

## Annex IV

### REPORTING DATA ON PROGRESS IN THE IMPLEMENTATION OF COUNTRY PROGRAMMES TO THE FUND SECRETARIAT

#### Practical manual for country programme data reporting (2019 data and beyond)

#### Background

1. Article 5 countries that request funding from the Multilateral Fund for the phase-out of controlled substances in the consumption and production (where applicable) sectors are required to submit annually a mandatory progress report on the implementation of country programmes (CP) to the Fund Secretariat.<sup>1</sup>
2. CP data reports represent the sole source of information on the sector distribution of the use of these controlled substances in Article 5 countries. Based on the CP data reports, the Secretariat prepares a document on CP data and prospects for compliance, which the Executive Committee considers at each meeting. This document is also submitted as an information document to each meeting of the Implementation Committee under the Non-compliance Procedure of the Montreal Protocol.
3. Therefore, the accuracy of the consumption and production data reported under CP is of great relevance.

#### Scope of the Practical manual for CP data reporting

4. Article 5 countries are required to submit annual reports on the progress in the implementation of the CP for the previous calendar year to the Fund Secretariat, eight weeks prior to the Executive Committee's first meeting of the year, if possible, and no later than 1 May, in line with decision 74/9(b)(iv). The Secretariat has developed the present Practical manual for CP data reporting to assist national ozone officers in filling the CP data reports.
5. The CP data report format contains six separate sections as described below:

| Section                                                                                        | Description                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. Annex A - Groups I and II<br>Annex B – Groups I, II and III<br>Annex C - Group I<br>Annex E | Data reporting of controlled substances of:<br>Annex A - Group I (CFCs) and Group II (halons);<br>Annex B – Group I (CFC-13), Group II (CTC) and Group III (TCA);<br>Annex C - Group I (HCFCs);<br>Annex E (MB)    |
| B. Annex F - Consumption                                                                       | Data reporting for HFCs (including HFC-23 use) and HFCs contained in imported pre-blended polyols                                                                                                                  |
| C. Price of HCFCs, HFCs and alternatives                                                       | Average estimated freight on board (FOB) or retail price of controlled substances.<br>Prices could be obtained from importers and/or suppliers.<br>Retailer price data can include taxes and transportation costs. |

<sup>1</sup> At its 5<sup>th</sup> meeting, the Executive Committee noted that Governments should monitor the progress being made in reducing consumption of controlled substances in line with their plans set out in the CP, and should periodically review the effectiveness of the measures being taken, and requested Article 5 Parties to present annually information on progress being made in the implementation of their CPs. (UNEP/OzL.Pro/ExCom/5/16, paragraphs 22 and 23).

| Section                                        | Description                                                                                                                                                                                                                                                                        |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D. Annex F, Group II (HFC-23 generation)       | Quantification of HFC-23 by-product generation, only related to countries with manufacturing facilities for Annex C Group I or Annex F substances that generate HFC-23. The amounts of production or generated HFC-23 that is captured for use, feedstock, destruction or storage. |
| E. Annex F, Group II (HFC-23 emissions)        | Emissions of HFC-23, only related to countries with manufacturing facilities for Annex C Group I or Annex F substances that generate HFC-23. Emissions of HFC-23 should be reported separately for each manufacturing facility.                                                    |
| F. Comments by bilateral/implementing agencies | Narrative comments                                                                                                                                                                                                                                                                 |

6. For countries that have ratified the Kigali Amendment, CP data reporting for Annex F substances is mandatory. Countries that have not ratified the Kigali Amendment are encouraged to submit data on Annex F substances on a voluntary basis. Data forms D and E are only relevant to countries with production facilities of controlled substances.

### **Report of controlled substances under Article 7 of the Montreal Protocol**

7. Article 5 countries are required to submit data on imports, exports and production of controlled substances under Article 7 of the Montreal Protocol to the Ozone Secretariat. The columns for import, export and production in the CP data report format should be consistent with the data reported under Article 7. Where there is a discrepancy, the country should provide an explanation for the difference in the “Remarks” column in Sections A, B and E.

8. Data is required for “Use by Sector” for each controlled substance. This data allows for an analysis of trends in consumption of controlled substances and for an accurate assessment of the assistance to be provided to Article 5 countries for the cost-effective phase-out/phase-down of controlled substances. Such sector-specific data will also be useful to Article 5 countries for developing their phase-out/phase-down strategies.

9. In most cases, when the total amount of controlled substance imported for the year was totally consumed in the various use sectors, the TOTAL “Use by Sector” is equal to the TOTAL amount of “Imports” minus “Exports” plus “Production columns”. In other cases, the amounts in these columns will not be equal, since the amounts in “Use by Sector” for the year do not always equate to the total amounts imported for the same year. For instance, a country may register use of a controlled substance in the refrigeration servicing sector from the previous year’s imports without having imported such controlled substance in the reporting year. The country should provide a clarification in the “Remarks” column for each controlled substance where there is a data discrepancy.

10. Countries should check the reported data of all controlled substances before submitting the report, ensuring that there are no data discrepancies or that an explanation has been provided for cases of data discrepancies. Inconsistencies in the data could delay the project review process of the Multilateral Fund because of the need to reconcile the data.

11. The list of blends/mixtures containing controlled substances with their compositions can be found in Appendix I of this Practical manual.

## Practical instructions for filling the data forms

12. The following observations are relevant when filling the data forms:

- (a) Data entry is needed only in unshaded cells. The unshaded cells are automatically pre-filled with 0 (zero) values
- (b) Data should be provided in **metric tonnes only** and not in ODP tonnes or CO<sub>2</sub>-equivalent. Conversion of the data to ODP tonnes or CO<sub>2</sub>-equivalent will be done by the Secretariat
- (c) Quantities of controlled substances contained in end-products, either imported or exported, e.g. mobile automobile air conditioners (MACs), domestic refrigerators and freezers, air-conditioners should not be reported on the data forms
- (d) Reported data should not include quantities of controlled substances used as feedstock for producing other chemicals, or used for quarantine and pre-shipment applications, or quantities that have been destroyed. These quantities can be explained in the “Remarks” column

13. The following instructions are arranged by section and guide the user in collecting the information required for accurate and reliable reporting.

### Section A. Annex A, Annex B, Annex C and Annex E substances

14. This section is used to report data of controlled substances in Annex A (CFCs and halons), Annex B (CFC-13, CTC and TCA), Annex C (HCFCs) and Annex E (methyl bromide) as shown in the table below. Cells in the data forms where data is not required have been shaded.

| SECTION A. ANNEX A, ANNEX B, ANNEX C - GROUP I AND ANNEX E - DATA ON CONTROLLED SUBSTANCES (METRIC TONNES) |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
|------------------------------------------------------------------------------------------------------------|---------------|------|---------------|---------------|---------|---------------|---------|----------------|---------|--------|--------|------------|---------------|----------------------------------------------------|----------------------|
| NOTE: Data entry is required in UNSHADED cells only                                                        |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| Substance <sup>1</sup>                                                                                     | Use by Sector |      |               |               |         |               |         |                | TOTAL   | Import | Export | Production | Import quotas | If imports are banned, indicate date ban commenced | Remarks <sup>3</sup> |
|                                                                                                            | Aerosol       | Foam | Fire Fighting | Refrigeration | Solvent | Process agent | Lab Use | Methyl Bromide |         |        |        |            |               |                                                    |                      |
|                                                                                                            |               |      |               | Manufacturing | Service |               |         | QPS            | Non-QPS |        |        |            |               |                                                    |                      |
| Annex A, Group I                                                                                           |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| CFC-11                                                                                                     | 0.00          | 0.00 |               | 0.00          | 0.00    |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| CFC-12                                                                                                     | 0.00          | 0.00 |               | 0.00          | 0.00    |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| CFC-113                                                                                                    | 0.00          |      |               |               |         | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| CFC-114                                                                                                    |               |      |               | 0.00          | 0.00    |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| CFC-115                                                                                                    |               |      |               | 0.00          | 0.00    |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Sub-Total                                                                                                  | 0.00          | 0.00 |               | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Annex A, Group II                                                                                          |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| Halon-1211                                                                                                 |               |      | 0.00          |               |         |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Halon-1301                                                                                                 |               |      | 0.00          |               |         |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Halon-2402                                                                                                 |               |      | 0.00          |               |         |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Sub-Total                                                                                                  |               |      | 0.00          |               |         |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Annex B, Group I                                                                                           |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| CFC-13                                                                                                     |               |      |               |               | 0.00    |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Sub-Total                                                                                                  |               |      |               |               | 0.00    |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Annex B, Group II                                                                                          |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| Carbon tetrachloride                                                                                       |               |      |               |               | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Sub-Total                                                                                                  |               |      |               |               | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Annex B, Group III                                                                                         |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| Methyl chloroform                                                                                          |               |      |               |               | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Sub-Total                                                                                                  |               |      |               |               | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Annex C, Group I                                                                                           |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| HCFC-22                                                                                                    | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-141b                                                                                                  | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-141b in imported pre-blended polyol                                                                   |               | 0.00 |               |               |         |               |         |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-142b                                                                                                  | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-123                                                                                                   | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-124                                                                                                   | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-133                                                                                                   | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-225                                                                                                   | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-225ca                                                                                                 | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| HCFC-225cb                                                                                                 | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Other <sup>2</sup>                                                                                         | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Other <sup>2</sup>                                                                                         | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Subtotal                                                                                                   | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    |                |         | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Annex E                                                                                                    |               |      |               |               |         |               |         |                |         |        |        |            |               |                                                    |                      |
| Methyl Bromide                                                                                             |               |      |               |               |         |               |         | 0.00           | 0.00    | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| Subtotal                                                                                                   |               |      |               |               |         |               |         | 0.00           | 0.00    | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |
| TOTAL                                                                                                      | 0.00          | 0.00 | 0.00          | 0.00          | 0.00    | 0.00          | 0.00    | 0.00           | 0.00    | 0.00   | 0.00   | 0.00       | 0.00          | 0.00                                               |                      |

<sup>1</sup> Where the data involves a blend of two or more substances, the quantities of individual components of controlled substances must be indicated separately.

<sup>2</sup> Indicate relevant controlled substances.

<sup>3</sup> Provide explanation if total sector use and consumption (import-export+production) is different (e.g. stockpiling).

15. Each controlled substance should be broken down into specific sector uses, such as for aerosol, foam, refrigeration (manufacturing and servicing), solvent, process agent, laboratory use and methyl bromide. All “Use by Sector” columns should be added up to get a TOTAL for each substance.

16. Quantities of HCFC-141b contained in imported pre-blended polyols should be reported only under foam sector, and not under other sectors.

17. Where the data involves a blend of two or more substances, the quantities of the individual components of controlled substances should be indicated separately. The amounts of each substance should be calculated based on the percentages in the composition, and the total quantity should be indicated in the appropriate row for each substance.

18. For Annex C substances (HCFCs), if the country is importing or has uses of controlled substances other than those listed, data should be entered in rows “Other”.

19. Methyl bromide use is divided into two categories, quarantine and pre-shipment uses (“QPS”) and non-quarantine and pre-shipment uses (“Non-QPS”). These amounts should be reported in the relevant columns under the “Methyl bromide” heading. The total amount of “QPS” and “Non-QPS” should also be reported under the “Import/Export/Production” columns. For countries with approved consumption of methyl bromide for critical uses approved by the Parties to the Montreal Protocol, these data can be explained in the “Remarks” column.

20. For “Import quotas”, the information required is whether the country has established an import quota for each controlled substance for the reporting year. For example, if during the reporting year, the country has issued licenses for import of an actual amount of a controlled substance, this amount should be entered in the column “Import quotas”.

21. In the case where imports of a specific controlled substance are banned, the date of the ban should be provided in the “If imports are banned, indicate date ban commenced” column.

22. Additional information on each controlled substance should be reported in the “Remarks” column.

## **Section B. Annex F**

23. This section is used to report data on Annex F (HFCs) controlled substances including HFC-23 (use) and HFCs contained in imported pre-blended polyols, as shown in the table below:

SECTION B. ANNEX F - DATA ON CONTROLLED SUBSTANCES (METRIC TONNES)

NOTE: Data entry is required in UNSHADED cells only

| Substance                                              | Use by Sector |      |                  |               |      |                    |           |         |                    |       | Import | Export | Production | Import<br>quotas | If imports are<br>banned, indicate<br>date ban<br>commenced<br>(DD/MM/YYYY) | Remarks <sup>4</sup> |
|--------------------------------------------------------|---------------|------|------------------|---------------|------|--------------------|-----------|---------|--------------------|-------|--------|--------|------------|------------------|-----------------------------------------------------------------------------|----------------------|
|                                                        | Aerosol       | Foam | Fire<br>Fighting | Refrigeration |      |                    | Servicing | Solvent | Other <sup>3</sup> | TOTAL |        |        |            |                  |                                                                             |                      |
|                                                        |               |      |                  | Other         | AC   | Total <sup>5</sup> |           |         |                    |       |        |        |            |                  |                                                                             |                      |
| Annex F                                                |               |      |                  |               |      |                    |           |         |                    |       |        |        |            |                  |                                                                             |                      |
| Controlled Substances                                  |               |      |                  |               |      |                    |           |         |                    |       |        |        |            |                  |                                                                             |                      |
| HFC-32                                                 | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-41                                                 | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-125                                                | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-134                                                | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-134a                                               | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-143                                                | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-143a                                               | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-152                                                | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-152a                                               | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-227ea                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-236cb                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-236ca                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-236fa                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-245ca                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-245fa                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-365mfc                                             | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-43-10mee                                           | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-23 (use)                                           | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| Sub-Total                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| Blends (Mixture of Controlled Substances) <sup>1</sup> |               |      |                  |               |      |                    |           |         |                    |       |        |        |            |                  |                                                                             |                      |
| R-404A (HFC-125=44%, HFC-134a=4%, HFC-143a=52%)        | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| R-407A (HFC-32=20%,HFC-125=40%,HFC-134a=40%)           | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| R-407C (HFC-32=23%,HFC-125=25%, HFC-134a=52%)          | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| R-410A (HFC-32=50%, HFC-125=50%)                       | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| R-507A (HFC-125=50%, HFC-143a=50%)                     | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| R-508B (HFC-23=46%, PFC-116=54%)                       | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| Others: <sup>2</sup>                                   | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| Others: <sup>2</sup>                                   | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| Sub-Total                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       |                  | 0.00                                                                        |                      |
| Others                                                 |               |      |                  |               |      |                    |           |         |                    |       |        |        |            |                  |                                                                             |                      |
| HFC-245fa in imported pre-blended polyol               | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| HFC-365mfc in imported pre-blended polyol              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| Sub-Total                                              | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |
| TOTAL                                                  | 0.00          | 0.00 | 0.00             | 0.00          | 0.00 | 0.00               | 0.00      | 0.00    | 0.00               | 0.00  | 0.00   | 0.00   | 0.00       | 0.00             |                                                                             |                      |

<sup>1</sup> When reporting blends/mixtures, reporting of controlled substances should not be duplicated. For the CP report, countries should report use of individual controlled substances and quantities of blends/mixtures used, separately, while ensuring that the amounts of controlled substances are not reported more than once.

<sup>2</sup> If a non-standard blend not listed in the above table is used, please indicate the percentage of each constituent controlled substance of the blend being reported in the remarks column.

<sup>3</sup> Uses in other sectors that do not fall specifically within the listed sectors in the table.

<sup>4</sup> Provide explanation if total sector use and consumption (import+export+production) is different (e.g. stockpiling).

<sup>5</sup> If break-down of consumption in manufacturing is not available, information in total can be provided.

24. When reporting blends/mixtures of controlled substances, reporting each controlled substance in the blends/mixtures should not be duplicated. Countries should separately report the use of individual pure controlled substances and the quantities contained in blends or mixtures used, and should ensure that the amounts of controlled substances are not reported more than once.

25. If a blend/mixture not listed in the above table is used, the name of the blend/mixture should be indicated in the “Others” row and the percentage of each constituent controlled substance of the reported blend should be indicated in the “Remarks” column.

26. When an HFC blend/mixture also contains HCFC as a constituent, the quantity of HCFCs should be included in Section A.

27. Data should be provided in **metric tonnes only** and not in CO<sub>2</sub>-equivalent.

28. Each controlled substance should be broken down into its specific sector use, such as for aerosol, foam, fire fighting, refrigeration (manufacturing and servicing), solvent and others. Uses in sectors that do not fall specifically within the listed sectors should be reported in the “Other” column. All “Use by Sector” columns should be added up to get a TOTAL for each substance.

29. For the refrigeration manufacturing sector, data should be provided separately for the air-conditioning (AC) subsector. Data for other subsectors should be provided in the “Other” column. If break-down of consumption in manufacturing for AC and others is not available, information of total consumption in the refrigeration manufacturing sector should be reported in column “Total”.

30. HFC-23 data should be provided only for use and production. HFC-23 destroyed and used as feedstock should not be included in the production. This is explained in Sections D and E below.

31. When pure controlled substances or blends/mixtures thereof are imported into the country or exported from the country, data should be reported in the appropriate column.

32. In cases where imports of controlled substances are used for production, these quantities need to be explained in the “Remarks” column; total import quantities should be reported in the “Import” column of Section B.

33. For “Import quotas”, the information required is whether the country has established an import quota for each controlled substance for the reporting year. For example, if during the reporting year licenses have been issued for importation of an actual amount of controlled substances, the actual amount should be entered in the column “Import quotas”.

34. In cases where imports of a specific controlled substance are banned, the date of the ban should be provided in the “If imports are banned, indicate date ban commenced” column.

#### **Section C. Prices of HCFCs, HFCs and alternatives**

35. This section is used to report the prices of HCFCs, HFCs and alternatives, as shown in the table below:

| SECTION C. AVERAGE ESTIMATED PRICE OF HCFCs, HFCs AND ALTERNATIVES (US \$/kg) |                                                                         |                |                      |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------|----------------------|
| Description                                                                   | Previous year price<br>(prefilled - online<br>submission, if available) | Current prices | Remarks <sup>1</sup> |
| <b>HCFCs</b>                                                                  |                                                                         |                |                      |
| HCFC-22                                                                       | 0.00                                                                    | 0.00           |                      |
| HCFC-141b                                                                     | 0.00                                                                    | 0.00           |                      |
| HCFC-142b                                                                     | 0.00                                                                    | 0.00           |                      |
| HCFC-123                                                                      | 0.00                                                                    | 0.00           |                      |
| HCFC-124                                                                      | 0.00                                                                    | 0.00           |                      |
| HCFC-133                                                                      | 0.00                                                                    | 0.00           |                      |
| HCFC-225                                                                      | 0.00                                                                    | 0.00           |                      |
| HCFC-225ca                                                                    | 0.00                                                                    | 0.00           |                      |
| HCFC-225cb                                                                    | 0.00                                                                    | 0.00           |                      |
| HCFC-141b in imported pre-blended polyol                                      | 0.00                                                                    | 0.00           |                      |
| <b>HFCs</b>                                                                   |                                                                         |                |                      |
| HFC-23 (use)                                                                  | 0.00                                                                    | 0.00           |                      |
| HFC-32                                                                        | 0.00                                                                    | 0.00           |                      |
| HFC-41                                                                        | 0.00                                                                    | 0.00           |                      |
| HFC-125                                                                       | 0.00                                                                    | 0.00           |                      |
| HFC-134                                                                       | 0.00                                                                    | 0.00           |                      |
| HFC-134a                                                                      | 0.00                                                                    | 0.00           |                      |
| HFC-143                                                                       | 0.00                                                                    | 0.00           |                      |
| HFC-143a                                                                      | 0.00                                                                    | 0.00           |                      |
| HFC-152                                                                       | 0.00                                                                    | 0.00           |                      |
| HFC-152a                                                                      | 0.00                                                                    | 0.00           |                      |
| HFC-227ea                                                                     | 0.00                                                                    | 0.00           |                      |
| HFC-236cb                                                                     | 0.00                                                                    | 0.00           |                      |
| HFC-236ea                                                                     | 0.00                                                                    | 0.00           |                      |
| HFC-236fa                                                                     | 0.00                                                                    | 0.00           |                      |
| HFC-245ca                                                                     | 0.00                                                                    | 0.00           |                      |
| HFC-245fa                                                                     | 0.00                                                                    | 0.00           |                      |
| HFC-365mfc                                                                    | 0.00                                                                    | 0.00           |                      |
| HFC-43-10mee                                                                  | 0.00                                                                    | 0.00           |                      |
| HFC-245fa in imported pre-blended polyol                                      | 0.00                                                                    | 0.00           |                      |
| HFC-365mfc in imported pre-blended polyol                                     | 0.00                                                                    | 0.00           |                      |
| R-404A                                                                        | 0.00                                                                    | 0.00           |                      |
| R-407A                                                                        | 0.00                                                                    | 0.00           |                      |
| R-407C                                                                        | 0.00                                                                    | 0.00           |                      |
| R-410A                                                                        | 0.00                                                                    | 0.00           |                      |
| R-507A                                                                        | 0.00                                                                    | 0.00           |                      |
| R-508B                                                                        | 0.00                                                                    | 0.00           |                      |
| <b>Alternatives</b>                                                           |                                                                         |                |                      |
| Isobutane (HC-600a)                                                           | 0.00                                                                    | 0.00           |                      |
| Propane (HC-290)                                                              | 0.00                                                                    | 0.00           |                      |
| Pentane                                                                       | 0.00                                                                    | 0.00           |                      |
| Cyclopentane                                                                  | 0.00                                                                    | 0.00           |                      |
| Methyl formate                                                                | 0.00                                                                    | 0.00           |                      |
| Other alternatives (Optional):                                                | 0.00                                                                    | 0.00           |                      |
|                                                                               | 0.00                                                                    | 0.00           |                      |

<sup>1</sup> Indicate whether the prices are FOB or retail prices.

36. Data can be provided for retail or freight on board (FOB) prices. However, the type of prices should be indicated in the “Remarks” column.

37. Regarding FOB prices, the Executive Committee has requested the Governments to report, on a voluntary basis, the average import FOB price for each controlled substance and controlled substances substitute in the revised CP format (decision 68/4(b)(iv)).

38. The average estimated prices of HCFCs, HFCs and alternatives should be provided, in US dollars per kilogramme. Most suppliers of alternatives will have a price list, and it can be collected, and the average price calculated. If the amount is in local currency, official rates of currency exchange should be used when converting the prices to US dollars. This will be helpful to compare the pricing gathered with existing global prices of substances to observe price differences.

39. Additional information can be provided in the “Remarks” column.

#### Section D. Annex F, Group II – Data on HFC-23 generation

40. This section should be provided if the country generated HFC-23 from any facility that produced (manufactured) Annex C, Group I or Annex F substances.

| SECTION D. ANNEX F, GROUP II - DATA ON HFC-23 GENERATION (METRIC TONNES)                                                                           |                                    |                                                              |                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------|---------------------------------------|
| NOTE: Fill in this form only if your country generated HFC-23 from any facility that produced (manufactured) Annex C Group I or Annex F substances |                                    |                                                              |                                       |
|                                                                                                                                                    | Captured for all uses <sup>1</sup> | Captured for feedstock uses within your country <sup>2</sup> | Captured for destruction <sup>2</sup> |
| HFC-23 <sup>1</sup>                                                                                                                                |                                    |                                                              |                                       |

<sup>1</sup> HFC-23 generation that is captured, whether for destruction, feedstock or any other use, shall be reported in this form  
<sup>2</sup> Amounts of HFC-23 captured for destruction or feedstock use will not be counted as production as per Article 1 of the Montreal Protocol.

41. The total HFC-23 by-products captured for all uses, i.e. destruction, feedstock or any other use should be reported in this section. Amounts of HFC-23 by-products captured for destruction or feedstock use will not be counted as production as per Article 1 of the Montreal Protocol.

42. In providing data on “Captured for all uses”, the quantity for “Captured for feedstock uses within your country”, or “Captured for destruction” should not be deducted. The column on production “Pure (A)” in Section B1 for HFC-23 (use) should include the data on HFC-23 captured for all uses minus the amount captured for feedstock uses within the country and the amount used for destruction.

#### Section E. Annex F, Group II (HFC-23 emissions)

43. This section should be provided only for countries that had generated HFC-23 from any facility that produced (manufactured) Annex C, Group I or Annex F substances. The information required in the columns that are shaded in grey is provided on a voluntary basis.

| SECTION E. ANNEX F, GROUP II - DATA ON HFC-23 EMISSIONS (METRIC TONNES)                                                                            |                                     |                                            |                                   |                 |                                                              |                                                     |                               |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------|-----------------------------------|-----------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|---------|
| NOTE: Fill in this form only if your country generated HFC-23 from any facility that produced (manufactured) Annex C Group I or Annex F substances |                                     |                                            |                                   |                 |                                                              |                                                     |                               |         |
| Facility name or identifier                                                                                                                        | Total amount generated <sup>1</sup> | Amount generated and captured <sup>2</sup> |                                   |                 | Amount used for feedstock without prior capture <sup>3</sup> | Amount destroyed without prior capture <sup>4</sup> | Amount of generated emissions | Remarks |
|                                                                                                                                                    |                                     | For all uses                               | For feedstock use in your country | For destruction |                                                              |                                                     |                               |         |
|                                                                                                                                                    |                                     |                                            |                                   |                 |                                                              |                                                     |                               |         |
|                                                                                                                                                    |                                     |                                            |                                   |                 |                                                              |                                                     |                               |         |
|                                                                                                                                                    |                                     |                                            |                                   |                 |                                                              |                                                     |                               |         |
|                                                                                                                                                    |                                     |                                            |                                   |                 |                                                              |                                                     |                               |         |
|                                                                                                                                                    |                                     |                                            |                                   |                 |                                                              |                                                     |                               |         |
| <b>Total</b>                                                                                                                                       | <b>0.00</b>                         | <b>0.00</b>                                | <b>0.00</b>                       | <b>0.00</b>     | <b>0.00</b>                                                  | <b>0.00</b>                                         |                               |         |

<sup>1</sup> “Total amount generated” refers to the total amount whether captured or not. The sum of these amounts is not to be reported under Section D.  
<sup>2</sup> The sums of these amounts are to be reported under Section D.  
<sup>3</sup> Amount converted to other substances in the facility. The sum of these amounts is not to be reported under Section D.  
<sup>4</sup> Amount destroyed in the facility.

44. If there were no emissions from a production facility, that production facility should be included in the data form and zero should be reported in the emissions column. The “Total amount generated” of HFC-23 refers to the total amount, whether captured or not; this amount should not be reported under Section D. It is the total amount for each column under “Amount generated and captured” that should be reported under Section D.

45. The “Amount used for feedstock without prior capture” column refers to the amount converted to other substances in the specified facilities, and the sum of those amounts should not be reported under Section D.

46. The “Amount destroyed without prior capture” column refers to the amounts destroyed in the specified facilities and the sum of those amounts should not be reported under Section D.

**Section F. Comments by the bilateral/implementing agency**

47. This section is very important. Countries should send the completed forms to the relevant bilateral or implementing agency responsible for the institutional strengthening project to ensure the accuracy of the data, by, for example, cross-checking the consumption and production data reported in the CP data forms against the consumption and production data reported on ongoing projects proposals or sector plans.

## Appendix I

### Composition of blends (mixtures of controlled substances)<sup>2</sup>

| Mixtures           | Composition |        |             |        |             |       |             |       |             |     |             |  |
|--------------------|-------------|--------|-------------|--------|-------------|-------|-------------|-------|-------------|-----|-------------|--|
|                    | Component 1 |        | Component 2 |        | Component 3 |       | Component 4 |       | Component 5 |     | Component 6 |  |
| Zeotropic mixtures |             |        |             |        |             |       |             |       |             |     |             |  |
| R-401A             | HCFC-124    | 34%    | HCFC-22     | 53%    | HFC-152a    | 13%   |             |       |             |     |             |  |
| R-401B             | HCFC-124    | 28%    | HCFC-22     | 61%    | HFC-152a    | 11%   |             |       |             |     |             |  |
| R-401C             | HCFC-124    | 52%    | HCFC-22     | 33%    | HFC-152a    | 15%   |             |       |             |     |             |  |
| R-402A             | HC-290      | 2%     | HCFC-22     | 38%    | HFC-125     | 60%   |             |       |             |     |             |  |
| R-402B             | HC-290      | 2%     | HCFC-22     | 60%    | HFC-125     | 38%   |             |       |             |     |             |  |
| R-403A             | HC-290      | 5%     | HCFC-22     | 75%    | PFC-218     | 20%   |             |       |             |     |             |  |
| R-403B             | HC-290      | 5%     | HCFC-22     | 56%    | PFC-218     | 39%   |             |       |             |     |             |  |
| R-404A             | HFC-125     | 44%    | HFC-134a    | 4%     | HFC-143a    | 52%   |             |       |             |     |             |  |
| R-405A             | HCFC-142b   | 6%     | HCFC-22     | 45%    | HFC-152a    | 7%    | PFC-C318    | 43%   |             |     |             |  |
| R-406A             | HC-600a     | 4%     | HCFC-142b   | 41%    | HCFC-22     | 55%   |             |       |             |     |             |  |
| R-407A             | HFC-125     | 40%    | HFC-134a    | 40%    | HFC-32      | 20%   |             |       |             |     |             |  |
| R-407B             | HFC-125     | 70%    | HFC-134a    | 20%    | HFC-32      | 10%   |             |       |             |     |             |  |
| R-407C             | HFC-125     | 25%    | HFC-134a    | 52%    | HFC-32      | 23%   |             |       |             |     |             |  |
| R-407D             | HFC-125     | 15%    | HFC-134a    | 70%    | HFC-32      | 15%   |             |       |             |     |             |  |
| R-407E             | HFC-125     | 15%    | HFC-134a    | 60%    | HFC-32      | 25%   |             |       |             |     |             |  |
| R-407F             | HFC-125     | 30%    | HFC-134a    | 40%    | HFC-32      | 30%   |             |       |             |     |             |  |
| R-407G             | HFC-125     | 2.50%  | HFC-134a    | 95%    | HFC-32      | 2.5%  |             |       |             |     |             |  |
| R-408A             | HCFC-22     | 47%    | HFC-125     | 7%     | HFC-143a    | 46%   |             |       |             |     |             |  |
| R-409A             | HCFC-124    | 25%    | HCFC-142b   | 15%    | HCFC-22     | 60%   |             |       |             |     |             |  |
| R-409B             | HCFC-124    | 25%    | HCFC-142b   | 10%    | HCFC-22     | 65%   |             |       |             |     |             |  |
| R-410A             | HFC-125     | 50%    | HFC-32      | 50%    |             |       |             |       |             |     |             |  |
| R-410B             | HFC-125     | 55%    | HFC-32      | 45%    |             |       |             |       |             |     |             |  |
| R-411A             | HO-1270     | 1.50%  | HCFC-22     | 87.50% | HFC-152a    | 11%   |             |       |             |     |             |  |
| R-411B             | HO-1270     | 3%     | HCFC-22     | 94%    | HFC-152a    | 3%    |             |       |             |     |             |  |
| R-412A             | HCFC-142b   | 25%    | HCFC-22     | 70%    | PFC-218     | 5%    |             |       |             |     |             |  |
| R-413A             | HC-600a     | 3%     | HFC-134a    | 88%    | PFC-218     | 9%    |             |       |             |     |             |  |
| R-414A             | HC-600a     | 4%     | HCFC-124    | 28.50% | HCFC-142b   | 16.5% | HCFC-22     | 51%   |             |     |             |  |
| R-414B             | HC-600a     | 1.50%  | HCFC-124    | 39%    | HCFC-142b   | 9.50% | HCFC-22     | 50%   |             |     |             |  |
| R-415A             | HCFC-22     | 82%    | HFC-152a    | 18%    |             |       |             |       |             |     |             |  |
| R-415B             | HCFC-22     | 25%    | HFC-152a    | 75%    |             |       |             |       |             |     |             |  |
| R-416A             | HC-600      | 1.50%  | HCFC-124    | 39.50% | HFC-134a    | 59%   |             |       |             |     |             |  |
| R-417A             | HC-600      | 3.40%  | HFC-125     | 46.60% | HFC-134a    | 50%   |             |       |             |     |             |  |
| R-417B             | HC-600      | 2.70%  | HFC-125     | 79%    | HFC-134a    | 18.3% |             |       |             |     |             |  |
| R-417C             | HC-600      | 1.70%  | HFC-125     | 19.50% | HFC-134a    | 78.8% |             |       |             |     |             |  |
| R-418A             | HC-290      | 1.50%  | HCFC-22     | 96%    | HFC-152a    | 2.5%  |             |       |             |     |             |  |
| R-419A             | HCE-170     | 4%     | HFC-125     | 77%    | HFC-134a    | 19%   |             |       |             |     |             |  |
| R-419B             | HCE-170     | 3.50%  | HFC-125     | 48.50% | HFC-134a    | 48%   |             |       |             |     |             |  |
| R-420A             | HCFC-142b   | 12%    | HFC-134a    | 88%    |             |       |             |       |             |     |             |  |
| R-421A             | HFC-125     | 58%    | HFC-134a    | 42%    |             |       |             |       |             |     |             |  |
| R-421B             | HFC-125     | 85%    | HFC-134a    | 15%    |             |       |             |       |             |     |             |  |
| R-422A             | HC-600a     | 3.40%  | HFC-125     | 85.10% | HFC-134a    | 11.5% |             |       |             |     |             |  |
| R-422B             | HC-600a     | 3%     | HFC-125     | 55%    | HFC-134a    | 42%   |             |       |             |     |             |  |
| R-422C             | HC-600a     | 3%     | HFC-125     | 82%    | HFC-134a    | 15%   |             |       |             |     |             |  |
| R-422D             | HC-600a     | 3.40%  | HFC-125     | 65.10% | HFC-134a    | 31.5% |             |       |             |     |             |  |
| R-422E             | HC-600a     | 2.70%  | HFC-125     | 58%    | HFC-134a    | 39.3% |             |       |             |     |             |  |
| R-423A             | HFC-134a    | 52.50% | HFC-227ea   | 47.50% |             |       |             |       |             |     |             |  |
| R-424A             | HC-600      | 1%     | HC-600a     | 0.90%  | HC-601a     | 0.6%  | HFC-125     | 50.5% | HFC-134a    | 47% |             |  |
| R-425A             | HFC-134a    | 69.50% | HFC-227ea   | 12%    | HFC-32      | 18.5% |             |       |             |     |             |  |
| R-426A             | HC-600      | 1.30%  | HC-601a     | 0.60%  | HFC-125     | 5.10% | HFC-134a    | 93%   |             |     |             |  |
| R-427A             | HFC-125     | 25%    | HFC-134a    | 50%    | HFC-143a    | 10%   | HFC-32      | 15%   |             |     |             |  |
| R-428A             | HC-290      | 0.60%  | HC-600a     | 1.90%  | HFC-125     | 77.5% | HFC-143a    | 20%   |             |     |             |  |
| R-429A             | HC-600a     | 30%    | HCE-170     | 60%    | HFC-152a    | 10%   |             |       |             |     |             |  |
| R-430A             | HC-600a     | 24%    | HFC-152a    | 76%    |             |       |             |       |             |     |             |  |
| R-431A             | HC-290      | 71%    | HFC-152a    | 29%    |             |       |             |       |             |     |             |  |
| R-434A             | HC-600a     | 2.80%  | HFC-125     | 63.20% | HFC-134a    | 16%   | HFC-143a    | 18%   |             |     |             |  |

<sup>2</sup> UNEP/OzL.Pro.30/11, Annex III, Appendix I, Section 11.

| Mixtures                   | Composition |        |                |        |                |        |             |        |             |        |             |     |
|----------------------------|-------------|--------|----------------|--------|----------------|--------|-------------|--------|-------------|--------|-------------|-----|
|                            | Component 1 |        | Component 2    |        | Component 3    |        | Component 4 |        | Component 5 |        | Component 6 |     |
| R-435A                     | HCE-170     | 80%    | HFC-152a       | 20%    |                |        |             |        |             |        |             |     |
| R-437A                     | HC-600      | 1.40%  | HC-601         | 0.60%  | HFC-125        | 19.5%  | HFC-134a    | 78.5%  |             |        |             |     |
| R-438A                     | HC-600      | 1.70%  | HC-601a        | 0.60%  | HFC-125        | 45%    | HFC-134a    | 44.20% | HFC-32      | 8.5%   |             |     |
| R-439A                     | HC-600a     | 3%     | HFC-125        | 47%    | HFC-32         | 50%    |             |        |             |        |             |     |
| R-440A                     | HC-290      | 0.60%  | HFC-134a       | 1.60%  | HFC-152a       | 97.8%  |             |        |             |        |             |     |
| R-442A                     | HFC-125     | 31%    | HFC-134a       | 30%    | HFC-152a       | 3%     | HFC-227ea   | 5%     | HFC-32      | 31%    |             |     |
| R-444A                     | HFC-152a    | 5%     | HFC-32         | 12%    | HFO-1234ze (E) | 83%    |             |        |             |        |             |     |
| R-444B                     | HFC-152a    | 10%    | HFC-32         | 41.50% | HFO-1234ze (E) | 48.50% |             |        |             |        |             |     |
| R-445A                     | HFC-134a    | 9%     | R-744          | 6%     | HFO-1234ze (E) | 85%    |             |        |             |        |             |     |
| R-446A                     | HC-600      | 3%     | HFC-32         | 68%    | HFO-1234ze (E) | 29%    |             |        |             |        |             |     |
| R-447A                     | HFC-125     | 3.50%  | HFC-32         | 68%    | HFO-1234ze (E) | 28.50% |             |        |             |        |             |     |
| R-447B                     | HFC-125     | 8%     | HFC-32         | 68%    | HFO-1234ze (E) | 24%    |             |        |             |        |             |     |
| R-448A                     | HFC-125     | 26%    | HFC-134a       | 21%    | HFO-1234ze (E) | 7%     | HFO-1234yf  | 20%    | HFC-32      | 26%    |             |     |
| R-449A                     | HFC-125     | 24.70% | HFC-134a       | 25.70% | HFC-32         | 24.30% | HFO-1234yf  | 25.3%  |             |        |             |     |
| R-449B                     | HFC-125     | 24.30% | HFC-134a       | 27.30% | HFC-32         | 25.20% | HFO-1234yf  | 23.2%  |             |        |             |     |
| R-449C                     | HFC-125     | 20%    | HFC-134a       | 29%    | HFC-32         | 20%    | HFO-1234yf  | 31%    |             |        |             |     |
| R-450A                     | HFC-134a    | 42%    | HFO-1234ze (E) | 58%    |                |        |             |        |             |        |             |     |
| R-451A                     | HFC-134a    | 10.20% | HFO-1234yf     | 89.80% |                |        |             |        |             |        |             |     |
| R-451B                     | HFC-134a    | 11.20% | HFO-1234yf     | 88.80% |                |        |             |        |             |        |             |     |
| R-452A                     | HFC-125     | 59%    | HFC-32         | 11%    | HFO-1234yf     | 30%    |             |        |             |        |             |     |
| R-452B                     | HFC-125     | 7%     | HFC-32         | 67%    | HFO-1234yf     | 26%    |             |        |             |        |             |     |
| R-452C                     | HFC-125     | 61%    | HFC-32         | 12.50% | HFO-1234yf     | 26.5%  |             |        |             |        |             |     |
| R-453A                     | HC-600      | 0.60%  | HC-601a        | 0.60%  | HFC-125        | 20%    | HFC-134a    | 53.80% | HFC-227ea   | 5%     | HFC-32      | 20% |
| R-454A                     | HFC-32      | 35%    | HFO-1234yf     | 65%    |                |        |             |        |             |        |             |     |
| R-454B                     | HFC-32      | 68.90% | HFO-1234yf     | 31.10% |                |        |             |        |             |        |             |     |
| R-454C                     | HFC-32      | 21.50% | HFO-1234yf     | 78.50% |                |        |             |        |             |        |             |     |
| R-455A                     | HFC-32      | 21.50% | HFO-1234yf     | 75.50% | R-744          | 3%     |             |        |             |        |             |     |
| R-456A                     | HFC-134a    | 45%    | HFC-32         | 6%     | HFO-1234ze (E) | 49%    |             |        |             |        |             |     |
| R-457A                     | HFC-152a    | 12%    | HFC-32         | 18%    | HFO-1234yf     | 70%    |             |        |             |        |             |     |
| R-458A                     | HFC-125     | 4%     | HFC-134a       | 61.40% | HFC-227ea      | 13.5%  | HFC-236fa   | 0.60%  | HFC-32      | 20.50% |             |     |
| R-459A                     | HFC-32      | 68%    | HFO-1234yf     | 26%    | HFO-1234ze (E) | 6%     |             |        |             |        |             |     |
| R-459B                     | HFC-32      | 21%    | HFO-1234yf     | 69%    | HFO-1234ze (E) | 10%    |             |        |             |        |             |     |
| R-460A                     | HFC-125     | 52%    | HFC-134a       | 14%    | HFO-1234ze (E) | 22%    | HFC-32      | 12%    |             |        |             |     |
| R-460B                     | HFC-125     | 25%    | HFC-134a       | 20%    | HFO-1234ze (E) | 27%    | HFC-32      | 28%    |             |        |             |     |
| <b>Azeotropic mixtures</b> |             |        |                |        |                |        |             |        |             |        |             |     |
| R-500                      | CFC-12      | 73.80% | HFC-152a       | 26.2%  |                |        |             |        |             |        |             |     |
| R-501                      | CFC-12      | 25%    | HCFC-22        | 75%    |                |        |             |        |             |        |             |     |
| R-502                      | CFC-115     | 51.20% | HCFC-22        | 48.8%  |                |        |             |        |             |        |             |     |
| R-503                      | CFC-13      | 59.90% | HFC-23         | 40.10% |                |        |             |        |             |        |             |     |
| R-504                      | CFC-115     | 51.80% | HFC-32         | 48.20% |                |        |             |        |             |        |             |     |
| R-505                      | CFC-12      | 78%    | HCFC-31        | 22%    |                |        |             |        |             |        |             |     |
| R-506                      | CFC-114     | 45%    | HCFC-31        | 55%    |                |        |             |        |             |        |             |     |
| R-507A (AZ-50)             | HFC-125     | 50%    | HFC-143a       | 50%    |                |        |             |        |             |        |             |     |
| R-508A                     | HFC-23      | 39%    | PFC-116        | 61%    |                |        |             |        |             |        |             |     |
| R-508B                     | HFC-23      | 46%    | PFC-116        | 54%    |                |        |             |        |             |        |             |     |

| Mixtures                | Composition |        |                |        |             |       |             |       |             |  |             |  |
|-------------------------|-------------|--------|----------------|--------|-------------|-------|-------------|-------|-------------|--|-------------|--|
|                         | Component 1 |        | Component 2    |        | Component 3 |       | Component 4 |       | Component 5 |  | Component 6 |  |
| R-509 (TP5R2)           | HCFC-22     | 46%    | PFC-218        | 54%    |             |       |             |       |             |  |             |  |
| R-509A                  | HCFC-22     | 44%    | PFC-218        | 56%    |             |       |             |       |             |  |             |  |
| R-512A                  | HFC-134a    | 5%     | HFC-152a       | 95%    |             |       |             |       |             |  |             |  |
| R-513A (XP10/DR-11)     | HFC-134a    | 44%    | HFO-1234yf     | 56%    |             |       |             |       |             |  |             |  |
| R-513B                  | HFC-134a    | 41.50% | HFO-1234yf     | 58.50% |             |       |             |       |             |  |             |  |
| R-515A                  | HFC-227ea   | 12%    | HFO-1234ze (E) | 88%    |             |       |             |       |             |  |             |  |
| <b>Other mixtures</b>   |             |        |                |        |             |       |             |       |             |  |             |  |
| FX 20                   | HFC-125     | 45%    | HCFC-22        | 55%    |             |       |             |       |             |  |             |  |
| FX 55                   | HCFC-22     | 60%    | HCFC-142b      | 40%    |             |       |             |       |             |  |             |  |
| D 136                   | HCFC-22     | 50%    | HCFC-124       | 47%    | HC-600a     | 3%    |             |       |             |  |             |  |
| Daikin Blend            | HFC-23      | 2%     | HFC-32         | 28%    | HCFC-124    | 70%   |             |       |             |  |             |  |
| FRIGC                   | HCFC-124    | 39%    | HCFC-134a      | 59%    | HC-600a     | 2%    |             |       |             |  |             |  |
| Free Zone               | HCFC-142b   | 19%    | HFC-134a       | 79%    | Lubricant   | 2%    |             |       |             |  |             |  |
| GHG-HP                  | HCFC-22     | 65%    | HCFC-142b      | 31%    | HC-600a     | 4%    |             |       |             |  |             |  |
| GHG-X5                  | HCFC-22     | 41%    | HCFC-142b      | 15%    | HFC-227ea   | 40%   | HC-600a     | 4%    |             |  |             |  |
| NARM-502                | HCFC-22     | 90%    | HFC-152a       | 5%     | HFC-23      | 5%    |             |       |             |  |             |  |
| NASF-S-III <sup>3</sup> | HCFC-22     | 82%    | HCFC-123       | 4.75%  | HCFC-124    | 9.50% | HC-600a     | 3.75% |             |  |             |  |

<sup>3</sup> A halon alternative.