

**Guidance  
Note**



**Fire Industry Association**



**Recycled Halocarbon Extinguishing Agents**

# FIA Guidance Document – Recycled Halocarbon Extinguishing Agents

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## 1. SCOPE

This FIA guidance sets out the criteria required for recycled Halocarbon fire extinguishing agents and their use in discharged and / or service exchange containers. The intent of this guidance is to illustrate why the recovery and recycling of halocarbon extinguishing agents should be carried out in a safe and environmentally responsible manner that meets the required quality standards.

It is worth noting that “recovered” agent refers to halocarbon extinguishing agents that has been simply removed from a system and kept for future use without testing or processing in any way.

“Recycled agent” refers to halocarbon fire extinguishing agents that have been recovered, tested and processed as necessary to bring them into compliance with the necessary quality standards.

## 2. SAFETY

All extinguishing agents used in fixed gaseous fire extinguishing systems, must meet the required purity levels established in EN15004. Ideally the containers should be filled by those acting under the authority of the Original Equipment Manufacturer, but always in strict accordance with the Original Equipment Manufacturers processes and utilising only parts approved by the Original Equipment Manufacturer for their specific equipment.

Failure to follow the correct procedures, may result in a number of potential hazards:

- Inability of the system to meet the requirements of relevant standards and certification
- Contamination of the agent
- Compromise to human safety levels through contamination (e.g. water or other gases using the same recovery equipment)
- Reduced fire extinguishing capability
- Damage to the systems hardware or other equipment
- Efficiency of the system performance
- Leakage of the fire extinguishing system containers
- Inadvertent release of the fire extinguishing system

## 3. AGENTS COVERED

The following agents, listed in EN 15004-1 are covered by this Guidance Note

FK-5-1-12	EN 15004 Part 2
HFC-125	EN 15004 Part 4
HFC-227ea	EN 15004 Part 5
HFC-23	EN 15004 Part 6

## 4. AGENT SPECIFICATIONS

### 4.1 General

The halocarbon fire extinguishing agents covered by this guidance shall should comply with the specifications below.

**Table 1 – Specification for FK-5-1-12**

PROPERTY	REQUIREMENT
Purity	99,6% (mol/mol), min.
Acidity	$3 \times 10^{-6}$ by mass, max.
Water content	0,001 % by mass, max.
Non-volatile residue	0,03 % by mass, max.
Suspended matter or sediment	None visible

**Table 2 – Specification for HFC-125**

PROPERTY	REQUIREMENT
Purity	99,6% (mol/mol), min.
Acidity	$3 \times 10^{-4}$ by mass, max.
Water content	$10 \times 10^{-4}$ by mass, max.
Non-volatile residue	0,01 % by mass, max.
Suspended matter or sediment	None visible

**Table 3 – Specification for HFC-227ea**

PROPERTY	REQUIREMENT
Purity	99,6% (mol/mol), min.
Acidity	$3 \times 10^{-6}$ by mass, max.
Water content	$10 \times 10^{-6}$ by mass, max.
Non-volatile residue	0,01 % by mass, max.
Suspended matter or sediment	None visible

**Table 4 – Specification for HFC-23**

PROPERTY	REQUIREMENT
Purity	99,6% (mol/mol), min.
Acidity	$3 \times 10^{-6}$ by mass, max.
Water content	$10 \times 10^{-6}$ by mass, max.
Non-volatile residue	0,01 % by mass, max.
Suspended matter or sediment	None visible

## 5. RECOVERY

When containers are returned from active duty, the reclamation of the agent during servicing or decommissioning of the container, should be handled in a reverse process of the filling procedure. Recovery processes that use a closed loop arrangement with no contact with ambient air are preferred to minimise losses and preclude the introduction of contaminants to the agent.

Equipment used for filling and reclamation should be suitably purged / cleaned before each cycle to prevent cross contamination of agents.

Technicians operating or supervising the recovery of agent should be trained in the use of such equipment and in the safe handling of halocarbon fire extinguishing agents and equipment. Guidelines contained in the Safety Data Sheet for the agent should be followed. When recovering halocarbon fire extinguishing agents that are subject to the F-Gas regulation, companies and technicians should hold the relevant certification in accordance with the regulation.

## 6. RECYCLING

When it is necessary to bring the halocarbon fire extinguishing agent back into compliance with the standard, it should be processed by filtering, drying, distillation or other means prior to reuse.

Once the agent has been processed, it requires to be tested to ensure that it meets the specification of the relevant part of the EN 15004 standard.

Testing using appropriate laboratory test methods provided by the halocarbon fire extinguishing agent manufacturer should be carried out. Dependant on the results the gases may require additional cleaning or separation to meet with the minimum levels set out in EN 15004 standard.

It should be noted that agent should not be simply removed from one container to another and it is necessary to provide certification, for each batch of agent that has been processed.

Any agent that cannot be made to meet the minimum required purity level should not be used and should be destroyed in an environmentally friendly way or returned to the manufacturer in accordance with applicable laws and regulations.

## 7. PURITY CERTIFICATION

Halocarbon fire extinguishing agents should only be considered for reuse if they have been recovered, tested and processed as necessary to ensure that they are in compliance with the quality requirements of EN 15004.

**DISCLAIMER**

*The information set out in this document is believed to be correct in the light of information currently available but it is not guaranteed and neither the Fire Industry Association nor its officers can accept any responsibility in respect of the contents or any events arising from use of the information contained within this document.*



**Fire Industry Association**

**Tudor House, Kingsway Business Park, Oldfield Road, Hampton, Middlesex TW12 2HD**

**Tel: +44 (0)20 3166 5002 • [www.fia.uk.com](http://www.fia.uk.com)**