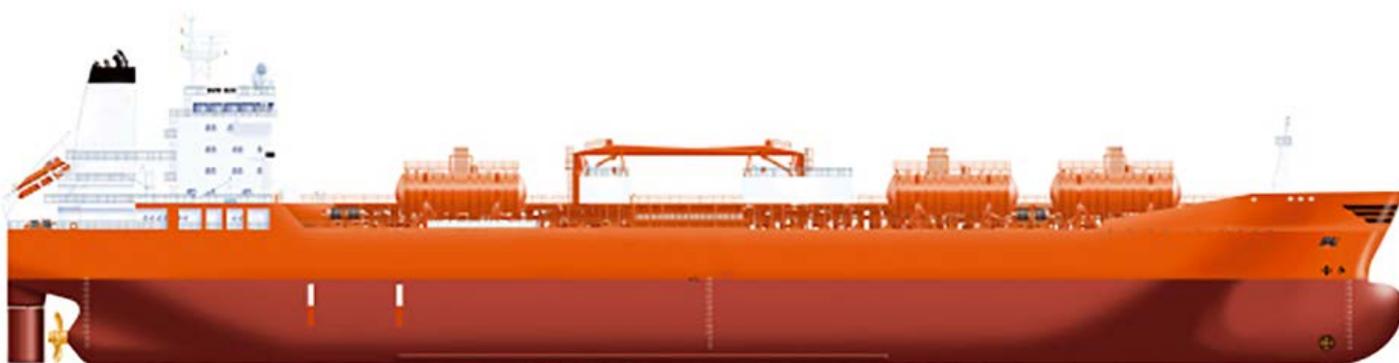


TECHNICAL UPDATE No. 01, 2015 / JANUARY

NEW REQUIREMENTS TO INERT GAS SYSTEMS



In 2004 in-tank explosions resulted in the total loss of two chemical tankers. The requirements for inerting of cargo tanks did not apply to these vessels. In recent years there have been a significant number of similar explosions and fires on board tankers. The majority of these explosions appear to take place in connection with tank washing and gas-freeing operations.

As a consequence of the accidents in 2004, the inert gas requirements for oil and chemical tankers have now been amended.

- The amendments apply to oil and chemical tankers constructed on or after 1st January 2016.
- The amendments do not have retro-active effect for existing tankers constructed before 1st January 2016.
- The amendments have been included in SOLAS Ch.II-2, the IBC code and the FSS code Ch.15.
- The amendments will have the following effect:

General for all tankers:

The deadweight limit for inert gas requirements has been lowered from 20 000 tonnes deadweight to 8000 tonnes deadweight. Therefore, all oil and chemical tankers of 8000 dwt and above must be provided with a fixed inert gas system.

The requirements also apply to gas carriers carrying flammable oils as well as flammable chemicals listed in Ch.17 or 18 of the IBC code.

The oxygen limit for inert gas supplied to cargo tanks has been changed from 8% to 5%. This may affect the way in which the oxygen detection alarm is set.

Specific requirements applicable for chemical tankers:

The exemption for existing chemical tankers having cargo tank volumes' not exceeding 3000 m³ and having tank cleaning machine throughput not exceeding 17.5 m³/h per nozzle and total throughput not exceeding 110 m³/h per tank, does not apply to new chemical tankers constructed on or after 1st January 2016.

For tankers that are arranged with an exhaust gas based inert gas system, inerting must be carried out during loading, on voyage, during unloading, tank cleaning and for purging prior to gas freeing with air.

For chemical tankers, it is however accepted that inert gas need only be applied before commencing the unloading. It is understood that this exemption clause was accepted as a matter of convenience to reduce cargo handling time (as pre-loading procedures for chemical tankers always require in-tank cargo surveys). A very important condition for the above alternative is that nitrogen is the only accepted inert gas medium.

Although nitrogen does not need to be applied until before commencing the unloading, it is still required to be applied during discharging, during tank cleaning and for purging prior to gas freeing with air.

The application of inert gas before commencing the unloading can be performed through the normal inert gas padding connections in way of P/V-valve risers.

The previous exemption for chemical tankers related to inert gas capacity still exists. When carrying flammable chemicals it is therefore acceptable that the unloading rate is reduced to 80% of the inert gas system capacity.

Note also that the operational requirements to gas freeing in the IBC code have been amended in line with the requirements for oil tankers. In situations where chemical tankers are required to use inert gas, the cargo tanks shall be purged with inert gas, using approved gas-freeing arrangements, until the concentration of flammable vapors in the cargo tanks has been reduced to less than 2% by volume. As the normal inert gas padding connections in way of P/V-valve risers are not suitable for purging cargo tanks, the use of inert gas for purging before gas freeing with air will normally have to be carried out via the cargo system.

Lastly, for chemical tankers that are required to be inerted and that are carrying products containing an oxygen-dependent inhibitor, the use of inert gas shall not take place before loading or during the voyage. Instead it shall be applied before commencing the unloading procedure. The minimum level of oxygen required in the vapour space of the tank for the inhibitor to be effective shall be specified in the Certificate of Protection provided by the cargo manufacturer. This information should be taken into account in the operation of the inert gas system to ensure the oxygen level does not fall below the level indicated on the certificate.

Consequences for ship owners building new chemical tankers:

Owners must ensure the following:

1. It must be specified whether the cargo discharge rate for chemicals and oil shall be the same or whether a reduced cargo discharging rate for flammable chemicals is acceptable. If a reduced cargo discharge rate is acceptable, the minimum discharge rate should be specified.

2. The use of exhaust based inert gas is a known source of contamination. In order to reduce cargo handling time at terminals, it is proposed that owners specify that inerting shall take place before commencement of unloading. This implies that nitrogen is the only acceptable inert gas medium.

3. If it is specified that inert gas must be used before commencing the unloading, it is our opinion that, a fixed nitrogen generator system is required to be provided on board. Certain other parties have indicated differently and may consider nitrogen bottles and shore supply of nitrogen to be sufficient for meeting the new requirements. This will however give significant operational restrictions as follows:

- It is a condition for the operation of the ship that it only performs cargo handling at terminals where nitrogen is available as shore supply.
- The ships must perform purging before gas freeing with air using nitrogen supply from terminals. Considering possible port and terminal restrictions on tank cleaning and gas freeing alongside, this is not a realistic option.
- The alternative of using nitrogen bottles for the above purpose is also considered to be highly unrealistic, as it would require a very significant number of nitrogen bottles on board. Hence, nitrogen bottles are not a feasible alternative for inerting during tank cleaning and for purging before gas freeing with air.

It is therefore proposed that chemical tanker owners specify that the inert gas system on board shall be of nitrogen generator type with capacity of 125% of the unloading rate.

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