



# Certificate of Conformity

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## Product designation

**Ansul®, LVS™ wet chemical, Non-Fluorinated Liquid Suppression Agent (NFLSA), pre-engineered, vehicular fire suppression system**

(Refer to the Schedule/enclosures for further specified details)

## Agent/distributor

Tyco Fire Protection Products  
Level 3, 95 Coventry Street, SOUTHBANK, VIC, AUSTRALIA, 3006

## Registrant

Tyco Fire Protection Products  
451 North Cannon Avenue, LANSDALE, PA, UNITED STATES, 19446-2256

### Producer

Tyco Fire Protection Products  
One Stanton Street, MARINETTE, WI, UNITED STATES, 54143

## Conformance criteria and evaluation

The Ansul®, LVS™ wet chemical, Non-Fluorinated Liquid Suppression Agent (NFLSA), pre-engineered, vehicular fire suppression system has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. Australian Standard AS 5062:2016, 'Fire protection for mobile and transportable equipment'.
2. Approval Standard FM Class Number 5970, 'Approval Standard for Off-Road Vehicle Protection Systems'.
3. Factory Mutual - Evaluation and approval, 'FM approval'.

## Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

Specified limitations/conditions, determined from the evaluation for conformity, include the following.

- i. Temperature range of operation -30°C to 60°C.

(Limitations/conditions of conformance continue)

This certification is issued within the scope of CSIRO Verification Services – Rules governing ActivFire Scheme and is valid only for the product(s) as submitted for evaluation and verification of conformity, subject to the following conditions.

- Reference to details, limitations and requirements, where documented as a schedule/enclosure with this certificate.
- The Registrant is responsible for their attestation of conformity and ensuring that on-going production complies with the conformance criteria defined in this certificate.
- This certificate will not be valid if any changes or modifications are made to the product which have not been notified and validated by CSIRO Verification Services.
- This certificate is subject to periodical re-validation upon verification that all requirements, as determined by the conformity assessment body, continue to be satisfactorily met by the Registrant.
- This certificate may only be reproduced in its published form, without modification and inclusive of all schedules/enclosures.
- Any changes, errors or omissions, must be submitted in writing and if necessary or requested, substantiated with relevant evidence.
- Any representations, such as advertising or other marketing related activities or articles shall reflect the correct contents of this certificate and conform with all relevant trade practices and consumer protection legislation and regulations.
- Any terms or conditions of use as applicable to content and documentation as published or accessed through web sites administered by the CSIRO Verification Services.

Issued by

David Whittaker  
Executive Officer – ActivFire Scheme



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- ii. NFLSA systems are installed, operated, and maintained, in accordance with the system's "LVS™ liquid agent system Installation, Recharge, Inspection, and Maintenance Manual," Ansul part num. 427109 and Bulletin No. 2019106 (noting limitation/condition above).
- iii. Liquid NFLSA is discharged through a maximum of 6 nozzles (3 USgal / 11.36 l), 4 nozzles (5 USgal / 18.93 l), 8 nozzles (10 USgal / 37.85 l), 12 nozzles (15 USgal / 56.78 l), or 24 nozzles (30 USgal / 113.56 l), respectively, and the related hose length, elbow and manifold limitations described in Bulletin No. 2019106.

## Producer's description

The Ansul®, LVS™ wet chemical, Non-Fluorinated Liquid Suppression Agent (NFLSA), pre-engineered, vehicular fire suppression system utilized as a stand-alone system, which can be used for the protection of on-road vehicles such as public transportation, waste management, over-the-road trucking and cargo transport.

The system is also well suited for, off-road type vehicles such as landfill equipment, forestry vehicles, construction equipment, various above ground and sub-surface mining equipment, as well as specialty vehicles (e.g. slag, pot carriers, iron/steel slab carriers and tunnel boring machines).

The Ansul®, LVS™ wet chemical, Non-Fluorinated Liquid Suppression Agent (NFLSA), pre-engineered, vehicular fire suppression system suppresses fires and helps to secure hazard areas by various means:

1. The LVS system agent formulation, sprayed into fire hazard areas, interrupts the chemical reaction that supports combustion.
2. Because the agent formulation is liquid, it can flow into areas that flammable liquids can settle in.
3. The water content of the solution cools the fuel and the surrounding super-heated surface areas, minimizing the chance for fire re-ignition.
4. The LVS system agent formulation, forms a film over flammable fuels, which also minimizes reflash potential.

The agent storage tanks are not pressurised until the system is actuated, Once the agent tank is filled with LVS wet chemical, securely hand tighten the fill cap and make certain the tank is securely mounted in place. Systems may be multiple-tank arrangements, but each agent tank must be connected to its own expellant cartridge/release valve assembly and agent distribution system. Each agent tank of a multiple-tank system is therefore installed, with its associated pre-engineered pipework (hoses) and nozzles, as a discrete fire-suppression "module", but all agent tanks in the system are discharged simultaneously by actuating their expellant cartridges from a shared pneumatic actuator.

## Twin-agent system

The fire suppression system can also be used as a dry chemical/liquid agent twin agent system for the protection of large, off road type vehicle and non-vehicle construction and mining equipment (e.g. large excavators/shovels draglines, etc.), underground mining equipment and specialty vehicles (e.g. slag, pot, tunnel boring machines etc.).

When Ansul®, LVS™ wet chemical, Non-Fluorinated Liquid Suppression Agent (NFLSA), pre-engineered, vehicular fire suppression system is used in a twin agent system, the dry chemical portion of the system is primarily responsible for quick fire knock-down and suppression. Although the Ansul®, LVS™ wet chemical, Non-Fluorinated Liquid Suppression Agent (NFLSA), pre-engineered, vehicular fire suppression system has similar fire suppression capabilities the LVS wet chemical solution utilized in a twin agent concept, is primarily intended for cooling.

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## Technical specification

The following details are a representative extract of the technical specification for the Ansul®, LVS™ wet chemical, Non-Fluorinated Liquid Suppression Agent (NFLSA), pre-engineered, vehicular fire suppression system and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.

### Schedule of components and/or assemblies

The following is a schedule of primary validated components and/or assemblies of the certified/listed equipment.

Description	Part num.
LVS-3 Tank Shipping Assembly	441777
LVS-5 Tank Shipping Assembly	435876
LVS-10 Tank Shipping Assembly	439361
LVS-15 Tank Shipping Assembly	438775
LVS-30 Tank Shipping Assembly	438821
Tank Assembly, Charged, LT-A-101 Model 125 ( 50.8kg model)	427745
Tank Assembly, Charged, LT-A-101 Model 250 (113.4 kg model)	427746
Tank Bracket, LT-A-101-50 tank	433685
Mounting Ring for LVS-15	428404
Mounting Ring for LVS-30	428405
LVS Non-fluorinated Liquid Suppression Agent (NFLSA)	449693
Cartridge, Expellant Gas, LT-A-101-30 systems	423491
Cartridge, Expellant Gas, LT-A-101-50 systems	423491
LT-A-101-30 Includes: Cartridge, Cartridge Bracket and Pneumatic Actuator for LT-A-101-30 Unit	24883
23 Cu. Ft. Nitrogen Cartridge	428060
55 Cu. Ft. Nitrogen Cartridge	428061
LT-A-101-30 Cartridge Bracket	29193
LT-A-101-30 Cartridge	423491
Electric Pneumatic Actuator	439569
1/4" Check Valve	25627
Safety Relief Valve	15677
½ x ½ x ¾ NPT Reducing Tee	4655
½ x ½ x ¾ NPT Reducing Tee Two Pack	53040
Distribution Manifold Block with four Female ½"	438835
Distribution Manifold Block with two Female ½"	438834
Nozzle with Blow-off Cap	433294
Shipping Assembly	433325
L-shaped Bracket Assembly	427149
Straight Bracket	427228
Sealed Burst Disc Assembly	428271
Sealed Burst Disc Assembly Replacement	428363
Blow-off Cap Shipping Assembly	434403
9.5 Nozzle (1/2 in. NPT), Package of 4	439049
9.5W Nozzle (1/2 in. NPT), w/ Nozzle Cap	448517
Blow-off Caps (50)	449287
Pressure Switch Assembly	437409
Pressure Switch	437266
Pressure Switch Connector Kit	437412
Ansul Engine Shutdown Device	427425
Air Cylinder	15733
LVS-30 Tank 55 ft³ (1.6 m³) Nitrogen Cartridge with Pneumatic Actuator Expellant Gas Hose (2) 1/4" Street Elbows	438839
LVS-15 Tank 23 ft³ (0.7 m³) Nitrogen Cartridge with Pneumatic Actuator Expellant Gas Hose (2) 1/4" Street Elbows	438838
Cartridge Scale and Hook Assembly (LT-A-101-30)	75382
Cartridge Scale and Hook Assembly	3923
Lead Wire Seal	197
LT-10-R Cartridge (DOT)	13193
LT-10-R Cartridge (TC/DOT)	423423
LT-10-L Cartridge (DOT)	13177
LT-10-L Cartridge (TC/DOT)	423425
Fill Cap Spanner Wrench (LVS-5)	16511
Fill Cap Gasket	3461
Nozzle Bracket Package Includes: 12 Brackets, 2" x 2" Angle	73871
Nozzle Bracket, 2" x 3" Angle	427149
Nozzle Bracket, Straight 5" x 2", 4 Brackets	427228

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Description	Part num.
Nozzle Lockwasher Package: Includes 50 Lockwashers, Part. No. 25581	73872
Remote Manual Actuator Package includes: LT-10-L Cartridge, "S" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	70584
Remote Manual Actuator Package includes: LT-10-L Cartridge, "L" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	71699
Remote Manual Actuator Package includes: LT-10-R Cartridge, "S" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	57484
Remote Manual Actuator Package includes: LT-10-R Cartridge, "L" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	71804
Remote Manual Actuator for LT-10-L Cartridge only	70581
Manual Actuator, Standard Type, for RH cartridges	57452
Manual Actuator Bracket, 'S' Type	57661
Manual Actuator Bracket, 'L' Type	70580
Operating Instruction Label for Manual Actuator Includes: Nameplate "In Case of Fire 1. Shut off Engine 2. Pull Ring Pin 3. Push Lever"	16033
Operating Instruction Label for Manual Actuator Includes: Nameplate "In Case of Fire 1. Shut off Engine 2. Pull Ring Pin 3. Strike Button"	16459
Checkfire 210 Electric Detection and Actuation System per Planning Installation, Operation, and Maintenance Manual	440392
Safety Vent Relief Valve	15677
Safety Vent Relief Valve Package Includes: 2 Safety Vent Relief Valves	53050
¼" Check Valve (Package of 2)	53051
Engine Shutdown Device	427425
System Blow Down Kit	427560
LVS Manual, Installation, Operation, design, Maintenance and Recharge	427109 (Rev. 9)
LVS Owner Manual	53081
ANSUL Bulletin No. 2019106 (July 2019)	-

## Supplementary information

### Schedule of relevant articles

The following schedule is an extract of articles significant and/or related as evidence of conformity.

Reference		Title / description	Date issued (or date validated)	Source
Ident. type	Ident.			
Report:	XF3308/R2	Evaluation for Conformity of the ANSUL, Non-fluorinated Liquid Suppression Agent (NFLSA), wet-chemical, pre-engineered, vehicular fire suppression system to the requirements of AS 5062:2016	1-Aug-2019	CSIRO, Fire Systems Laboratory, AU
Project No.	PR452726	FM Approvals Approval Report Project No: PR452726 Class: 5970 Product Name: Approval Modification – Non-Fluorinated LVS Fire Extinguishing Agent Product Type: Off-Road Vehicle Protection Systems	9-Jul-2019	FM Approvals, US
Correspondence	July 18, 2019	Subject: Non-Fluorinated Liquid Suppression Agent	18-Jul-2019	
Bulletin No.	2019106	ANSUL® Bulletin To: Authorized ANSUL® Australian Vehicle System Distributors From: Product Management, Vehicle systems Introducing the new ANSUL® LVS Non-Fluorinated Liquid Suppression Agent	1-Jul-2019	Johnson Controls, WI, US
Part num.	427109 (Rev. 9)	LVS™ Liquid Agent System Installation, Recharge, Inspection, and Maintenance Manual	30-Jan-2015	Tyco Fire Protection Products, WI, US
Product code	449693 Version 2	Ansul® Safety Data Sheet	13-Mar-2019	
Report num.	MF0018/R1	Technical verification – ANSUL LVS™ Wet-chemical, Pre-engineered liquid agent fire suppression system	23-Feb-2012	CSIRO, Materials Science and Engineering, AU

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Reference		Title / description	Date issued (or date validated)	Source
Ident. type	Ident.			
Project Class	3038729 5970	Approval Report, LVS™ Liquid Agent Vehicle Fire Extinguishing Systems	29-Aug-2011	FM Approvals, US
Project Class	3046217 5320	Approval modification – Model LVS-10 liquid agent fire extinguishing system for heavy duty mobile equipment	5-Dec-2012	FM Approvals, US
Approval Identification	0003038729	Certificate of compliance, LVS™ Liquid Agent Vehicle Fire Extinguishing System	29-Aug-2011	FM Approvals, US
Project Class	3051373 5320	Approval examination of CHECKFIRE 210 Electric Detection and Actuation System for use in off-road vehicle protection systems	14-Apr-2014	FM Approvals, US
Data Sheet	F-2014011	CHECKFIRE 210 Detection and Actuation System	7-May-2014	Tyco Fire Protection Products, WI, US
Project Class	3053848 5320	Approval Modification – Model LVS-3 Liquid Agent Fire Extinguishing System for Heavy Duty Mobile Equipment	19-Mar-2015	FM Approvals, US