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Title: Cleaning of refrigerated containers

Reference: The cleaning of refrigerated containers is part of its regular maintenance routine. Cargoes and chemical products used inside refrigerated containers can deteriorate and damage the interior components of a reefer unit. The proper choice of cleaning products used play an important role in the process. The use of acidic solutions cause corrosion to copper pipes which over a period results in failure of the component and refrigerant leaks.

Purpose: Provide warning and clarification about the use of cleaning products in refrigerated containers that can cause serious damage to its components and have a negative effect on the equipment.

The IICL has noticed a growing number of issues relating to contamination of the machine and interiors of reefer containers. Containers are transporting a wide range of cargo (grapes, fish, fertilizers, non-reefer related cargo, and many others). Exposure to the chemical properties of the cargo as well as various types of chemicals (such as SO₂ – Sulfur Dioxide) used to facilitate their transport may result in the contamination of key components in the machine and container. In many cases contamination can be avoided by proper cleaning techniques immediately after each shipment.

The IICL considers the above conditions to be a non-standard use of the container and that failure to take basic or corrective action in the form of aggressive cleaning after each use to be negligence and damage.

Tests performed by machinery manufacturers have shown that an acid solution with pH lower than 5 can result in leaks of the evaporator coil due to corrosion of the copper tubing.

The use of cleaning agents with low pH to clean the interior of containers may facilitate the cleaning process however it brings an irreversible corrosion process to certain components, especially the ones made of copper. Cleaning products with a pH lower than 5 should **not** be used to clean the interior of refrigerated containers. Copper pipes exposed to strong acidic agents immediately start a corrosion process that leads to leaks.

Some refrigerated containers are used to transport non-reefer cargoes. It is important to note that care should be taken when transporting fertilizers and other products such as textiles and garments that release chemicals, Interior high humidity can develop strong concentration of acid in the container.



To address the situations above and prevent damage to the container, the IICL recommends as follows:

- Cleaning products must have a pH between 7 and 9. Do not use cleaning products with a pH lower than 7.
- Reefer used for non-operating reefer cargoes or stored empty for a long period of time should have the fresh-air intake door kept open. Ventilation will keep humidity as low as possible and allow internal gaseous contaminants to be released.
- If the interior of the refrigerated container has been exposed to cleaning agents with pH lower than 7 proceed to clean it as soon as possible with a detergent that has a pH value between 7 and 9.

This RTB was prepared under the supervision of the IICL Technology Committee.

For questions about this technical bulletin, you may contact technical@iicl.org