



Australian Government

PMBTECH503 Determine rheology and output of plastics materials from processing equipment

Release: 1

PMBTECH503 Determine rheology and output of plastics materials from processing equipment

Modification History

Release 1. Supersedes and is equivalent to PMBTECH503B Determine rheology and output of plastics materials from processing equipment

Application

This unit of competency covers the skills and knowledge required to determine rheology and output of plastics materials from processing equipment.

This unit of competency applies to experienced technicians or those in similar roles who are required to apply in-depth knowledge of materials, process, equipment and problem solving in order to perform calculations using the rheological properties of polymers and apply that to their performance in process equipment.

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

Pre-requisite Unit

PMBTECH401 Predict polymer properties and characteristics

Competency Field

Technical

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	Determine flow characteristics of polymer	1.1	Calculate and describe shear and shear rates
		1.2	Distinguish between Newtonian and non-Newtonian

compound		flow
	1.3	Identify the characteristics of polymer structures which influence flow
	1.4	Identify the relationships between density, temperature and viscosity for polymers
	1.5	Identify the flow characteristics of a polymer compound based on its structure and temperature
2	Calculate flow rate of polymer compound	
	2.1	Use equipment dimensions and data to determine shear rate of polymers through that equipment
	2.2	Calculate output from equipment using viscosity curves and shear rate diagrams
	2.3	Calculate mean velocity at critical points in a process
	2.4	Determine the characteristic curves for the screws and dies in processing equipment, and the resultant operating point for the system

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, materials and processes being used and products being made
- 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:

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

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

- hazardous products and materials
- smoke, dust or other atmospheric hazards
- other hazards that might arise.

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>