



# HFC Fire Suppressant Agents – New Laboratory Testing Requirements

*HFC Fire Suppression Agent Test and Reporting Requirements under the AIM Act and EPA Regulations (40 CFR Part 84)*

*On July 20, 2023, the EPA published an update to (40 CFR Part 84) which implements the American Innovation and Manufacturing Act. The updated regulations, effective September 18, 2023, include new requirements to verify the quality of HFC fire suppressant agents by laboratory testing as well as additional recordkeeping requirements. These updated regulations affect FSSA members who fill or recharge HFC fire system cylinders. An overview of the EPA regulation was given at the FSSA Annual Forum and discussed at the division meetings. (88 Fed. Reg. 46836)*

## **SUMMARY OF THE REGULATORY UPDATES**

The regulations now require anyone who transfers HFC fire suppressant agent from one container to another<sup>1</sup> to verify that each batch of HFC fire suppressant agents used to fill or recharge system cylinders meets applicable quality specifications by testing before selling or distributing the HFC fire suppressant agent. (84.5(i)(3)(i))

Anyone who transfers HFC fire suppressant agents from one container to another prior to sale or distribution is a “repackager” with the following exception: “An entity that services system cylinders for use in fire suppression equipment and returns the same regulated substances to the same system cylinder it was recovered from after the system cylinder is serviced is not a repackager.” (84.3 Definitions)

The repackager must maintain dated records of the required laboratory tests performed on the batch available for review. (84.31(k)) The records must be maintained for 5 years.

Anyone who does initial fill or recharge of HFC system cylinders must follow the EPA regulations summarized above. The laboratory test requirements apply to both virgin and recycled HFC fire suppressant agents.

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<sup>1</sup> An exception is removing agent from a system cylinder, servicing the cylinder, and then returning the same agent to the same system cylinder from which the agent was recovered. This agent need not be tested per EPA regulations.

## EXAMPLE SCENARIOS



*One ton cylinder of HFC-227ea is purchased from a manufacturer, importer, or recycler with a certificate of analysis for purity.*

*The one ton cylinder is used to fill system cylinders which are sold for use in a fire suppression system.*

*⇓ - test the contents of the one ton cylinder as representative sample of the batch - ⇓*



*Not required to test sample from the system cylinders because sample of batch was tested.*

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*A one ton cylinder of HFC-227ea is purchased from a manufacturer, importer, or recycler with a certificate of analysis for purity.*

*The contents of the one ton cylinder are separated into two half ton cylinders.*



*Each half ton is used to fill system cylinders for use in a fire suppression system.*

*⇓ - test each half ton as representative sample of the batch - ⇓*

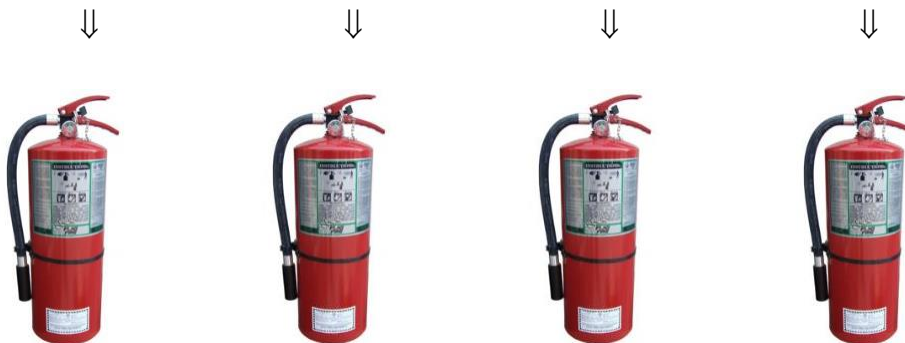


*Not required to test a sample from the system cylinders because sample of batch was tested.*



*A repackager buys a one ton cylinder of HFC-236fa from a manufacturer, importer, or recycler with a certificate of analysis for purity.*

*One ton is used to fill portable fire extinguishers. Per EPA interpretations, the repackager is not required to test the agent from the one ton cylinder. (88 Fed. Reg., page 46874, column 2)*



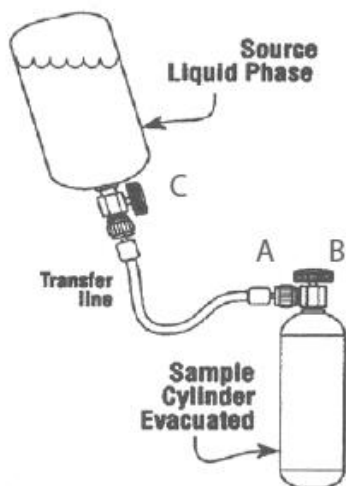
## AGENT TESTING

Before offering regulated HFC fire suppression agents for sale or distribution, the cylinder filler must verify by test that the composition of the contents of the agent container matches the container label. The required sampling and testing methodology for this verification is given in 84.5(i)(3)(i), a copy of which is included in Annex A.

Various laboratories provide testing of HFCs.

- Until October 1, 2024, the EPA regulations permit any laboratory which tests per the requirements in 84.5(i)(3)(i) to do the verification testing.
- Beginning October 1, 2024, EPA will require testing to be conducted by accredited or certified laboratories per the definition of “laboratory testing” in 88 Fed. Reg., page 46894, Item 3 and shown below in Annex B.

To avoid erroneous results which could cause rejection of a good batch of agent, it is recommended to use evacuated, sealed sample cylinders from the test laboratory. Transfer hoses must be absolutely free of moisture, residue, and particulate matter. The connections at the source cylinder (C) and sample cylinder (A) must be absolutely dry before connecting the transfer line. The transfer hose should be purged with agent immediately before connecting it to the sample cylinder. Rigorously follow the directions provided by the testing laboratory.



NOTICE: This material is made available by the FSSA for its members for informational purposes only and is subject to change. Users are encouraged to consult with their own professional advisors for guidance based on their own circumstances. If advisable, a user may consider contacting the EPA with any questions concerning its rules and regulations by clicking [here](#).

## *July 2023 Agent Test and Reporting Requirements under the AIM Act and EPA Regulations*

### **ANNEX A: TEXT OF RELATED EPA REGULATIONS, 40 CFR Part 84 (CURRENT AS OF 2/27/2024)<sup>2</sup>**

#### 84.3 Definitions

*Batch* means a vessel, container, or cylinder from which a producer, importer, reclaimer, recycler, or repackager transfers regulated substances directly for sale or distribution, or for repackaging for sale or distribution; or a population of small vessels, containers, or cylinders with the same nominal composition that a producer, importer, reclaimer, recycler, or repackager directly offers for sale or distribution.

*Repackagers* means entities who transfer regulated substances, either alone or in a blend, from one container to another container prior to sale or distribution or offer for sale or distribution. An entity that services system cylinders for use in fire suppression equipment and returns the same regulated substances to the same system cylinder it was recovered from after the system cylinder is serviced is not a repackager.

*Representative sample* means a sample collected from a container offered for sale or distribution using a sampling method that obtains all components of regulated substance(s) in an unbiased and precise manner; and a sample that can be used to infer that the composition of regulated substance(s) in a population of containers offered for sale or distribution that constitute, or are derived from, the batch, are within stated tolerances.

#### 84.5 Prohibitions relating to regulated substances

**84.5(i)(3)(i)** No person producing, importing, exporting, reclaiming, recycling for fire suppression, or repackaging regulated substances, whether as a single or multicomponent substance, may sell or distribute, or offer for sale or distribution, those regulated substances without first conducting laboratory testing of a representative sample of the regulated substances that they are producing, importing, exporting, reclaiming, recycling for fire

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<sup>2</sup> Note that per 88 Fed. Reg page 46874, column 2, “. . . a regulated substance contained in a fire extinguisher is not a bulk substance. As a result, fire extinguishers are not subject to any requirements under 40 CFR part 84, subpart A, including the sampling and testing requirements.” System cylinders are considered “bulk regulated substances” and are subject to 40 CFR Part 84, subpart A.

suppression, or repackaging to verify that the composition of the regulated substance(s) matches the container labeling using the sampling and testing methodology prescribed in appendix A to 40 CFR part 82, subpart F for regulated substances offered for sale and distribution as refrigerants and using the following sampling and testing method for regulated substances offered for non-refrigerant uses:

**Table 1 to Paragraph (i)(3)(i) Non-Refrigerant Regulated Substance Sampling and Testing Methods**

Regulated substance	Sampling and testing method
HFC–23, HFC–134, HFC–125, HFC–143a, HFC–41, HFC–152a	Appendix A to 40 CFR part 82, subpart F, Sections 1, 2, 3, 5.1, 5.2, 5.3, 7, 8; <i>Part 7 of 2008 Appendix C for Analytical Procedures for AHRI Standard 700–2014—Normative</i> , (incorporated by reference in § 84.37). <sup>3</sup>
HFC–134a, HFC–143, HFC–245fa, HFC–32, HFC–152	Appendix A to 40 CFR part 82, subpart F, Sections 1, 2, 3, 5.1, 5.2, 5.3, 7, 8; <i>Part 9 of 2008 Appendix C for Analytical Procedures for AHRI Standard 700–2014—Normative</i> , (incorporated by reference in § 84.37). <sup>3</sup>
HFC–227ea, HFC–236cb, HFC–236ea, HFC–236fa, HFC–245ca, HFC–365mfc, HFC–43–10mee	Sections 8,1 9, 10, 11, 12,2 and 13 of EPA Method 18 as applicable—appendix A–6 to <a href="#">40 CFR part 60</a> —Test Methods 16 through 18. Or ASTM D6806–02 (2022), Standard Practice for Analysis of Halogenated Organic Solvents and Their Admixtures by Gas Chromatography (incorporated by reference in § <a href="#">84.37</a> ). <sup>4</sup>

<sup>1</sup> Only applicable portions of section 8 as specified here are required. Canisters may be used in place of bags for the purposes of these requirements. A sampling and analysis procedure under [section 8.2](#) which provides for a representative sample is

required (while section 8.2.1.5 is likely most appropriate, other procedures may be acceptable). Sections 8.4.1, 8.4.2.1, and 8.4.2.2 are required.

<sup>2</sup> “Dry basis” concentrations do not need to be recorded.

<sup>3</sup> ASTM D6064–11 (reapproved 2022), *Standard Specification for HFC–227ea, 1,1,1,2,3,3,3-Heptafluoropropane (CF<sub>3</sub>CHF<sub>2</sub>CF<sub>3</sub>)* (incorporated by reference in § 84.37) may be used as an alternative for non-refrigerant regulated substances offered for fire suppression use.

<sup>4</sup> ASTM D6231/D6231M–21, *Standard Specification for HFC–125 (Pentafluoroethane, C<sub>2</sub>HF<sub>5</sub>)* (incorporated by reference in § 84.37) and ASTM D6541–21 *Standard Specification for HFC–236fa, 1,1,1,3,3,3-Hexafluoropropane, (CF<sub>3</sub>CH<sub>2</sub>CF<sub>3</sub>)*, (incorporated by reference in § 84.37) reference ASTM D6806 and may be used as an alternative for non-refrigerant regulated substances offered for fire suppression use.

#### 84.31 Record Keeping and Reporting

*84.31(k) Repackagers.* Persons who transfer regulated substances, either alone or in a blend from one container to another container prior to sale or distribution or offer for sale or distribution must comply with the following recordkeeping requirements:

- (1) *Recordkeeping.* Repackagers must maintain dated records of batch tests of regulated substances packaged for sale or distribution, including instrument calibration, sample testing data files, audit trail files, and results summaries of both sample test results and quality control test results that are in a form suitable and readily available for review.
- (2) [Reserved]





## *October 1, 2024 New Definition/Requirement*

### **ANNEX B: DEFINITION TO BE ADDED TO 40 CFR 84.3 ON OCTOBER 1, 2024**

*Laboratory testing* means the use of the sampling and testing methodology prescribed in § 84.5(i)(3) by a laboratory that is accredited to ISO 17025 in accordance with ISO/IEC 17025:2017(E) (incorporated by reference, see § 84.37), or certified under the AHRI Refrigerant Testing Laboratory Certification Program in accordance with the AHRI RTL OM and AHRI General OM (both incorporated by reference, see § 84.37), or recognized under OSHA's Nationally Recognized Testing Laboratory program in accordance with requirements codified at 29 CFR 1910.7. (46894 Federal Register / Vol. 88, No. 138 / Thursday, July 20, 2023 / Rules and Regulations)