

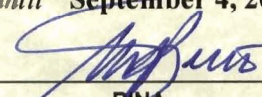
TYPE APPROVAL CERTIFICATE
No. FPE387808CS



This is to certify that the product identified below is in compliance with the regulations herewith specified

<i>Description</i>	FIXED FIRE EXTINGUISHING SYSTEM
<i>Type</i>	NOVEC 1230
<i>Applicant</i>	TYCO SAFETY PRODUCTS BURLINGHAM HOUSE, HEWETT ROAD GREAT YARMOUTH, NORFOLK NR31 0NN
<i>Manufacturer</i>	3M
<i>Place of manufacture</i>	3M CENTER MN 55144 1000 ST PAUL U.S.A.
<i>Reference standards</i>	IMO MSC/Circ. 848
<i>Reference documents</i>	Rules for the Type Approval of Fixed Clean Agent Fire-Extinghishing Systems in Machinery Spaces

Issued in **Genoa** *on* **September 5, 2008. *This Certificate is valid until* **September 4, 2013****



RINA
Marco Benzi

This certificate consists of this page and 1 enclosure



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NOVEC 1230

Product description

Product name: 3M (TM) Novec (TM) 1230 fire Protection Fluid.

Manufacturer: 3M

Division: 3M Speciality Materials

NOAEL: (% volume): 10.0

LOAEL (% volume): >10.0

Reference documents

"NOVEC 1230 total flooding systems - Marine" Issue 1A on March 2002 filed with number FPE 288 and issued by Tyco Safety Products, *"An evaluation of 3M/TEPG total flooding NOVEC 1230 Systems with the IMO gaseous agents test protocol for machinery space applications (MSC/Circ. 848)"* issued by Hughes Associates Inc. filed with n° FPE 289

Tests carried out

Fire tests as required by IMO MSC/Circ. 848, described in report HAI Project # 5087 *"An evaluation of 3M/TEPG total flooding NOVEC 1230 Systems with the IMO gaseous agents test protocol for machinery space applications (MSC/Circ. 848)"* .

Installation requirements

Minimum design concentration (% volume) 5.5

Maximum nozzle height 5 m

Maximum nozzle area of coverage 25 m²

Maximum discharge time: 10 seconds for 95% of the design concentration

Field of application

Gas total flooding fire extinguishing system in machinery spaces and cargo pump rooms.



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Remarks

1. In case of design concentrations above the NOAEL concentrations, controls as required by para 2.2.2.1 and 2.2.2.2. of Chapter 5 of Fire Safety System Code are to be provided;
2. Prior to fitting the relevant system on board, the following details shall be submitted to RINA Head Office for approval for each installation:
 1. schematic arrangement of the system including sizes and material of piping and method of pipe jointing, nozzle types and temperature rating for each location;
 2. capacity calculations;
 3. wiring diagrams and cable specifications;
 4. isometric drawings and pressure loss calculations;
 5. testing/approval documentation of system components.
3. The approval of the system is subjected to the acceptance of the extinguishing agent by the flag Administration

Mass produced articles (Containers of mass produced articles) of the aforesaid material are to be marked or labelled with the trade name and the data of the Company to whom this Certificate is addressed. The validity of this Certificate is dependent on the compliance of each manufactured product with the prototype which underwent the type approval tests and such compliance shall be stated by the manufacturer. Moreover, the Company is fully responsible for ensuring compliance by performing all the necessary checks also in respect of its sub-suppliers. Notwithstanding the above, RINA reserves the right to make any checks it deems appropriate during production. The validity of this Certificate ceases in the case of amendments to the rules on the basis of which the Certificate was issued.

Genoa September 5, 2008

