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# PURPOSE

This standard establishes the minimum requirements for the use, control, and elimination of **Ozone Depleting Substances** (ODS).

# SCOPE

The provisions of this standard apply to all TI sites worldwide.

# reference documents

## TI Standard Policy and Procedure (SP&P) 04-04-01: "Environmental, Safety, and Health"

# Definitions

[TI ESH Standards Glossary of Definitions](https://sps01.itg.ti.com/sites/wwf/esh/standards/Knowledge_Bank/00.01.xlsx)

List of **Class I and II ODS** chemicals – See Appendix A.

# Requirements

## Use of **Ozone Depleting Substances**

### Class I and Class II ODS shall not be used.

Exception: use is allowed in closed loop refrigeration systems if the refrigeration system equipment was purchased or acquired before the ODS refrigerant’s elimination date as shown in Appendix A.

## Closed Loop Refrigeration Systems

### Equipment Purchase or Acquisition

#### No equipment shall be purchased or acquired that requires the use of Class I **ODS** refrigerant.

#### No equipment that uses a **Class II ODS** refrigerant shall be purchased, acquired, or placed in service after its **Class II ODS** elimination date as shown in Appendix A.

Note: Existing equipment containing Class I or II ODS may remain in use **in compliance with section 5.2.2 below**. ODS elimination dates in Appendix A refer generally to the manufacture/import/export of ODS, not to the use of ODS, and are based on US EPA requirements. Some countries may have different national ODS elimination (ban) dates due to that particular country’s UN categorization under the Montreal Protocol. In such cases, the earliest date will apply.

### Existing Equipment in Service

#### Existing equipment shall be operated and maintained in a manner that minimizes releases of **ODS**, including the monitoring and repair of leaks and replacement of equipment.

##### Leaks from equipment with a charge of 50 lbs (22.6 kg) or greater must be repaired as soon as possible, but no later than 30 days after discovery of a leak; or the equipment shall be replaced within one year in accordance with a written conformance plan.

#### No **Class I** or **Class II ODS** refrigerant shall be knowingly vented or otherwise knowingly released or disposed of in a manner which permits the ODS to enter the environment.

#### All **Class I** and **Class II ODS** refrigerants shall be recovered from all pieces of equipment prior to disposal, conversion, replacement, or decommissioning.

## Recordkeeping

### Each site shall keep an accurate inventory of all ODS in use at the site.

### Each site shall keep maintenance records necessary to demonstrate compliance with Section 5.2.2. This includes keeping a record of the date and amount of ODS refrigerant added to each ODS refrigerant system.

# STANDARD Approval

This standard has been approved by David Thomas, TI Vice President.

# Revision history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Rev#** | **Date** | **Nature of Revision** | **Author/Editor** | **Approver** |
| A | 6/27/2014 | Updated format; deleted redundant or obsolete elements; standardized leak repair for equipment; added Appendix A list of ODS chemicals. | Laurie Lehmberg, John Willis | David Thomas |
| B | 5/24/2017 | Wording clarified in 5.1, “Note” added in 5.2.1. Modified Note in Appendix A for Class I ODS. | John Willis | ELC |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. - Class I and Class II ODS Chemicals

|  |  |  |  |
| --- | --- | --- | --- |
| **Class I ODS Chemical Name** | **CAS Number** | **Formula** | **Refrigerant Elimination Date** |
| Group I - CFCs |   |   | Purchase or acquisition of new or used equipment using Class I ODS is prohibited. Existing equipment placed in service before January 1, 1996 may remain in service until equipment is retired.  |
| CFC-11 (trichlorofluoromethane) | 75-69-4 | CFCl3  |
| CFC-12 (dichlorodifluoromethane)  | 75-71-8 | CF2Cl2  |
| CFC-113 (trichlorotrifluoroethane)  | 76-13-1 |  C2F3Cl3  |
| CFC-114 (dichlorotetrafluoroethane)  | 76-14-2 | C2F4Cl2  |
| CFC-115 (chloropentafluoroethane)  | 76-15-3 | C2F5Cl  |
| Group II - Halons |   |   |
| Halon 1211 (bromochlorodifluoromethane)  | 353-59-3 | CF2BrCl  |
| Halon 1301 (bromotrifluoromethane)  | 75-63-8 | CF3Br  |
| Halon 2402 (dibromotetrafluoroethane)  | 124-73-2 | C2F4Br2  |
| Group III |   |   |
| CFC-13 (chlorotrifluoromethane)  | 75-72-9 | CF3Cl  |
| CFC-111  | 354-56-3 | C2FCl5  |
| CFC-112  | 76-12-0 | C2F2Cl4  |
| CFC-211  | 422-78-6 | C3FCl7  |
| CFC-212  | 3182-26-1 | C3F2Cl6  |
| CFC-213  | 2354-06-5 | C3F3Cl5  |
| CFC-214  | 29255-31-0 | C3F4Cl4  |
| CFC-215  | 4259-43-2 | C3F5Cl3  |
| CFC-216  | 661-97-2 | C3F6Cl2  |
| CFC-217  | 422-86-6 | C3F7Cl  |
| Group IV |   |   |
| Carbon Tetrachloride  | 56-23-5 | CCl4  |
| Group V |   |   |
| Methyl Chloroform (1,1,1-trichloroethane)  | 71-55-6 | C2H3Cl3  |
| Group VI |   |   |
| Methyl Bromide  | 74-83-9 | CH3Br  |
| Group VII - Hydrobromofluorocarbons (HBFCs) |   |   |
|  |   | CHFBr2  |
| HBFC-12B1 |   | CHF2Br  |
|   |   | CH2FBr  |
|   |   | C2HFBr4  |
|  |  | C2HF3Br2 |
|   |   | C2HF2Br3  |
|   |   | C2HF4Br  |
|   |   | C2H2FBr3  |
|   |   | C2H2F2Br2  |
|   |   | C2H2F3Br  |
|   |   | C2H3FBr2  |
|   |   | C2H3F2Br  |
|   |   | C2H4FBr  |
|   |   | C3HFBr6  |
|   |   | C3HF2Br5  |
|   |   | C3HF3Br4  |
|   |   | C3HF4Br3  |
|   |   | C3HF5Br2  |
|   |   | C3HF6Br  |
|   |   | C3H2FBr5  |
|   |   | C3H2F2Br4  |
|   |   | C3H2F3Br3  |
|   |   | C3H2F4Br2  |
|   |   | C3H2F5Br  |
|   |   | C3H3FBr4  |
|   |   | C3H3F2Br3  |
|   |   | C3H3F3Br2  |
|   |   | C3H3F4Br  |
|   |   | C3H4FBr3  |
|   |   | C3H4F2Br2  |
|   |   | C3H4F3Br  |
|   |   | C3H5FBr2  |
|   |   | C3H5F2Br  |
|   |   | C3H6FBr  |  |
| Group VIII - Chlorobromomethane   |   |  |  |
| Chlorobromomethane  |   | CH2BrCl |  |
|   |   |   |   |

|  |  |  |  |
| --- | --- | --- | --- |
| **Class II ODS Chemical Name** | **CAS Number** | **Formula** | **Refrigerant Elimination Date** |
| **HCFC-21 (dichlorofluoromethane)**  | 75-43-4 | CHFCl2  | Jan. 1, 2030 |
| **HCFC-22 (chlorodifluoromethane)**  | 75-45-6 | CHF2Cl  | Jan. 1, 2020 |
| HCFC-31 (chlorofluoromethane)  | 593-70-4 | CH2FCl  | Jan. 1, 2030 |
| HCFC-121  | 354-14-3 | C2HFCl4  | Jan. 1, 2030 |
| HCFC-122  | 354-21-2 | C2HF2Cl3  | Jan. 1, 2030 |
| **HCFC-123**  | 306-83-2 | C2HF3Cl2  | Jan. 1, 2030 |
| **HCFC-124**  | 2837-89-0 | C2HF4Cl  | Jan. 1, 2030 |
| HCFC-131  | 359-28-4 | C2H2FCl3  | Jan. 1, 2030 |
| HCFC-132b  | 1649-08-7 | C2H2F2Cl2  | Jan. 1, 2030 |
| HCFC-133a  | 75-88-7 | C2H2F3Cl  | Jan. 1, 2030 |
| **HCFC-141b**  | 1717-00-6 | C2H3FCl2  | Jan. 1, 2003 |
| **HCFC-142b**  | 75-68-3 | C2H3F2Cl  | Jan. 1, 2020 |
| HCFC-221  | 422-26-4 | C3HFCl6  | Jan. 1, 2030 |
| HCFC-222  | 422-49-1 | C3HF2Cl5  | Jan. 1, 2030 |
| HCFC-223  | 422-52-6 | C3HF3Cl4  | Jan. 1, 2030 |
| HCFC-224  | 422-54-8 | C3HF4Cl3  | Jan. 1, 2030 |
| **HCFC-225ca** | 422-56-0 | C3HF5Cl2 | Jan. 1, 2030 |
| **HCFC-225cb**  | 507-55-1 | C3HF5Cl2 | Jan. 1, 2030 |
| HCFC-226  | 431-87-8 | C3HF6Cl  | Jan. 1, 2030 |
| HCFC-231  | 421-94-3 | C3H2FCl5  | Jan. 1, 2030 |
| HCFC-232  | 460-89-9 | C3H2F2Cl4  | Jan. 1, 2030 |
| HCFC-233  | 7125-84-0 | C3H2F3Cl3  | Jan. 1, 2030 |
| HCFC-234  | 425-94-5 | C3H2F4Cl2  | Jan. 1, 2030 |
| HCFC-235  | 460-92-4 | C3H2F5Cl  | Jan. 1, 2030 |
| HCFC-241  | 666-27-3 | C3H3FCl4  | Jan. 1, 2030 |
| HCFC-242  | 460-63-9 | C3H3F2Cl3  | Jan. 1, 2030 |
| HCFC-243  | 460-69-5 | C3H3F3Cl2  | Jan. 1, 2030 |
| HCFC-244  | 679-85-6 and 134190-50-4 | C3H3F4Cl  | Jan. 1, 2030 |
| HCFC-251  | 421-41-0 | C3H4FCl3  | Jan. 1, 2030 |
| HCFC-252  | 819-00-1 | C3H4F2Cl2  | Jan. 1, 2030 |
| HCFC-253  | 460-35-5 | C3H4F3Cl  | Jan. 1, 2030 |
| HCFC-261  | 420-97-3 | C3H5FCl2  | Jan. 1, 2030 |
| HCFC-262  | 421-02-3 and 134190-53-7 | C3H5F2Cl  | Jan. 1, 2030 |
| HCFC-271  | 430-55-7 | C3H6FCl  | Jan. 1, 2030 |