

Field Manufacturing**Review of *Plastics Processing Technology* unit standards**

| Subfield | Domain | ID |
|--------------------------------|---------------------------------|---|
| Plastics Processing Technology | Blown Film Extrusion | 287-289, 291-294, 9710, 27666, 27667 |
| | Expanded Polystyrene Moulding | 17461-17466 |
| | Extrusion | 281-283, 285, 286, 9715, 27571, 27631 |
| | Extrusion Blow Moulding | 295-303, 9714, 27922 |
| | Film Conversion | 275-278, 27609 |
| | Film Slitting | 279, 280 |
| | Injection Moulding | 252-256, 258-260, 9712, 9713, 27925, 27926 |
| | Injection Stretch-Blow Moulding | 15206-15213 |
| | Plastics Materials | 9708, 9709, 17460, 19378, 19379, 23128-23131, 25679 |
| | Plastics Processing - General | 9711, 19380, 19381 |
| | Rotational Moulding | 16116-16121 |
| Thermoforming | 261-270, 27553 | |

Competenz has completed the review of the unit standards listed above.

Date new versions published

September 2016

Planned review date

December 2021

Summary

The unit standards were reviewed to align with the recently registered New Zealand Certificates in Plastics Processing and to meet Competenz's ongoing unit standard review schedule.

The review was carried out in consultation with plastics processing industry technical experts and some new unit standards were developed. Unit standards that have had very low usage and are not required in the future have been set to expire.

Main changes

- Minor changes were made to outcome statements, evidence requirements, and range statements to clarify assessment requirements, ensure alignment with current industry requirements, and to correct grammatical errors.
- Explanatory notes and evidence requirements were updated and practical standards were standardised to use reference to the term *workplace procedures* to replace *operating procedures*, *company procedures*, and *enterprise procedures*.
- 42 unit standards were designated as expiring without replacement. Recommended

alternatives for category D standards are indicated below in the *Detailed list of unit standards – classification, title, level, and credits* table.

- Nine new unit standards in the *Plastics Processing Technology* subfield were registered.
- A new unit standard in the *Manufacturing Processes* domain, unit standard 29447, was registered.
- The level of 15 unit standards was adjusted to provide a better match with the level descriptors and new programme requirements.
- The credits for 13 unit standards were adjusted to better reflect the time required for learning and assessment.
- A last date for assessment of superseded versions for Category B unit standards was added. Results will not be accepted where the assessment date is after the last date for assessment of the superseded version of the standard.
- The Plastics processing technology standards have been moved to a different CMR (0013) in line with the revision and consolidation of a number of CMRs leading to unit standards administered by Competenz.

Category D unit standards will expire at the end of December 2019

The last date for assessment of superseded versions of Category B unit standards is 31 December 2019

Impact on existing organisations with consent to assess

| Current consent for | | | Consent extended to | | |
|---------------------|--------------------------------|-------|---------------------|----------------------|-------|
| Nature of consent | Classification or ID | Level | Nature of consent | Classification or ID | Level |
| Subfield | Plastics Processing Technology | 1 | Standards | 23128 | 2 |
| Domain | Thermoforming | 2 | Standards | 267, 269 | 3 |

Impact on Consent and Moderation Requirements (CMR)

Plastics processing technology standards that are not expiring as part of this review will move to CMR 0013.

Detailed list of unit standards – classification, title, level, and credits

All changes are in **bold**. The details of recommended alternatives are in *italics*.

| Key to review category | |
|------------------------|---|
| A | Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number |
| B | Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number |
| C | Major changes that necessitate the registration of a replacement standard with a new ID |
| D | Standard will expire and not be replaced |

Manufacturing > Manufacturing skills > Manufacturing Processes

| ID | Title | Level | Credit | Review Category |
|-------|---|-------|--------|-----------------|
| 29447 | Use problem-solving models to determine solutions to resolve technical manufacturing processing problems | 4 | 10 | New |

Manufacturing > Plastics Processing Technology

| ID | Domain | Title | Level | Credit | Review Category |
|-------|---------------------------------|---|-------|--------|-----------------|
| 27922 | Extrusion Blow Moulding | Remove and fit an extrusion blow moulding die head assembly and an extruder screw | 3 | 6 | D |
| 29521 | Extrusion | Carry out routine service of extrusion equipment | 3 | 5 | New |
| 287 | Blown Film Extrusion | Perform process operations for blown film extrusion | 1 | 4 | D |
| 288 | Blown Film Extrusion | Operate a blown film extrusion machine | 2 | 8 | D |
| 281 | Extrusion | Perform basic extrusion process operations | 1 | 4 | D |
| 295 | Extrusion Blow Moulding | Perform process operations for extrusion blow moulding | 1 | 4 | D |
| 275 | Film Conversion | Perform process operations for film conversion | 1 | 3 | D |
| 276 | Film Conversion | Operate a film conversion machine | 2 | 7 | D |
| 279 | Film Slitting | Perform process operations for film slitting | 1 | 3 | D |
| 280 | Film Slitting | Set up and control operations for film slitting | 2 | 7 | D |
| 253 | Injection Moulding | Operate the injection moulding machine | 2 | 6 | D |
| 254 | Injection Moulding | Run and monitor the injection moulding production process | 2 | 9 | D |
| 256 | Injection Moulding | Set up simple moulds for injection moulding | 2 | 8 | D |
| 15206 | Injection Stretch Blow Moulding | Perform basic process operations for injection stretch-blow moulding | 1 | 5 | D |
| 16116 | Rotational Moulding | Perform basic process operations for rotational moulding | 1 | 4 | D |
| 16117 | Rotational Moulding | Operate the rotational moulding machine | 2 | 6 | D |

| ID | Domain | Title | Level | Credit | Review Category |
|--------------|--------------------------------------|--|----------|-----------|-----------------|
| 16120 | Rotational Moulding | Mount mould, set and monitor the rotational moulding production process | 2 | 11 | D |
| 261 | Thermoforming | Perform process operations for thermoforming | 1 | 4 | D |
| 262 | Thermoforming | Operate a thermoforming process | 2 | 6 | D |
| 263 | Thermoforming | Run and monitor the production process for vacuum thermoforming | 2 | 8 | D |
| 264 | Thermoforming | Run and monitor the production process for pressure thermoforming | 2 | 8 | D |
| 29514 | Plastics Processing - General | Operate pre-set plastics processing machinery | 2 | 15 | New |
| 9712 | Injection Moulding | Trial advanced injection moulds | 4 | 6 | D |
| 15209 | Injection Stretch Blow Moulding | Trial and optimise the single stage injection stretch-blow moulding production process | 4 | 12 | D |
| 15210 | Injection Stretch Blow Moulding | Trial and optimise the two stage injection stretch-blow moulding production process | 4 | 16 | D |
| 29517 | Plastics Processing - General | Plan, conduct and evaluate a plastics product trial | 4 | 5 | New |
| 9714 | Extrusion Blow Moulding | Trial and evaluate an advanced or complex extrusion blow mould or moulding process | 4 | 8 | D |
| 27571 | <i>Extrusion</i> | <i>Trial an extrusion product or process on a specified extrusion line</i> | 4 | 12 | B |

Manufacturing > Plastics Processing Technology > Blown Film Extrusion

| ID | Title | Level | Credit | Review Category |
|-----|--|-------|----------------|-----------------|
| 289 | Set up, monitor, and adjust mono-layer production for blown film extrusion | 2 | 12 | B |
| 291 | Operate a blown film extrusion machine for co-extrusion production | 2 | 8 | B |
| 292 | Set up, monitor, and adjust co-extrusion production for blown film extrusion | 3 | 10 | B |
| 293 | Service mono-layer dies and extruder screws for blown film extrusion | 3 | 12 5 | B |

| ID | Title | Level | Credit | Review Category |
|-------|--|-------|--------|-----------------|
| 294 | Coordinate and lead a co-extrusion die service for blown film extrusion Coordinate and lead a team to service a co-extrusion die for blown film extrusion | 4 | 9 | B |
| 9710 | Demonstrate knowledge of the application of advanced processing technology Demonstrate knowledge of the application of advanced blown film extrusion processing technology | 4 | 10 | B |
| 27666 | Optimise complex mono-layer production processes for blown film extrusion | 3 | 5 | B |
| 27667 | Trial a blown film extrusion product on a specified blown film extrusion line | 4 | 7 | B |

Manufacturing > Plastics Processing Technology > Expanded Polystyrene Moulding

| ID | Title | Level | Credit | Review Category |
|-------|--|-------|--------|-----------------|
| 17461 | Perform basic process operations for expanded polystyrene moulding | 1 | 5 | D |
| 17462 | Operate and control the expanded polystyrene moulding machine | 2 | 8 | D |
| 17463 | Operate and control pre-expansion equipment for expanded polystyrene materials | 2 | 8 | D |
| 17464 | Control and optimise the expanded polystyrene moulding production process | 3 | 12 | D |
| 17465 | Service a mould for expanded polystyrene moulding production | 2 | 5 | D |
| 17466 | Set up a mould for expanded polystyrene moulding production | 2 | 7 | D |

Manufacturing > Plastics Processing Technology > Extrusion

| ID | Title | Level | Credit | Review Category |
|--------------|--|----------|-----------|-----------------|
| 282 | Operate the extrusion machine | 2 | 8 | D |
| 283 | Run and control the extrusion production process | 2 | 12 | D |
| 285 | Change dies and set ancillary equipment for extrusion | 2 | 10 | D |
| 286 | Demonstrate knowledge of advanced extrusion tooling and change extruder screws | 3 | 6 | D |
| 29520 | Demonstrate knowledge of, and operate and control the plastics extrusion process | 3 | 15 | New |
| 9715 | Prepare extrusion dies and calibrators for production and demonstrate knowledge of their design principles | 4 | 7 | B |
| 27631 | Optimise the extrusion process and operate an extrusion process for complex products | 3 4 | 8 | B |
| 29522 | Prepare and set up polymer extrusion process for a new product trial | 3 | 5 | New |

Manufacturing > Plastics Processing Technology > Extrusion Blow Moulding

| ID | Title | Level | Credit | Review Category |
|-----|--|--------|----------|-----------------|
| 296 | Operate the extrusion blow moulding machine Operate an extrusion blow moulding machine | 2 3 | 6 5 | B |
| 297 | Run and monitor the extrusion blow moulding production process | 2 3 | 10 | B |
| 298 | Control and trial the extrusion blow moulding process for a simple extrusion blow mould | 3 | 8 5 | B |
| 299 | Service a simple mould for extrusion blow moulding | 2 | 4 | B |
| 300 | Service an advanced or complex mould for extrusion blow moulding | 2 | 8 | B |
| 301 | Service a die head for extrusion blow moulding | 3 4 | 12 10 | B |
| 302 | Set up simple moulds and ancillary equipment for extrusion blow moulding | 2 3 | 8 | B |
| 303 | Set up and start up an extrusion blow moulding machine to run advanced or complex moulds | 3 4 | 6 5 | B |

Manufacturing > Plastics Processing Technology > Film Conversion

| ID | Title | Level | Credit | Review Category |
|-------|---|-------|--------|-----------------|
| 277 | Set up and control operations for simple products for film conversion | 2 | 12 | B |
| 278 | Set up and control operations for advanced products for film conversion | 3 | 14 | B |
| 27609 | Trial a film conversion product on a specified film conversion machine | 4 | 4 | D |

Manufacturing > Plastics Processing Technology > Injection Moulding

| ID | Title | Level | Credit | Review Category |
|--------------|--|----------|----------|-----------------|
| 252 | Perform process operations for injection moulding | 1 | 4 | B |
| 255 | Control and optimise the injection moulding production process | 3 | 12 | B |
| 258 | Service simple moulds for injection moulding | 2 | 6 | D |
| 259 | Service advanced moulds for injection moulding | 2 | 4 | D |
| 27925 | Remove and refit an injection moulding machine screw | 3 | 3 | D |
| 29515 | Carry out routine service of injection moulding equipment | 3 | 5 | New |
| 260 | Service and maintain a complex mould for injection moulding | 3 4 | 10 | B |
| 9713 | Set up and remove complex injection moulds Set and remove complex injection moulds | 4 | 5 | B |
| 27926 | Set up advanced moulds for injection moulding | 3 | 7 | B |

Manufacturing > Plastics Processing Technology > Injection Stretch Blow Moulding

| ID | Title | Level | Credit | Review Category |
|-------|---|--------|----------|-----------------|
| 15207 | Operate injection stretch-blow moulding equipment | 2 3 | 6 5 | B |
| 15208 | Set and run the injection stretch-blow moulding production process | 2 3 | 9 10 | B |
| 15211 | Service tooling for injection stretch-blow moulding | 2 3 | 6 5 | B |
| 15212 | Demonstrate knowledge and carry out routine maintenance of preform injection moulds | 4 | 16 15 | B |
| 15213 | Set up tooling for injection stretch-blow moulding | 3 4 | 6 | B |

Manufacturing > Plastics Processing Technology > Plastics Materials

| ID | Title | Level | Credit | Review Category |
|-------|---|--------|--------|-----------------|
| 9708 | Explain the influence of polymer morphology on properties and processing Explain the influence of polymer morphology on properties and processing of plastics materials | 4 | 7 | B |
| 9709 | Explain additive mixing, compounding, and plasticisation Explain additive mixing, compounding, and plasticisation of plastics materials | 4 | 7 | B |
| 17460 | Demonstrate knowledge of expanded polystyrene materials | 1 | 2 | D |
| 19378 | Demonstrate knowledge of polymer property relationships, their structure and polymerisation | 5 | 12 | B |
| 19379 | Demonstrate knowledge of rheology and calculate output from processing equipment for polymer compounds | 5 | 6 | B |
| 23128 | Demonstrate basic knowledge of plastics production processes and materials | 1 2 | 3 | B |
| 23129 | Process and use plastics materials | 2 | 6 | B |
| 23130 | Classify and name plastics materials | 2 | 8 | B |
| 23131 | Compare melt flow and dimensional stability of plastics materials | 3 | 7 | B |
| 25679 | Demonstrate knowledge of plastic product development | 5 | 8 | B |

Manufacturing > Plastics Processing Technology > Plastics Processing – General

| ID | Title | Level | Credit | Review Category |
|-------|---|-------|--------|-----------------|
| 9711 | Review and analyse production trial and specify re-trial Review and analyse production trial results and specify re-trial | 4 | 6 | B |
| 19380 | Perform heat transfer calculations for plastics processing | 5 | 8 | B |

| ID | Title | Level | Credit | Review Category |
|--------------|---|----------|-----------|-----------------|
| 19381 | Demonstrate knowledge of plastics processing, fabrication and product finishing technologies Describe plastics processing, fabrication and product finishing technologies | 5 | 8 | B |
| 29516 | Prepare and set plastics processing moulds for new product trial | 3 | 5 | New |
| 29518 | Demonstrate knowledge of plastics processing machinery | 4 | 10 | New |
| 29519 | Analyse and implement plastics processing line quality improvements | 5 | 10 | New |

Manufacturing > Plastics Processing Technology > Rotational Moulding

| ID | Title | Level | Credit | Review Category |
|-------|--|---------------|-----------------|-----------------|
| 16118 | Control and optimise the rotational moulding production process for a standard product | 3 | 12 15 | B |
| 16119 | Service moulds for rotational moulding | 2 3 | 5 | B |
| 16121 | Trial a complex rotationally moulded product | 4 | 6 5 | B |

Manufacturing > Plastics Processing Technology > Thermoforming

| ID | Title | Level | Credit | Review Category |
|-------|--|---------------|----------------|-----------------|
| 265 | Control the production process for vacuum thermoforming | 3 | 8 | B |
| 266 | Control the production process for pressure thermoforming | 3 | 8 | B |
| 267 | Set up simple tooling for thermoforming Set up tooling for thermoforming | 2 3 | 8 10 | B |
| 268 | Set up complex tooling for thermoforming | 3 | 9 | D |
| 269 | Service simple tooling for thermoforming Service tooling for thermoforming | 2 3 | 6 5 | B |
| 270 | Service complex tooling for thermoforming | 3 | 8 | D |
| 27553 | Trial and optimise an initial thermoforming production run | 4 | 12 | D |