

# CFI RIM SEAL FIRE PROTECTION FOR FLOATING ROOF TANKS

Stored product vapour will collect in the rim between the floating roof and the tank shell. This can mix with air when the rim seal is damaged, providing a hazardous mixture. Lightning or sparks produced by static electricity can cause a fire to occur. Hidden by the tank shell it may develop undetected until it reaches a dangerous intensity, possibly out of control.



## EARLY DETECTION

As it is relatively simple to extinguish an incipient fire, it is obvious that early detection is of utmost importance. Saval has understood this from the very beginning some 50 years ago and has incorporated this principle into all his designs. The latest development is based on the application of CF3I (Trifluoroiodomethane).

## THE EXTINGUISHING AGENT

CF3I is a fluoromethane compound, colourless, odourless and with a vapour density of 6.9 times that of air. It is stored as a liquefied gas and super pressurised with nitrogen for more expelling energy.

## HUMAN SAFETY

CF3I has a low order of acute toxicity and the cardiac sensitization measurements indicate that the NOAEL is 0.2% and the LOAEL is 0.4%. CF3I therefor is a highly suitable agent for use in unoccupied areas and for streaming applications such as on floating roof tanks.

## ENVIRONMENT

CF3I has the shortest atmospheric lifetime of all chemical extinguishing agents mentioned in NFPA 2001 viz. less than 1.5 days, and therefore the lowest GWP.

WE KNOW FIRE  
WE KNOW SAFETY  
WE KNOW YOU

Since 1925 Saval is a well known name in fire fighting. Every fire risk requires a professional assessment of the situation. Choosing the right type of detection and extinguishing and the location are of crucial importance. From Saval, you will receive sound advice.

We also have a long experience and extensive know-how to design, build and maintain these systems. The small chance that we face a new problem will enable us to search the best solution for you. From drawing to installation, we know what your situation requires.

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### EXTINGUISHING MECHANISM

CF3I's mechanism of extinguishing fires is active and primarily based on interruption of the chain reaction in the combustion area of the flame by so-called "negative" catalytic action.

### FAST ACTING

CF3I is a very efficient fire suppression agent with even better characteristics compared to the banned Halons.

### SAFE FOR EQUIPMENT

CF3I is electrically non-conductive and non-corrosive, so it's safe for use even on electrically charged equipment. CF3I leaves no particulates to damage equipment and requires no cleaning-up after a release.

### SPACE AND WEIGHT EFFICIENT

CF3I systems on storage tanks with floating roofs require only a limited area and the weight of the storage vessels with instrumentation is the lowest of all available types of protection systems. As additional loads on floating roofs are often critical this is a very important advantage of these CF3I systems.

- + Day and night supervision and protection against fire
- + Fast fire suppression
- + Fast warning in case of fire
- + Low cost and simple construction without any moving control parts
- + Fully reliable
- + Easy maintenance
- + VdS system approval



### TECHNICAL DESCRIPTION

The Saval CFI™ system for protection of rim seals on floating roof tanks is a fully prefabricated system and requires limited manpower for installation on the tank roof. Each storage tank has one or more independent systems (called sections), depending on the size of the tank. Each section consists of a circular pipe of a determined maximum length which is installed in the rim seal area between the tank shell and the roof and which is connected to a storage vessel containing the clean agent CF3I (a liquefied fire extinguishing agent, super pressurised with nitrogen). Glass bulb activated sprayers made of corrosion resistant materials and platings are located at intervals along the pipe. The distribution pipe is permanently connected to and pressurised by the storage vessel. The storage vessel is designed to exact specifications and is externally treated with a high quality protective coating. Each storage vessel is provided with a contents level switch and a pressure switch. These switches are connected to intrinsically safe supervising loops in order to comply with the international explosion safety rules. When the level switch or the pressure switch is activated, a 'trouble' alarm will be given, When both switches are activated simultaneously this will create a "fire" alarm. These signals will be transferred to a central post.

In case of a fire its heat causes one or more sprayers to open, thus delivering the extinguishing agent directly into the fire area. "The fire is extinguished even before it is spotted".

The combination of simple design and continuous supervision makes the Saval CFI system the key to real safety in floating roof tank storage facilities.

### ENGINEERING

Saval has supplied and installed CO<sub>2</sub>-, Halon-, Clean Agent- and Dry Powder Systems all over the world for more than 50 years. During this period Saval has become the specialist in fire extinguishing systems. Research and field experience gained with these systems has been used to develop and improve the quality and reliability of these systems. For every application, the Saval team will offer a custom-designed system.



*Floating roof of a storage tank*

### QUALITY ASSURANCE AND QUALITY CONTROL

Saval has an integrated quality control system in accordance with the international standard ISO 9001, which is certified by Lloyd's. This approval represents the total commitment of the entire organisation, not only in the production process but also for design, administrative procedures and after sales service.

Saval's CFI™ rim seal protection systems are manufactured according the highest quality standards with regard to design, choice of materials and reliability. Saval's CFI™ systems are the best available systems for application in marine industrial and environmentally hostile applications where reliability is required.