



Australian Government

PUAFIR202 Use Class A foam in wildfire operations and non-structural applications

Release: 1

PUAFIR202 Use Class A foam in wildfire operations and non-structural applications

Modification History

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Application

This unit of competency involves the skills and knowledge required to use Class A foam to extinguish Class A carbonaceous solid fires in wildfire operations, secure against ignition or extinguish Class B shallow hydrocarbon fuel spills and to operate and maintain foam equipment required for its production.

Class A foam is a liquid foam solution used mostly to extinguish fires in ordinary combustible solids such as wood, fabric, paper or organic material. The foam blanket adheres to fuels and gradually releases the water in the foam to wet fuels for a longer period than water alone.

Class B shallow hydrocarbon fuel spills includes incidents such as at road crashes where fuel tanks may have been ruptured or begun leaking, service station fuel pump area spills or machinery refuelling trailers have occurred.

The unit applies to personnel on the fire ground responsible for preparing, handling and applying Class A foam during wildfire and non-structural firefighting operations.

The fire sector is those sections of government departments, statutory authorities or organisations that have responsibility under jurisdictional arrangements for the delivery of firefighting and fire management services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

It is essential that the prerequisite units listed below are obtained prior to the issuance of this unit to individuals within the fire sector or the units contributing to the attainment of a fire qualification.

PUAFIR204 Respond to wildfire

Competency Field

Fire

Unit Sector

Fire

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare Class A foam for use

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Type of foam for application in a wildfire or on non-structural object is selected depending on the required effect of foam on components of the fire triangle and fuel
- 1.2** Decision to apply Class A foam to Class A fuels at wildfire or non-structural incident is received from Incident Controller
- 1.3** Foam proportioning or induction rate is selected, in accordance with manufacturers' recommendations, organisational procedures and guidelines, to produce the solution strength required to achieve operational objectives with the decision communicated to the crew preparing the foam
- 1.4** Foam expansion or aspiration ratio is confirmed, based on fuel type, operational requirements and need to achieve maximum operational benefit
- 1.5** Class A foam concentrate and equipment is prepared for use, in accordance with organisational procedures and safe work practices with consideration of potential environmental impact and required precautions to be complied with
- 1.6** Correct personal protective clothing and equipment required for working with Class A foam is donned for handling concentrate and solution

2 Operate Class A foam system and equipment

- 2.1** Type of Class A foam system is confirmed through chain of command
- 2.2** Predetermined amount of foam concentrate is added to water flow using appropriate equipment, as directed
- 2.3** Foam system available is operated using predetermined

proportioning or induction method

- 2.4** Where system is manually regulated, proportioning percentage rate and flow is monitored and achievement of operational objectives is confirmed

3 Apply Class A foam

- 3.1** Foam system and equipment is operated to produce required solution strength suitable for its intended application as non-aspirated or aspirated foam and for the type of fuel to which it is to be applied
- 3.2** Class A foam is applied as a direct attack to extinguish the edge of the fire using non-aspirated or low expansion foam nozzles
- 3.3** Class A foam is used to wet fuels to construct a control line adjacent to the fire edge, using required foam proportion rate to contribute to fuel reduction burning, burning out and back burning
- 3.4** Foam is applied to conduct mop up/blacking out operations by regulating flow to suit application type and rate
- 3.5** Class A foam is applied to non-structural objects, in accordance with organisational operating procedures for these types of fires
- 3.6** Direct and indirect application of Class A foam is demonstrated, in accordance with organisational operating procedures
- 3.7** Environmental contamination from application of Class A foam is considered and preventative measures are implemented

4 Store and handle Class A foam and prevent damage to equipment and the environment

- 4.1** Class A foam is stored on tankers and appliances in designated storage drums, racks or tanks, in accordance with Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements
- 4.2** Storage arrangements in workplace and other locations for Class A drum stocks of foam concentrate are implemented and adhered to, in accordance with Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements
- 4.3** Measures to control foam leaks or spills are followed, in accordance with organisational procedures

- 4.4** Class A foam tanks are refilled using personal protective clothing and equipment and approved foam concentrate transfer equipment, in accordance with organisational procedures and environmental requirements
- 4.5** Cleaning and safe disposal of any foam spills is undertaken, in accordance with relevant Safety Data Sheets (SDS)
- 4.6** Foam compatibility is considered when using Class A foam solutions from different vehicles on the same fire particularly when mixing one manufacturer's brand of Class A foam with another's
- 4.7** Environmental regulations, as specified in organisational procedures, are adhered to when using foam and cleaning spills or foam equipment
- 4.8** Procedures for foam storage, mixing and filling sites are implemented, in accordance with organisational procedures and industry guidelines
- 4.9** Practices that do not contaminate water bodies, storm water drains or agricultural areas are implemented and adhered to when cleaning equipment at an incident or other location where Class A foam is used

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

non-structural objects must include two or more of the following

- coal fires
- hydrocarbon fuels
- machinery fire dozers and graders
- motor vehicles
- small and shallow hydrocarbon fuel spills
- tyre dumps

measures to control leaks or spills must include

- exercising care to avoid spills at mixing and

loading areas

Unit Mapping Information

This unit replaces and is equivalent to PUAFIR214 Use Class A foam in wildfire operations and non-structural applications.

Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

Assessment Requirements for PUAFIR202 Use Class A foam in wildfire operations and non-structural applications

Modification History

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least one occasion and includes

- applying Class A foam including direct and indirect application
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements
- constructing control lines, mopping up and completing blacking out operations
- constructing a control line including using a natural or constructed barrier or treated fire edge to limit spread of fire
- containing and disposing of, where practicable, fire water runoff containing Class A foam or wetting agent prior to its use
- directing attacks must include constructing a control line immediately adjacent to fire edge
- extinguishing fire's edge using water, foam and earth or by beating out flames
- handling concentrate using nitrile or neoprene handling gloves, P2 nuisance level organic vapour respirator (non-cartridge type) and in addition when handling solution using barrier cream for hands and leather gloves
- implementing asset protection
- implementing safe work practices when using Class A foam including avoiding the use of foam 50 metres from waterways
- implementing safe work practices when preparing, selecting, operating, cleaning up, storing and handling Class A foam
- implementing environmental precautions when working with Class A foams
- instigating environmental precautions when working with Class A foam
- minimising the use of foam and wetting agents
- mopping up and blacking out operations including making a fire safe after it has been controlled by extinguishing or removing burning material along or near the control line including felling stags and trenching logs to prevent rolling and the like, coal conveyor belts, power station cable ducts, ship holds, underground mining and vehicles
- notifying and seeking advice from environmental protection authorities
 - if there is substantial or significantly polluted fire water runoff or where Class A foam or wetting agent enters a waterway
 - where Class A foam or wetting agent enters a domestic water storage, flushing the water

storage before reuse

- where possible, using alternatives to foam and wetting agents to suppress fires where there is a risk of contaminating waterways
- operating Class A foam system and equipment
- preparing Class A foam for use and applying on a range of fuels using nominated proportioning or induction rates to maximise operational benefits
- refilling Class A foam containers
- selecting foam proportioning rate and foam expansion or aspiration ratio for fuel to be treated
- selecting and operating branch nozzle to apply foam
- storing and handling Class A foam including implementing procedures for operating and flushing Class A foam system and minimising risk of equipment and/or environmental contamination
- using personal protective clothing and equipment required for working with Class A foam in all situations as per manufacturers' specifications including rubber or leather boots, safety goggles, wildfire or structural helmet, wildfire overalls or structural firefighter clothing for specialist use applications

Knowledge Evidence

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

- application of Class A foam
- aspirated and non-aspirated foam
- characteristics and limitations of equipment including cleaning and maintenance
- Class A foam system types and their operating components
- classes of fires
- Class A foams including concentrate storage and handling, expansion or aspiration of, expansion ratio, proportioning or induction rates, storage, mixing and filling sites and types and their use for wildfire application
- Class A foam including combinations of synthetic detergent surfactants that reduce the surface tension of water and foaming agents and corrosion inhibitors that reduce corrosion of metals and preservative to prolong shelf life
- Class A fuels such as flammable solids including forest flammable and grassland fuels, wood, paper, plastics and rubber
- Class A foam systems including low and high energy
- direct and indirect application of low expansion foam
- effects of Class A foam on fire triangle
- environmental impacts of Class A foams and precautions
- foam proportioning or induction rates including production of foam with properties within effective range and use of foam chemicals at safe concentrations
- foam expansion or aspiration ratio including low and high expansion foam, medium expansion foam and non-aspirated foam

- intended application of non-aspirated foam including cools, isolates and penetrates
- intended application of aspirated foam including insulates and smothers
- maximum operational benefits including application visible from ground and air, easily proportioned, effective use of Class A fuel, extension of useful life of water, increase in effectiveness of water, reduction in suppression and mop up time, short term fire barriers and simple application
- measures for the control of leaks or spills and exercising care to avoid spills at mixing and loading areas
- non-structural applications
- organisational documentation, policies and procedures
- personal protective clothing and equipment
- properties and benefits of Class A foam
- safe work practices including
 - avoiding contamination from exposure
 - being alert to concentrate and solution as it contributes to creating slippery conditions on vehicle decks and on the ground
 - being alert to the presence of trip hazards
 - holes and hot ash beds that can be concealed beneath the foam blanket and
 - potential environmental impact of using Class A foam
- storage arrangements in workplaces including storage of foam to minimise risk of foam entering drains and location of foam mixing and loading areas away from waterways
- types for non-structural applications and reason for restricting use of Class A foam on structures
- use of Class A foam on Class B hydrocarbon fuels including flammable liquids such as petrol, diesel and fuel oils and their impact
- Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) organisational requirements including safe work practices, risk mitigation and use of Safety Data Sheets (SDSs)

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

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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.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in industry approved simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, equipment, tools and personal protective clothing and equipment currently used in industry including
 - conducting foam training at a location away from waterways, storm water drains or agricultural areas
 - pumper or tanker fitted with a Class A foam system and associated equipment
 - training site where activity can be undertaken with minimum impact to the environment
- applicable documentation including organisational procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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