Drew Marine®

Refrigerant Recovery Journal

FOR SHIPBOARD REFERENCE

GUIDELINES FOR REFRIGERANT MANAGEMENT

The Regulation (F-gas Regulation 517/2014)

To control emissions from fluorinated greenhouse gases (F-gases), the European Union has adopted the F-gas Regulation. The F-gas Regulation covers all key applications in which F-gases are used, and the target is to decrease up to two thirds of the 2010 emissions by 2030. To achieve this, European Commission is limiting the amount of high Global Warming Potential (GWP) F-gases available in the market, is mandating leak reduction/prevention, and is introducing a ban on high GWP F-gases where alternatives are available. Equipment is required to be checked for leaks. With regard to entries in the Refrigerant Recovery Journal, Operators shall establish and maintain records for such equipment specifying the following information:

1. The quantity and type of fluorinated greenhouse gases installed.
2. The quantities of fluorinated greenhouse gases added during installation, maintenance or servicing or due to leakage.
3. Whether the quantities of installed fluorinated greenhouse gases have been recycled or reclaimed, including where applicable, the certificate number.
4. The quantity of fluorinated greenhouse gases recovered.
5. The identity of the undertaking which installed, serviced, maintained and where applicable repaired or decommissioned the equipment, including, where applicable, the number of its certificate.
6. The dates and results of the checks carried out.

The Regulation (MARPOL Annex VI)

Ozone Depleting Substances (ODS) and their emissions from ships are regulated by MARPOL Annex VI Regulation 12. The regulation specifies authorized installations, and the regulation requires record keeping for ODS use and for equipment containing ODS on board ships. Per the regulation, any deliberate emission of ODS are prohibited, including Halons and Chlorofluorocarbons (CFCs). Deliberate emissions of ODS include emissions occurring during maintenance, service, repair, or disposal of ODS equipment. However, deliberate emissions do not include minimal releases associated with the recapture or recycling of an ODS. Per the regulation, any ship that is required to be issued an International Air Pollution Prevention (IAPP) Certificate shall maintain a list of equipment containing ODS, should such equipment be on board. The list of equipment is noted in section 2.1 of the Supplement to the IAPP Certificate. Additionally, any ship which has rechargeable systems containing ODS shall maintain an ODS Record Book.

Regulation VI/12 does not apply to permanently sealed equipment where there are no refrigerant charging connections or potentially removable components containing ozone depleting substances.– Drew Marine supplies packings and jointings from major ports around the world. We make it easy for you to place orders. As a result, you can greatly reduce your shipboard inventories with confidence and in timely resupply wherever your vessels are calling.

With regard to entries in the ODS Record Book, the entries shall be in terms of mass (kg) of substance and shall be completed without delay on each of the following occasions:

1. Recharge, full or partial, of equipment containing ozone depleting substances;
2. Repair or maintenance of equipment containing ozone depleting substances;
3. Discharge of ozone depleting substances to the atmosphere:
- 3.1 Deliberate; and
- 3.2 Non-deliberate;

4. Discharge of ozone depleting substances to land-based reception facilities;
5. Supply of ozone depleting substances to the ship.

The ODS Record Book should also include the ship's name and IMO Number.

Although there is no specific format for the Record Book, the one in this booklet provides the necessary fields to collect the data needed to comply with MARPOL Regulation VI/12.

The purpose of maintaining the ODS log entries in the ODS Record Book is to confirm testing, repair, delivery and removal of refrigerants and the condition and quantities of ODS on board for verification by authorities. Verification of the International Air Pollution Prevention Certificate and data recorded in the ozone-depleting substances Record Book can be subject to review by a Class Surveyor at each periodical survey and by any Flag State Surveyor or Port State Control Officers. Such verification ensures the condition of the ODS equipment on board corresponds with the particulars of the IAPP Certificate and with ODS Record Book. Therefore, entries in the ODS Record Book are to be properly maintained.

Safety & Storage Information

REFRIGERATION GASES

PRODUCT NAME	FLASH PT (°C)	MDG CLASS & LABEL	PERSONAL HAZARDS RISK*	INGREDIENT(s) HAZARDOUS TO HEALTH	STORAGE RECOMMENDATION**
AMERFROST™ REFRIGERANT A-22	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Chlorodifluoromethane	Keep away from heat
AMERFROST™ REFRIGERANT A-134A	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	1,1,1,2-Tetrafluoroethane	Keep away from heat
AMERFROST™ REFRIGERANT A-404A	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Blend- Pentafluoroethane; 1,1,1-Trifluoroethane; 1,1,1,2-Tetrafluoroethane	Keep away from heat
AMERFROST™ REFRIGERANT A-407C	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Blend- Pentafluoroethane; 1,1,1,2-Tetrafluoroethane; difluoromethane	Keep away from heat
AMERFROST™ REFRIGERANT A-407F	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Blend- Pentafluoroethane; 1,1,1,2-Tetrafluoroethane; difluoromethane	Keep away from heat
AMERFROST™ REFRIGERANT A-410A	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Blend- Pentafluoroethane; difluoromethane	Keep away from heat
AMERFROST™ REFRIGERANT A-417A	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Blend- Pentafluoroethane; 1,1,1,2-Tetrafluoroethane; Butane	Keep away from heat
AMERFROST™ REFRIGERANT A-422A	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Blend- Pentafluoroethane; 1,1,1,2-Tetrafluoroethane; Isobutane	Keep away from heat
AMERFROST™ REFRIGERANT A-422D	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Blend- Pentafluoroethane; 1,1,1,2-Tetrafluoroethane; Isobutane	Keep away from heat
AMERFROST™ REFRIGERANT A-507	None	2, Non-Flammable Non-Toxic Gas	Burns, Frostbite	Trifluoroethane; pentafluorethane	Keep away from heat

NOTES:
* Drew Marine maintains Safety Data Sheets (SDS) on all of its products. The SDS's contain health and safety information for the development of appropriate handling procedures. The SDS should be read and understood by all supervisory personnel. This safety chart is only meant as a guide and should not be used as a substitute for the SDS. When working with chemicals, always ensure proper personal protective equipment (PPE) is worn. All chemicals should be handled and used with caution.

** **STORAGE:**
Always store chemicals in accordance with local regulations. Store in a segregated and approved area. Flammable products should be stored in an approved storage area or cabinet. Acids and bases should be separated to prevent any chemical reaction due to spillage or possible mixing. Store chemicals in original container, protected from direct sunlight, and in a dry, cool, and well-ventilated area, away from incompatible materials, food, and drink. Keep containers tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to avoid leakage. Do not store chemicals in unlabeled containers. Empty containers may contain product residue and can be hazardous. Refer to product SDS for specific storage guidelines.

For 24-hour-a-day information regarding chemical spills or emergencies, in the U.S. call: 1-877-715-9305.
Outside the U.S. call: + 800-2436-2255. Direct call: + 61-39-573-3112

Record Sheet for Marpol Annex VI

A separate sheet should be kept for each refrigeration system which contains 3 kg or more of refrigerant.

General Information:			
Name of Ship:			IMO Number:
Name of Plant:			Reference Number:
Location of Plant:			
Name of Company and Operator:			
Cooling Loads Served:			
Type of Refrigerant:			Quantity of Refrigerant (kg):
Plant Manufacturer:			Year of Installation:

Additions of Refrigerant			
Date	Engineer/Company	Amount added (kg)	Reason for addition

Removals of Refrigerant			
Date	Engineer/Company	Amount removed (kg)	Reason for removal. What has been done with the recovered refrigerant?

Leak Tests			
Date	Engineer/Company	Test result (including location and cause of any identified leaks)	Follow up actions required

Follow-Up Actions			
Date	Engineer/Company	Related to test on	Actions taken

Testing of Automatic Leak Detection System (if fitted)			
Date	Engineer/Company	Test Result	Comments

Refrigeration Delivered or Removed from Ship			
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Drew Marine shares our customers' commitment to the safety of their crew and the environment. In alignment with our customers' goals, we deliver holistic solutions that provide superior value for our customers' operations. As a critical component of our own operations, we ensure that our compressed gases and products comply with rigid standards and specifications before delivery to our customers, and our customers count on us as their reliable, safe supplier of quality gases and products across the globe.

As part of our complete program for our customers' Welding and Refrigeration needs, we also offer innovative solutions for maintenance on board, including:

- Calibration Gas
- Welding Gases and Equipment
- Refrigerants and Recovery Equipment
- Central Gas Installation

Quality products, reliable service.
Yesterday, today, and tomorrow.

OUR VISION

Drew Marine is the most trusted brand and preferred global resource for marine solutions that enhance the longevity and operating efficiency of ocean vessels.

OUR MISSION

To sustain the superiority of the Drew Marine brand by bringing environmentally and technologically superior products and services for the benefit of vessel owners and operators while increasing shareholder value.

Drew Marine®

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