- equipment failures
- machinery, equipment, product mass
- other hazards that might arise

Non-routine problems Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant

experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person.

Non-routine problems are unexpected problems or variations of previous problems and include one or more of:

- corrosion of die surface
- inadequate fitting
- faulty components
- machine malfunction
- variation in product.

Operational knowledge includes one or more of:

- procedures
- training
- technical information such as journals, engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people.

Unit Mapping Information

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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 PMBPREP305 Change extrusion die and setup

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and demonstrate the ability to:

- read and interpret procedures and job specifications
- plan and perform shutdown procedures for extruder and downstream equipment
- remove, clean and store die according to procedures
- select dies, calibration sleeves, seals and tools and install replacement die to meet specifications
- set machine conditions for new die
- check the installation and operation of new die to identify conformance and/or non-conformance to specifications
- make adjustments to settings and equipment operation to rectify variations in equipment operation or product quality
- identify hazards and apply relevant hazard controls
- distinguish between causes of problems/alarm/fault indications, such as:
 - operational problems
 - instrument failure/malfunction
 - electrical failure/malfunction
 - mechanical failure/malfunction
 - wrong readings
 - equipment design deficiencies
 - product parameters (temperature, flows, pressure and levels)
- resolve non-routine problems
- communicate effectively with team/work group and supervisors
- complete workplace records
- do basic arithmetical manipulations, including additions, subtractions, divisions, fractions and percentages.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to fulfil their job role, including knowledge of:

- function and principles of operation of extrusion equipment
- methods of connecting extrusion dies to machines

- extruder and ancillary equipment shut down processes
- impact of incorrect or faulty fitting
- the function of each machine setting and the appropriate ranges of settings for specific dies
- factors which may affect product quality or production output and appropriate remedies
- routine and non-routine problems that may arise, the range of possible causes and appropriate actions
- organisation procedures relevant to the work environment/job role
- hierarchy of control
- hazards that may arise in the job/work environment and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- In all plants it may be appropriate to assess this unit concurrently with units such as:
 - teamwork
 - communication.
- The collection of performance evidence:
 - should occur over a range of situations which include typical disruptions to normal, smooth operations and provide for demonstration of responding to problems
 - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
 - must include the use of industry appropriate materials, tools, equipment, data and documentation
 - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from demonstration of skills and one or more of:
 - walk-throughs
 - pilot plant operation
 - industry-based case studies/scenarios

- ‘what ifs’.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition the assessor or anyone acting in subject matter expert role in assessment shall demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they shall assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
 - relevant VET or other qualification/Statement of Attainment
 - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
 - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
 - being currently employed undertaking the type of work being assessed
 - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
 - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
 - conducting on the job training/assessments of the type of work being assessed
 - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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