



Certificate of Conformity

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Product designation

Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system

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

Agent/distributor

Tyco Fire Protection Products
567 Somerville Road, SUNSHINE, VIC, AUSTRALIA, 3020

Registrant

Ansul Incorporated
One Stanton Street, MARINETTE, WI, UNITED STATES, 54143-2542

Producer

Ansul Incorporated
One Stanton Street, MARINETTE, WI, UNITED STATES, 54143-2542

Conformance criteria and evaluation

The Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. Australian Standard AS 4214-2002, 'Gaseous fire extinguishing systems'.
2. SSL Appraisal Specification FAS-102, Version 3.1, 'Gaseous Extinguishing Systems'.

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. The components of Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system are designed to operate in the temperature range - 20°C to 50°C.
- ii. INERGEN® storage containers designed to hold INERGEN® in gaseous form at a nominal pressure of 300 Bar at 15°C.
- iii. Enclosure venting shall be provided and designed to ensure that, when the system is discharged, the pressure within the enclosure can not become harmful to the enclosure or its occupants.

(Limitations/conditions of conformance continue)

Issued by

David Whittaker
Executive Officer – ActivFire Scheme



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Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing systems installed in Australia and New Zealand are subject to the following additional requirements:

- i. Installation and service of Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system shall be carried out by technicians/staff accredited by TYCO Technical Services in the handling of pressurised containers and the system installation and service manuals
- ii. Design of Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system shall be carried out by staff accredited by TYCO Technical Services using the TYCO Safety Products, INERGEN® 300 Bar calculation program.
- iii. All Inergen refilled cylinders are to be distributed by only accredited Wormald Branches.
Inergen filling shall be carried out by a licenced gas filler accredited to ISO 9002. Analysis of each batch of filled cylinders shall be performed by a NATA accredited laboratory using a gas chromatograph for two of the three gases. This NATA analysis tag is attached to every filled Inergen cylinder which specifies the laboratory report number, analysis date, cylinder number, volume of gas in the cylinder and quantity and tolerance of each constituent gas.

Producer's description

The Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system is an engineered gaseous total-flooding type fire protection system which extinguishes fire by using patented blend of inert gases to dilute the oxygen content of the air within the risk enclosure. The inert gas blend is marketed by TYCO International as "INERGEN®" (IG-541), and is a mixture of nitrogen, argon and carbon dioxide in appropriate percentages. The three gases: Nitrogen, Argon and Carbon Dioxide are mixed in the following proportions:

Nitrogen	52%
Argon	40%
Carbon Dioxide	8%

As these gases occur naturally in the atmosphere, accidental and deliberate releases of INERGEN® do not contribute to global atmospheric warming or ozone depletion. INERGEN® agent complies with the NFPA Standard 2001, Standard for Clean Agent Fire Extinguishing Systems and EPA Program SNAP. The agent is also listed and approved by Underwriters Laboratories, Inc. (USA) and factory Mutual Research Corporation.

INERGEN® is particular suitable for use in occupiable areas because the recommended extinguishing concentrations result in an atmosphere within the protected enclosure which can be breathed for a prolonged period with no risk to health and little if any discomfort.

The INERGEN® is stored at 300 Bar, the storage cylinder, discharge valves, other control valves, the manifold piping, being stronger than those of the 200 Bar system and otherwise suitable for the higher agent pressure.

INERGEN® systems are designed to extinguish fires involving flammable liquids, gases and class A, B & C hazards, especially electrical equipment. Providing a Class A fire is detected quickly, the INERGEN® is discharged promptly and the concentration is maintained for an adequate period of time to allow embers to cool, then surface fire and the embers associated with the burning of solid materials are quickly extinguished.

Class B & C fires are quickly extinguished by INERGEN® at appropriate concentrations, but in the case of Class C fires the risk of explosion should be carefully considered and where possible the flammable gas flow should be isolated before or as soon as possible after extinguishment.

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Technical specification

The following details are a representative extract of the technical specification for the Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.

The components of the Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system that have been appraised by form part of the listed system include the following:

Description	Part num./order num.
INERGEN™ 80 Ltr. Container Filled 300 Bar	KO 240 435 6
INERGEN™ 80 Ltr. Container label	KO 235 396 0
Pressure Indicator DKE-6	KO 241 098 7
Pressure Monitoring Device KM-4	KO 241 099 6
Accessories for KM-3 and KM-4	KO 241 092 6
Connection Hose DN12 / 300 Bar	KO 247 021 3
Pressure reducer DRE/VS II	KS 241-DRE-VS-II
Manifold	KS 246-ISR
Quick Action Valve CI 12-9	KO 241 029 6
Container Top Label 300 Bar	KO 235 382 0
Container Neck Label 300 Bar	KO 235 386 0
Check Valve RSVI-12 / 300 Bar	KO 241 371 6
8 Ltr. Cylinder Filled 200 Bar	KO 240 401 6
8 Ltr. Cylinder Label	KO 235 398 6
Cylinder Retention Ring	KO 240 140 6
8 Ltr. Cylinder Retention Bar	KO 240 504 6
27 Ltr. Cylinder Filled 200 Bar	KO 240 412 6
27 Ltr. Cylinder Label	KO 235 398 6
Cylinder Retention Ring	KO 240 140 6
Connection Hose DN10 / 200 Bar	KO 247 022 6
Actuation Hose 200 Bar – DN 8	KO 247 021 6
Adaptor – DN 8	KO 240 305 6
Fixing Link	KO 240 080 6
INERGEN™ 80 Ltr. Container Filled 200 Bar	KO 240 415 6
INERGEN™ 80 Ltr. Container label	KO 235 398 6
Pressure Indicator DKE-6 (200 Bar)	KO 241 098 6
Pressure Monitoring Device KM-4	KO 241 099 6
Accessories for KM-3 and KM-4	KO 241 092 6
Quick Action Pilot Valve CI 12-6	KO 241 025 6
Terminal Box	KO 246 672 6
Slave Cylinder Branch Tee	KO 029 193 6
Hose DN8	KO 247 021 6
Release Head III	KO 241 381 6
Manual override	KO 240 627 6
Manifold Bracket - Short	KO 240 106 6
½ in. x 180° Nozzle (NPT)	310.208.001
½ in. x 360° Nozzle (NPT)	310.208.002
½ in. x 180° Nozzle (BSP)	310.208.007
½ in. x 360° Nozzle (BSP)	310.208.008
1 in. x 180° Nozzle (NPT)	310.208.003
1 in. x 360° Nozzle (NPT)	310.208.004
1 in. x 180° Nozzle (BSP)	310.208.009
1 in. x 360° Nozzle (BSP)	310.208.010
1 ½ in. x 180° Nozzle (NPT)	310.208.005
1 ½ in. x 360° Nozzle (NPT)	310.208.007
1 ½ in. x 180° Nozzle (BSP)	310.208.011
1 ½ in. x 360° Nozzle (BSP)	310.208.012

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Description	Part num./order num.
½ in. x 360° Nozzle (VdS/DIN)	KS 241 GRD ½ “
½ in. x 360° Nozzle (VdS/DIN)	KS 241 GRD ½ “
1 in. x 360° Nozzle (VdS/DIN)	KS 241 GRD 1 “
Local Application Nozzle - GOD	KO 241 GOD
Fixture Parts	KO 240 109 6
Step Motor Delay Device SMV-1	KO 241 397 6
Programming Interface PSS-1	KO 099 016 0
Electric Actuator SF-2	KO 246 032 6
Pilot Cylinder Tee	KO 029 196 6
Lock Off Unit	KO 246 289 6
Adaptor 18mm x 1.5 to 10 mm	KO 240 305 6
Slave Cylinder Elbow	KO 029 191 6
Manifold Bracket – Long	KO 240 108 6
Retention Bar 560 mm	KO 240 102 6
Grate 560 mm	KO 368 160 6
Retention Bar 840 mm	KO 240 104 6
Grate 840 mm	KO 368 165 6
Test and Relief Unit PRE-1	KO 242 466 6
Filter for Pilot Line DN8-SLF2	KO241 386 6
Switch Over, Main / Standby UER-1	KO 240 136 6
Fixture for Pilot Cylinder (27 Ltr.)	KO 240 506 6
Straight Coupling RA 12	KO 029 141 6
Straight Coupling RA 10	KO 029 122 6
Adjustable T Coupling	KO 029 193 6
Automatic Vent Valve SGV-1	KO 241 233 6
Pilot Gas Release Valve ELV-1	KO 241 231 6
T Coupling for SGV-1 / ELV-1	KO 029 510 6
Pilot Line 10 x 1.5 DIN 2391	KO 403 050 6
Orifice at the Container – DRE-V/S	KS 241-DRE-VS-300
Release Head III	KO 241 381 6
Pneumatic Actuator	KO 241 388 6
Local Manual Actuator	KO 240 6276
Discharge Pressure Switch - Latching	305.205.006
Discharge Pressure Switch – Non-Latching FF4-A22-022	KO 246 299 6
Test Unit for Pressure Switch FF4-A22-022	KO 246 296 6
Pressure Switch - Flameproof	305.205.003
Container Supervisory Pressure Indicator KM-4	KO 241 099 6
Union-joint 50 RL	KO 240 311 6
Union-joint 80 RL	KO 240 315 6
End cap 50 R	KO 240 314 6
End cap 50 L	KO 240 318 6
End cap 80 R	KO 240 319 6
End cap 80 L	KO 240 320 6
Elbow 50 RL	KO 240 307 6
Elbow 80 RL	KO 240 309 6
Tee 50 RRL	KO 240 327 6
Tee 50 x 25 x 50 RRL	KO 240 329 6
Tee 80 RRL	KO 240 321 6
Tee 80 x 50 x 80 RRL	KO 240 323 6
Tee 80 x 25 x 80 RRL	KO 240 325 6
Connecting Pipe 560-50 RL	KO 240 258 6
Connecting Pipe 560-80 RL	KO 240 259 6
Discharge Hose DN12/300 Bar	KO 247 021 3
Check Valve	305.208.001

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Description	Part num./order num.
Automatic Venting valve – GGV-1	KO 241 233 6
Pressure reducing Unit – DRE-3-DN 50	KS 241 DRE3
Retention Plate	KO 240 140 6
Retention Bar	KO 240 102 6
Fixing Link	KO 240 080 6
Free Standing Post	KO 240 142 6
Distribution Valve Assembly	308.208.001
Manual bypass Valve	302.001.008
Curtain Trip	305.200.007
Manual Release Caution Plate	SL 93936
Door Caution Plate (Lock-off)	SL 93481
Door Caution Plate (No Lock-off)	SL 93482
Over Pressurisation vent 300 x 300	302.205.014
Over Pressurisation vent 500 x 500	302.205.015
INERGEN®, 300 Bar, Engineered, Total Flooding, Fire Extinguishing System, Design, Installation, Commissioning, Servicing and Maintenance Manual, January, 2006	14A-09

Piping requirements:

Two types of piping shall be used in the Tyco Safety Products, INERGEN® 300 bar, engineered total flooding fire extinguishing system:

1. High pressure piping, extending from the storage cylinders to the pressure reducing orifice. This shall be suitable for a working pressure of at least 23.0 MPa and shall be Class 2 or 3, Pipe Grade B, in accordance with AS 4041. Minimum thickness of pipe wall shall be in accordance with BS 1600 and ANSI/ASME B36.10M. Welding shall be by Certified Code Welders only. Welded flanges shall be to ANSI/ASME B16.5 Class 900 lb, AS 2129 Table T. Butt-welded fittings shall be to ANSI/ASME B16.9 or BS 1640 Classes 1 and 2 (Standard weight = Schedule 40. Extra strong = Schedule 80). Screwed fittings shall be DN50 maximum, and shall be 3000 lb fittings to BS 3799 or ANSI B16.11.
2. Low pressure piping, extending from the pressure reducing orifice to the nozzles. This shall be suitable for a working pressure of at least 11.5 MPa and shall be Class 2 or 3, Pipe Grade B, in accordance with AS 4041. Minimum thickness of pipe wall shall be in accordance with BS 1600 and ANSI/ASME B36.10M. Welding shall be by Certified Code Welders only. Welded flanges shall be to ANSI/ASME B16.5 Class 600 lb, AS 2129 Table K. Butt welded fittings shall be to ANSI/ASME B16.9 or BS 1640 Classes 1 and 2 (Standard weight = Schedule 40; Extra strong = Schedule 80). Screwed fittings shall be DN50 maximum, and shall be 3000 lb fittings to BS 3799 or ANSI B16.11.