

<b>Title</b>	<b>Control and optimise the injection moulding production process</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>12</b>

<b>Purpose</b>	People credited with this unit standard are able to: demonstrate knowledge of, and control the injection moulding process for a repeat production run; trial a simple mould in a specified injection moulding machine; and start up the moulding process for an initial production run.
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<b>Classification</b>	Plastics Processing Technology > Injection Moulding
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<b>Available grade</b>	Achieved
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<b>Entry information</b>	
<b>Recommended skills and knowledge</b>	Unit 29515 <i>Carry out routine service of injection moulding equipment</i> ; and Unit 23131, <i>Compare melt flow and dimensional stability of plastics materials</i> .

**Explanatory notes**

- 1 Legislation relevant to this unit standard includes but is not limited to the Health and Safety at Work Act 2015.
- 2 Definitions
 

*Initial production run* – mould being run continuously for the first time to produce commercially saleable product.

*Simple mould* – two or three plate mould 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; part line and pin venting; simple drillings for mould cooling.

*Trial* – testing and evaluation of either a new mould, or a mould for which there is neither prior knowledge nor production set-up information available.

*Workplace procedures* – procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – standard operating procedures, site safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.
- 3 All evidence requirements must be performed in accordance with workplace procedures.

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## Outcomes and evidence requirements

### Outcome 1

Demonstrate knowledge of, and control the injection moulding process for a repeat production run.

#### Evidence requirements

- 1.1 Controls are monitored and adjusted to optimise production and quality.
- 1.2 Common machine malfunctions are explained.
- Range examples of common machine malfunctions are – feed throat bridging, under and over-riding barrel temperatures, screw creep, leaking nozzle, high hydraulic oil temperatures; evidence of two malfunctions is required.
- 1.3 A common machine malfunction is identified, corrected, and reported.
- Range examples of common machine malfunctions are – feed throat bridging, under and over-riding barrel temperatures, screw creep, leaking nozzle, high hydraulic oil temperatures; malfunction must be different to those explained in evidence requirement 1.2.
- 1.4 The consequences of common tooling malfunctions are described.
- Range examples of common tooling malfunctions include – blocked waterways, leakage from hoses, incorrect hose connections, venting or blocking vents, dry pins and plates.
- 1.5 Common material faults are identified and corrected or repaired.
- Range examples are – wet, contaminated, poorly mixed, degraded evidence is required for identification, correction or repair of one fault, and knowledge of the remaining faults.
- 1.6 The consequences of common setting faults are described.
- Range fault examples are – incorrect shot volume; injection pressure and speed; hold time and pressure; clamp pressure or setting; plasticising time and speed; cushion; cooling time.

### Outcome 2

Trial a simple mould in a specified injection moulding machine.

#### Evidence requirements

- 2.1 Mould and machine trial preparations are carried out.

- 2.2 Mould clamp force is calculated for consistency for machine capability, and adjustments made.
- 2.3 The trial mould is fitted, and pre-start procedures are carried out.
- 2.4 Initial machine conditions are set according to product design, material type, and mould construction.
- 2.5 Trial procedures are carried out, and adjustments are made to optimise product quality and productivity.
- 2.6 Trial results are recorded.

### Outcome 3

Start up the injection moulding process for an initial production run.

### Evidence requirements

- 3.1 The machine and mould are put into production and are monitored to maintain job specification.
- 3.2 Running adjustments are made and are recorded.

<b>Planned review date</b>	31 December 2021
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### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 April 1993	31 December 2013
Revision	2	13 February 1997	31 December 2013
Review	3	23 January 1998	31 December 2013
Review	4	24 August 2006	31 December 2019
Review	5	21 March 2013	31 December 2019
Review	6	15 September 2016	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

### Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

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### **Comments on this unit standard**

Please contact Competenz [qualifications@competenz.org.nz](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.