



Australian Government

Assessment Requirements for UEEHA0024 Inspect, maintain and fit plugs/couplers for reeling, trailing and flexible cables - coal mining

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Modification History

Release 1. This is the first release of this unit of competency in the Electrotechnology Training Package.

Performance Evidence

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

- preparing to inspect and fit plugs/couplers including:
 - reviewing safe work methods
 - receiving and understanding work instructions
 - identifying plugs/couplers by marking and explosion-protection certification documentation
 - obtaining tools and equipment needed and checking them for correct operation and safety
- inspecting the condition of plugs/couplers including:
 - obtaining and applying safe work methods
 - dismantling plugs/couplers and identifying and noting any damage to housings, pins and sockets and/or defects to any explosion-protection parts/components
 - documenting plug/coupler damage defects in accordance with quality assurance procedures
 - obtaining compliant replacement parts
 - making arrangements for maintenance by replacement only of defective explosion-protective enclosures/housings in accordance with quality assurance procedures
- fits and connects plugs /couplers including:
 - applying safe work methods
 - checking that replacement parts are authorized and compliant
 - preparing and terminating cables maintaining correct termination length, sheath protrusion and clamping
 - preparing and terminating cable cores to correct polarity and maintain required creepage and clearances
 - checking cable tails, leads and terminations
 - applying safe work methods for the care and storage of tools and equipment
- updating plug and coupling repair history record and notifying the responsible supervisor on the completion of the work.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- nature of explosion protection in explosive atmosphere areas including:
 - the standard definition of an ‘explosive atmosphere area’
 - conditions in an explosive atmosphere area that will lead to ignition, combustion and propagation of an explosive atmosphere
 - the explosive nature of flammable substances in the form of gas, vapour, dust, fibres, or flyings
 - low and upper explosive limits (LEL/UEL) and flash point of flammable substances encountered in explosive atmosphere areas
 - the toxic nature of gases and vapours and potentially harmful consequences
 - the classifications given to explosive atmosphere areas
 - electrical equipment as a potential source of ignition
 - characteristics of devices/equipment that require authorization to be taken into an explosive atmosphere area
- methods for preventing ignition of an explosive atmosphere from an electrical source including:
 - exclusion method including:
 - dust ignition protection type ‘tD’ or ‘t’
 - pressurization ‘p’
 - encapsulated ‘m’
 - oil-immersed ‘o’
 - powder filling ‘q’
 - explosion containment method – Flameproof ‘d’ enclosure type
 - energy limitation including:
 - intrinsic safety ‘i’
 - protection type ‘n’ (e.g. non-sparking, hermetically sealed, enclosed break)
 - avoidance of ignition source including:
 - increased safety ‘e’
 - protection type ‘n’
 - dilution—ventilation
- equipment and circuits protected by the flameproof (Ex ‘d’) enclosure type including:
 - how a flameproof-type enclosure works to provide explosion protection
 - features of flameproof enclosures and their function including:
 - enclosure materials
 - flamepaths
 - fasteners
 - gaskets

- enclosure entries
- breathing and drain devices
- attributes of flameproof enclosures including:
 - integrity under pressure
 - suitability for power switching equipment
 - situations where this type can be used
- aspects that are vulnerable to voiding the protection due to defective installation or poor maintenance including:
 - installed location
 - cable/conduit entries
 - flamepaths
 - gaskets
 - fasteners
 - pressure piling
- equipment and circuits protected by the increased safety (Ex ‘e’) method including:
 - how increased safety ‘e’ type works to provide explosion protection
 - features of increased safety and their function including:
 - electrical connections
 - length of conductors within an enclosure
 - clearances between bare conductive parts
 - enclosure entries
 - IP rating of enclosures
 - temperature limitation
 - certified components
 - attributes of increased safety including:
 - absence of sparking contacts
 - situations where this type can be used
 - aspects that are vulnerable to voiding the protection due to poor installation or maintenance including:
 - installed location
 - electrical connections
 - clearances
 - preservation of temperature limitations
 - components
- the purpose and characteristics of the design features of equipment and circuits protected by the intrinsic safety (Ex ‘i’) technique including:
 - how intrinsic safety type works to provide explosion protection
 - features of intrinsic safety and their function including:
 - associated equipment
 - dependant components

- infallible components, assemblies and connections
- external wiring
- safety barrier
- attributes of intrinsic safety including:
 - levels of protection
 - ignition energy limiting
 - entity versus integrated system concept
 - situations where this type can be used
- aspects that are vulnerable to voiding the protection due to poor installation or maintenance including:
 - installed location
 - external wiring
 - methods of earthing/bonding
- the purpose and characteristics of the design features of equipment protected from dust ignition by enclosure ‘t’ covering the following:
 - how dust ignition by enclosure type works to provide explosion protection
 - features of dust ignition by enclosure ‘t’ and their function including:
 - level of protection
 - protective devices
 - gaskets
 - cable/conduit entries
 - situations where this type can be used
 - type protection ‘pD’ in legacy systems
 - aspects that are vulnerable to voiding the protection due to poor installation or maintenance including:
 - cable/conduit entries
 - sealing
 - dust layer accumulation
- the common characteristics of explosion-protection types including:
 - criteria on which equipment protection levels (EPLs) are assigned
 - the purposes of ‘temperature classification’ and ‘equipment grouping’
 - equipment markings (nameplate)
 - limitations of non-metallic or specific alloy enclosures
 - the purpose and use of conformity and certification/approval for equipment used in explosive atmospheres
 - environmental conditions that may impact on explosion-protection techniques
 - the principles and applications of other and mixed explosion- protection techniques
- Standards to which explosion-protected equipment is required to comply including:
 - Standards to which the protective features of each type of explosion protection are required to comply

- typical content of equipment (Ex) certificates including:
 - explosion-protection parameters
 - electrical parameters
 - instruction and limitation of use
- verification dossiers including:
 - purpose
 - content
- ex certification schemes to accepted standards including:
 - purpose and scope of certification schemes
 - accepted certification schemes
 - processes for having equipment certified under the acceptable Ex schemes including:
 - scheme procedures
 - quality management requirements
 - conformance testing and assessment
 - requirements for on-going certification
- features of plugs and couplers including:
 - explosion-protection types
 - pin configuration
 - keying systems
 - IP ratings
- inspection process and techniques including:
 - parts of plugs and couplers that are required to be inspected
 - inspection procedures
 - condition of each part effecting fitness for service
- fitting processes and techniques including:
 - factors affecting the correct fitting of plugs and couplers
 - cable preparation requirements and techniques
 - conductor termination methods.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

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.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate tools and testing devices and PPE currently used in industry
- safe work method documentation
- resources relevant to the cable repairs undertaken and required to be a recognised cable repair workshop to the scope of AS/NZS 1747 with ISO 9001 type quality assurance.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>