

<b>Title</b>	<b>Transfer and pour molten metal in an industrial situation</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>15</b>

<b>Purpose</b>	People credited with this unit standard are able to: plan and prepare for transferring and pouring molten metal; transfer molten metal from furnace; pour molten metal; and clean, inspect, and maintain equipment and complete documentation.
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<b>Classification</b>	Mechanical Engineering > Metal Forming
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<b>Available grade</b>	Achieved
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### Guidance Information

- 1 References and legislation  
 Health and Safety at Work Act 2015 and supporting regulations.  
 Hazardous Substances and New Organisms Act 1996.  
 Resource Management Act 1991.  
 WorkSafe New Zealand. *Health and Safety Guidelines on the Management of Hazards in the Metal Casting Industry*. Available at:  
<http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/metal-casting-industry-health-and-safety-guidelines-for-the-management-of-hazards-in/metal-casting-hs-guidelines.pdf>.
- 2 Definitions  
*Accepted industry practice* refers to approved codes of practice and standardised procedures accepted by the wider mechanical engineering industry sectors as examples of best practice.  
*Metal forming* refers to the metalworking process of fashioning metal parts and objects through mechanical deformation such as sand casting, die casting, investment casting, continuous casting, centrifugal casting, forging, extrusion, three-dimensional additive metal manufacturing.  
*Workplace procedures* refer to the procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – standard operating procedures, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.
- 3 Assessment Information
  - a Evidence provided for assessment against this unit standard must be within the context of transferring and pouring molten metal in an industrial situation.
  - b All activities must comply with applicable workplace procedures and must be consistent with accepted industry practice.

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## Outcomes and performance criteria

### Outcome 1

Plan and prepare for transferring and pouring molten metal.

#### Performance criteria

- 1.1 Molten metal quantity and specification are established.
- 1.2 Vessel of suitable size and type is selected to meet pour requirements.
- 1.3 Workplace safety procedures and processes in relation to transferring and pouring molten metals are adhered to.
- 1.4 Vessel condition is checked and pre-heated.
- 1.5 Safety devices are identified and checked for correct operation.

### Outcome 2

Transfer molten metal from furnace.

#### Performance criteria

- 2.1 Workplace safety procedures and processes are complied with.  

Range	Examples are – warning systems, isolations, ventilation, access ways, personal protective equipment, safety locks.
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- 2.2 Pre-pouring metal treatment is carried out.
- 2.3 Molten metal is delivered.  

Range	Examples of delivery area are – pouring area, holding area, treatment area, launder.
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### Outcome 3

Pour molten metal.

#### Performance criteria

- 3.1 Receiver is examined and prepared.  

Range	Examples are – moulds, dies, ingots, test bars.
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- 3.2 Molten metal is checked in accordance with specifications.  

Range	Examples are – temperature, weight, composition samples.
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- 3.3 Any additional process treatment for the molten metal is carried out.  
Range Examples are – removal of impurities and/or making additions.
- 3.4 Pour is made into a receiver in a manner that avoids defects.  
Range Examples are – pour times, temperature, pour height, delivery pressure.
- 3.5 Post processes are applied.  
Range Examples are – feeding aids, exothermic.
- 3.6 Any molten metal breakout, spill, or flash is contained.
- 3.7 Excess metal is managed according to workplace procedures.  
Range Examples – poured into pigs or ingots mould, furnace.

**Outcome 4**

Clean, inspect, and maintain equipment and complete documentation.

**Performance criteria**

- 4.1 Equipment is cleaned, inspected, and maintained.
- 4.2 Documentation is completed.

<b>Planned review date</b>	31 December 2022
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	17 August 2017	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>.

**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.