



ACT Rural Fire Service
Standard Operating Procedure 3.15
Foam, Retardant and Gels

3.15
Operational
Management

Purpose

This SOP covers the procedures required for the safe and effective use of Foam, Retardant and Gels agents in fire operations.

Operating Procedure.

The ACTRFS uses a number of chemicals agents to aid in the suppression of fire, these agents can be broadly categorised as follows;

- **Surfactants** include wetting agents and foaming agents. Wetting agents increase the effectiveness of water as an extinguishing agent by reducing its surface tension, thus increasing its penetration of fuels. Foaming agents are applied either to extinguish fire or as foam blankets to form a control line.

Surfactants can be harmful to aquatic animals, e.g. frogs and fish; however the environmental effects of the repeated use of surfactant are still largely unknown.

- **Retardants** decrease the flammability of fuels by inhibiting the chemical reaction of fire preventing it from burning. They are composed of either ammonium phosphate or ammonium sulphate. They are useful in limiting the spread of low intensity sections of a fire. They are applied aerially by agricultural aircraft and by helicopter water buckets.

The use of retardants can increase soil nutrient levels, which may have impacts on the native plant community and encourage weed invasion. The use of retardants in reserves should therefore meet conditions to minimise impacts on native vegetation communities.

- **Gels** adhere to surfaces to absorb heat and form a protective layer that prevents objects from heating, charring and catching alight. When added to water these products absorb many times their own weight to reduce drift and evaporation.

The uses of these agents in fire suppression shall be selectively based upon:

- the fire threat to life and property
- the estimated effectiveness in assisting the planned fire suppression operation
- the potential impacts on biodiversity, water quality and other ecosystem processes, and
- Safety considerations.

Special consideration needs to be given when using these agents in sensitive ecological areas; all water catchments, endangered flora/fauna habitat and areas of high potential



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weed infestation (see map of these areas is contained within the Parks Conservation Service Bushfire pre-suppression atlas). As a general rule their storage, mixing and use should be avoided within 100m of waterways.

When making a determination about the use of these agents the Incident Controller should consider their effectiveness in stopping the fire, the potential of the fire if they are not used and the potential damage which may occur to the ecological/water quality value area if they are used. If the use of these agents is deemed a necessary strategy, their application should be undertaken to minimise the impact of their use as far as practical, e.g. avoiding application on steep slopes and areas of impermeable soils.

If any of these agents are used in areas of high ecological/water quality value then the RFS Duty Officer (RFSDO) or Incident Management Team (IMT) is to be notified. The RFSDO or IMT will then notify the relevant environmental agency, ACTEW and/or Land Manager.

Approved Foams, Retardants and Gels

Appendix A contains the list of foams, retardants and gels that are approved for use by the ACTRFS.

Maintained By: Manager, Operations

Approved By: Andrew Stark

Position: Chief Officer RFS

Signature:

A handwritten signature in black ink, appearing to be 'AS', written over a light grey background.

Date:

11/12/13

Cross Reference SOP/s:

Amendments:



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Appendix A

This list (current as of October 2011) contains agents that are certified by the US Forestry Service as meeting USDA Forest Service Specification 5100-307A, are on their Qualified Products List and are sold within Australia. Any product on the US Forestry Service Qualified Products List which meets USDA Forest Service Specification 5100-307A may be used by the ACTRFS in accordance with its specification. The below products are evaluated and qualified only at the specified mix ratio and only for use with the indicated application.

Foams

Chemical	Mix Ratio	Qualified Applications				
		Fixed-wing Air tanker Multi Engine	Fixed-wing Air tanker Single Engine	Helicopter		Ground Tanker
				Fixed- tank	Bucket	
Angus Hi-Combat A	0.1-1.0%	X	X		X	X
Angus ForExpan S	0.1-1.0%		X		X	X
1% Bushmaster "A" Class Foam	0.1-1.0%	X	X		X	X
Chemguard First Class	0.1-1.0%		X	X	X	X
First Response	0.1-1.0%	X	X	X	X	X
National Foam Knock Down	0.1-1.0%	X	X		X	X
Phos-Chek WD 881	0.1-1.0%	X	X	X	X	X
Phos-Chek WD 881-C	0.1-1.0%	X	X	X	X	X
Solberg Fire-Brake 3150A	0.1-1.0%	X	X		X	X
Tyco Silv-Ex	0.1-1.0%	X	X		X	X
Tyco Silv-Ex Plus Class A	0.1-1.0%	X	X	X	X	X

Retardants

Chemical	Mix Ratio	Qualified Applications				
		Fixed-wing Air tanker Multi Engine	Fixed-wing Air tanker Single Engine	Helicopter		Ground Tanker
				Fixed- tank	Bucket	
Dry Concentrate – Gum Thickened; permanent or temporary Base						
Phos-Chek D75-R	0.144 kg/litre	X	X		X	
Phos-Chek D75-F	0.144 kg/litre	X	X		X	
Phos-Chek D100-F	0.12 kg/litre	X	X		X	X
Dry Concentrate – Gum Thickened; temporary Base						
Phos-Chek 259-F	0.137 – 0.192 kg/litre	X	X	X	X	X



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Phos-Chek G75-F	0.134 kg/litre	X	X		X	X
Phos-Chek G75-W	0.134 kg/litre				X	X
Wet Concentrate – Gum Thickened; permanent or temporary Base						
Phos-Chek LC-95A-R	5.5:1	X	X		X	X
Wet Concentrate – Gum Thickened; temporary Base						
Phos-Chek LC-95W	5.5:1	X	X		X	X

Gels

Chemical	Mix Ratio	Qualified Applications				
		Fixed-wing Air tanker Multi Engine	Fixed-wing Air tanker Single Engine	Helicopter		Ground Tanker
				Fixed- tank	Bucket	
Uncoloured						
Barricade II	1.0%	X	X		X	X
Barricade II	1.0% - 3.0%				X	X
BioCentral Blazetamer 380	0.65%	X	X	X	X	X
GelTech Firelce	14.4 - 21.6 G/L	X	X		X	X
Phos-Chek AquaGel-K	0.4% - 1.2%		X			
Phos-Chek Insul-8	0.37%	X	X	X	X	X
Phos-Chek Insul-8	0.37% - 1.0%	X	X		X	X
Phos-Chek Insul-8	0.37% - 3.0%				X	X
Thermo-Gel 200L	0.5% - 3.0%	X	X		X	X
Thermo-Gel 500P	0.4% - 0.5%	X	X	X	X	X
Thermo-Gel 500P	0.4% - 1.2%	X	X		X	X
Wildfire AFG Firewall II	0.25% - 3.0%	X	X	X	X	X
Coloured						
Thermo-Gel 200L AV-B1 (blue)	0.5% – 3.0%	X	X		X	X