



Australian Government

Assessment Requirements for MEM07043

Identify causes of faulty aluminium extrusions

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM07043A Identify causes of faulty aluminium extrusions

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- complying with work health and safety (WHS), regulatory requirements and risk management procedures
- identifying bearings, apertures, components, and critical measurements and tolerances on die drawing
- liaising with extruder operators, die designers die makers and maintenance personnel to obtain information to assist in the identification of causes of faults
- identifying root cause of faults in both hollow and solid die extrusions
- identifying die, die support, process and temperature-related shape and surface faults
- identifying appropriate action to take to remedy extrusion faults
- accessing, analysing and adding to die history records.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- die components in an extrusion machine:
 - die
 - die support
 - container
 - support tooling
 - die holder
 - bolsters – single and split systems
 - die slide
 - tool stack
 - bearing
 - feeder plate

- backer
- platen plate
- aluminium extrusion process, including:
 - die heating
 - billet heating
 - loading of dies and billets
 - breakthrough control
 - flow speed
 - rolling
 - quenching
 - stretching
- aluminium extrusion alloys and their extrusion performance
- extruder components and controls
- requirements of AS/NZS 1866:1997 Aluminium and aluminium alloys – Extruded rod, bar, solid and hollow shapes for extruded products
- causes of die deformation, including:
 - damaged or die
 - poor or incorrect die support due to:
 - poor manufacture
 - wear
 - incorrect component placement/selection
- die and die support design and die manufacturing related faults, including:
 - tolerances and clearances too tight and beyond range of realistic correction by die corrector
 - tolerances and clearances too great causing components to move out of position during extrusion leading to flow blockage
- reasons for die blockage, including:
 - die damage
 - over polishing or incorrect die polishing
 - tongue bending
 - bearing clearances too tight
 - overheating of billet
- indicators of die support faults, including:
 - deflecting mandrels
 - die dishing
 - die movement during extrusion
- check for metal extruding inwards or outwards
- effects of nitriding and re-nitriding on die performance
- billet composition and billet heating procedures
- changes in billet composition caused by re-heating
- process related faults:

- incorrect temperature settings for pre-heating of billet
- bad breakthrough control by operator (setting too fast or too high a pressure):
 - poor extruder settings
 - speed through die too fast/slow
 - fouling of section on relief
 - unsuitable support of extrusion after exiting die
 - poor/incorrect quenching
 - faults not subject to action by die corrector
 - poor quality billet
 - mechanical/electrical fault with extruder
- types of extrusion faults and their relationship to die correction techniques and die correction limitations, including:
 - shape distortion:
 - during extrusion
 - on exit from die
 - loss during quenching
 - length overruns
 - section collapse
 - surface faults including:
 - breakdown
 - pickup
 - tearing
 - streaking
- die lines.

Assessment Conditions

- Assessors must:
 - have vocational competency in identifying causes of faulty aluminium extrusions at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must 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

- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- 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.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>