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Specific Certification Program Fire Protection Systems for Services

Cleaning of Foam Systems in context with PFAS



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Quality
Progress

Preface

This specific certification program has been accepted by the Kiwa Board of Experts Fire Safety, in which all relevant parties in the field of Fire Protection Systems are represented. The Board of Experts also supervises the certification activities and where necessary requires the evaluation guideline to be revised. All references to Board of Experts in this evaluation guideline pertain to the above mentioned Board of Experts.

This certification program will be used by Kiwa in conjunction with the Kiwa Regulations for Certification within the context of Certification Scheme K21045 "Fire Protection Systems".

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1 Introduction

1.1 General

This specific certification program includes all relevant requirements which are executed by Kiwa when dealing with specific applications.

This specific certification program is a first version and shall be used in context with the Testing Inspection and Certification scheme K21045 “Fire Protection Systems”.

1.1.1 *Motivation for this specific certification program*

Public and private fire brigade organizations, industrial and logistics (storage) companies widely use fluorine-containing firefighting foam for effective incident response. The fire protection foam is stored in foam tanks, in both vehicles and fixed fire protection systems. The PFAS (poly- and perfluoroalkyl substances) in this fire-fighting foam have adverse long-term effects on humans and the environment. Due to the upcoming European restrictions on the use of PFAS, more and more organizations are using fluorine-free firefighting foam, which does not contain PFAS.

When disposing of the fluorine-containing fire protection foam, PFAS residues may remain in the fire protection system. To prevent PFAS residues from ending up in the environment via the new foam, fire protection systems must be adequately cleaned. Various companies in the market have now developed a cleaning process for this. There are major differences in the cleaning processes. These differences are not important, if it achieves comparable results. There is a need in the market and the competent authority for clear frameworks for cleaning, sampling and analysis and disposal of residue.

By recording these frameworks in an assessment certification scheme, safety and quality can be arranged.

Fire Protection Systems based on foam use a concentrate which also contains elements like PFAS (Per- and Polyfluorinated Substances). This to fulfill a certain fire protection performance. This can be based on:

- fire protection systems with foam concentrates according to the EN1568 series applied according to NFPA 11 and/or EN 13565-2 or
- fire protection systems with water/foam mix applied according to NFPA 16 and/or EN12845.

1.1.2 *Objective of the working group developing this specific certification program*

Standardized frameworks have been drawn up for the cleaning process of PFAS-containing fire protection systems. The cleaning is aimed at the foam tanks and pump/mixing systems, including all connections and other parts of a fire protection system containing foam concentrate. These frameworks are included in a certification scheme, which arranges a safe, risk-based, cost-effective and qualitatively efficient cleaning process, which is reproducible with a uniform determination of the results.

The certification scheme is determined by the Board of Experts Fire Safety and validated and managed by an independent certification body.

The result is a certification scheme that is also accepted by the competent authority, which can be used for certification of cleaning processes for PFAS-containing mobile and fixed fire protection systems.

This specific certification program is part of Kiwa TIC scheme K21045 (Fire Protection Systems).

A timeline, with various EU regulations with restrictions for PFAS is detailed below.

| Group | Element | Regulation | Value | Date of implementation |
|--------|---------|------------|----------------------|---|
| C8 | PFOS | 2006/122 | <10 mg/kg or <10 ppm | June 2011 |
| | PFOA | 2017/1000 | <25 ppb | Juli 2020 production Jan 2023 / July 2025 usage |
| C9-C14 | | 2021/1297 | <25 ppb | Feb 2023 production Feb 2023 / July 2025 usage |
| C6 | PFHxA | Draft | <25 ppb | End 2025 production End 2027 usage End 2034 usage > 400m2 |
| | PFHxS | 2023/1608 | <25 ppb | August 2023 August 2026 usage < 0,1mg/kg |

Figure 1- milestones implementation regulations - informative

The objective of the specific certification program is a process and its requirements to execute the cleaning of the foam systems to conform it with the new European legislation: PFOS (C8) is regulated according to Directive 2006/122/EC of the European Parliament and of the Council of 12 December 2006.

PFOA (C8) is regulated according to Regulation 2017/1000 of the European Commission dated 13 June 2017.

C9-C14 is regulated according to Regulation 2021/1297 of the European Commission dated 4 August 2021.

PFHxS is regulated under European Commission Regulation 2023/1608 dated May 30, 2023.

Contextual note 1.

In early 2022, the European Chemicals Agency (ECHA) published a proposal for selling, exporting or using firefighting foam containing a total of less than 1,000 ppb PFAS. At the beginning of 2023, five European Member States submitted a proposal to ECHA for a complete ban on the production, sale and use of PFAS and PFAS-containing products.

Contextual note 2.

Premix mixtures are within this legal context of the above Directives / Regulations; source ECHA source 1 # [PFAS in fire-fighting foams - case study \(europa.eu\)](https://eucha.eu/en/en/16047)

This change process has the following reasons:

- The defined quality criteria for the above mentioned process;
- The re-assurance for owners / users of these foam systems to comply with the new European legislation;
- Better execution of the service / maintenance processes of these types of fire protection systems.

The conditions for allowing this service process to be executed

- A validation process for the method of cleaning or extraction of the PFAS elements in the foam systems to an acceptable limit;
- The acceptance criteria of the foam system enabling the start of the cleaning or extraction process of the PFAS by the provider of this service;
- The criteria to execute the cleaning or extraction process of the PFAS by the provider of this service;
- The criteria for proper disposal or transformation of the extracted PFAS elements complying with European and local legislation (*note see chapter 5.5*).

1.2 Field of application / scope

The process of cleaning of PFAS elements in foam systems for fire protection.

The basic scope are:

G – Foam systems – service;

- Stationary systems on sites and in buildings (also tunnels);
- Fixed systems on mobile firefighting system like fire brigade trucks and other compatible firefighting equipment.

B – Automatic Sprinkler Systems.

The functional and performance requirements for the process of cleaning of PFAS elements in foam systems based on best practices are defined in this Specific Certification Program 10 within the framework of TIC – schema K21045.

Contextual note 3.

Within this specific certification program, the pipes for premix are not standard within the demarcation of the cleaning project; the client shall decide to clean these pipes based on his own risk assessment and consultation with third parties such as legal authorities, insurers, etc.

It shall be clear before, during and after the cleaning project between the client and the contractor if this is included or excluded in the demarcation of the cleaning project.

If this is not the case, this is not included in the certification process.

1.3 Acceptance of test reports provided by the supplier

See TIC scheme K21045.

1.4 Quality declaration

See TIC scheme K21045.

2 Terms and definitions

See TIC scheme K21045.

2.1 Additional terms and definitions

Fixed fire protection system; in the context of the scope of this cleaning process in this document, the stationary fire protection systems on sites and buildings and the fixed fire protection system on fire brigade trucks are included in the scope.

Best practices; A best practice is a method or technique that has been generally accepted as superior to other known alternatives, because it often produces results that are superior to those achieved by other means or because it has become a standard way of doing things, e.g., a standard way of complying with legal or ethical requirements.

Guidance document; A guidance document is supporting the experiences on best practices parallel to this Specific Certification. Based on case studies describes this insights and approaches for specific situations. The latest version of this guidance document is published on the product page of TIC – schema K21045.

Retroactivity; The provisions of this standard reflect a consensus of what is necessary to provide an acceptable degree of protection from the hazards addressed in this standard at the time the standard was issued.

Unless otherwise specified, the provisions of this standard shall not apply to facilities, equipment, structures, or installations that existed or were approved for construction or installation prior to the effective date of the standard. Where specified, the provisions of this standard shall be retroactive.

In those cases where the authority having jurisdiction determines that the existing situation presents an unacceptable degree of risk, the authority having jurisdiction shall be permitted to apply retroactively any portions of this standard deemed appropriate.

The retroactive requirements of this standard shall be permitted to be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction, and only where it is clearly evident that a reasonable degree of safety is provided.

Equivalency; Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard. Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency. The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

Cleaning of the fire protection systems; the best practice assessed during the development of this specific certification program is the cleaning method, whereby the PFAS elements are extracted from the inner space of the tank, piping and appendages using a a flued cleaning mix that is pumped round several times through the complete system. This to reach the maximum acceptable cleaning concentration (MACC) according to the values in figure 1. Other methods are also possible based on equivalency, but may lead to an update of this specific certification program.

Flushing with water of parts of the system; when the information gathering process determinates that the contact possibilities between the foam and the piping is low to nihil, it can be decided that the piping is only flushed with water.

Ppb; parts per billion = microgram/litre.

Source 2 # [Understanding Units of Measurement \(epa.gov\)](#)

3 Procedure for granting a process certificate

See TIC scheme K21045.

Additional specific process requirements are specified in the following chapter.

3.1 Validation process of the method of cleaning / extraction of PFAS

The objective of this process step is to assess the cleaning method and its quality controls by the cleaning provider.

The validation process for the method of cleaning or extraction of the PFAS elements in the foam systems to accepted limits exist of the following steps:

- A detailed description of the method and process by the provider of this service with the foreseen quality controls;
- The witnessing of this process by the certification body detailing the internal quality plan;
- The process is assessed and validated based on the following criteria;
 - A. Type of methods: for example flushing 300% content of the volume of the system;
 - B. Demarcations of the method: showing what part of the firefighting system shall be cleaned (for example tank, piping and appendages) and what is not cleaned;
 - C. Sampling method and instruction: for example bottom sample tank or sample lower end piping;
 - D. Qualification of staff for sampling and packaging;
 - E. Initial frequency; for example 3 subsequent samples that meet the criteria or show a steady decline in PFAS concentration;
 - F. Sampling packing and conservation;
 - G. Packing transport to the laboratory;
 - H. Qualification of the laboratory;
 - I. Analyze method of the laboratory concluded with a sample to be analyzed using the TOP Assay
 - J. Template reporting by the laboratory;
 - K. Template evaluation report by the service provider;
 - L. Template validation report by the certification body.

The objective of this process stage is to assess if the provider of this cleaning service has designed and defined a process with adequate controls enabling a known outcome of this process.

A supplier shall compare its own cleaning process with a cleaning process with methanol, achieving an equal score, or must demonstrate in some other way that the cleaning process is effective in the long term

The statistical process control is based on standard ISO2859 sampling procedures for inspection by attributes.

This is based on the Total Oxidizable Precursor (TOP) Assay; Best Practices, Capabilities and Limitations for PFAS Site Investigation and Remediation.

See sources below;

3 # <https://pubmed.ncbi.nlm.nih.gov>.

4 # [Total Oxidizable Precursor \(TOP\) Assay—Best Practices, Capabilities and Limitations for PFAS # Site Investigation and Remediation | Science Inventory | US EPA](#)

The cleaning projects visited by Kiwa for inspection in this stage which fulfill the requirements for granting the certificate to the provider may be affixed with the certification mark.

4 Setup of this specific certification program

4.1 General

This chapter contains the setup for the specification certification program.

For the performance of its certification work, Kiwa is bound to the requirements as included in EN-ISO/IEC 17065 “Conformity assessment - Requirements for bodies certifying products, processes and services” and certification scheme K21045.

This program describes the process for the assessment of the service of cleaning and extraction of PFAS elements in foam systems based on the following main steps:

- A validation process for the method of cleaning or extraction of the PFAS elements in the foam systems to maximum accepted concentration after cleaning (MACC);
Conditions for monitoring and measuring concentrations;
- The acceptance criteria of the foam system enabling the start of the cleaning or extraction process of the PFAS by the provider of this service;
Determining start data and the extent the cleaning process;
- The criteria to execute the cleaning or extraction process of the PFAS by the provider of this service;
- Conditions for cleaning processes (for fixed and mobile systems);
Conditions for monitoring and measuring concentrations;
- The criteria for proper disposal or transformation of the extracted PFAS elements complying with European and local legislation (see chapter 5.5).
Conditions for PFAS contamination of equipment and disposal of PFAS residue and waste.

5 Requirements and testing of the service

5.1 General

These chapters describe the requirements that the services, applied in the processes stated, shall meet based on best practices. These requirements are part of the technical specification of the process and services, which is recorded in the service certificate for the Fire Protection System.

The best practices are developed by the providers of this process in the market. This specific certification program sets parameters to assess these processes as a specific method or solution with adequate quality control to predict the outcome of the process to be within the limits determined in this document.

The service provider shall define, based on the outcome of the validation process, its minimal executing and quality control steps and quality requirements.

This in context with the standard EN 16763 - Services for fire safety systems and security systems.

The minimal number of steps based on EN 16763 are;

- a. Planning based on the acceptance process;
- b. Design based on the validation process;
- c. Executing process based on steps A. and B.;
- d. Re-commission process of the foam system;
- e. Verification process;
- f. Handover process to the user of the foam system.

The objective of this process stage is to assess if the provider of this cleaning service has sufficient requirements in place in order to perform an adequate quality control process enabling a known outcome of this process.

Contextual note 4.

The process step descriptions below are decisive for the interpretation and control of this process. Critical in this process are:

- *The ultimately responsible organization / executor / project leader of the cleaning process;*
- *The laboratory methods for sampling and analyzing;*
- *The users and permit providers of these foam systems;*
- *The insurers in relation to the effects after usage of the foam systems and the purpose that these foam systems fulfill.*

5.2 Information gathering process and acceptance criteria of the foam system with PFAS

The objective of this process step is the adequate information receiving process by the provider of this process from the object owner / user, enabling the provider to fulfill the conditions and requirements of the process. One of the goals is the demarcation of the project cleaning scope.

Context: The entire fire protection system does not need to be cleaned, but only the parts that contain (long-term) fluorine-containing fire protection foam. This can be fire protection foam in all forms, namely concentrate, premix or shaped foam. Various parts of a fire protection system include, for example, the foam tank, pipes or appendages. The customer determines which parts are cleaned, the provider of service records this. The project demarcation shall be substantiated, for example, by means of a drawing, schematic representation or something similar.

The acceptance criteria of the foam system enabling the start of the cleaning or extraction process of the PFAS by the provider of this service shall contain the following minimal information based on a Process Instrumentation Diagram:

- The situation of the system such as location, mobile / fixed, tank content, number of piping (full / empty);
- Appendages such as pumps, valves, injectors, etc.;
- Dimension tank(s) in liters and materials such as steel (with inner inlay), stainless steel; coated steel; polyester; polyethylene, etc.;
- The type of foam used in the fire protection system;
- The fabrication period of the foam of the fire protection system;
- The state of the fire protection system such as good, average or bad;
- The applicable local regulation for this system;
- The level of corrosion of the inner of the tank and piping in conjunction with the extraction of PFAS;
- The number and type of nonmetal components that are used in the fire protection system for the estimate of components that are to be replaced because of inadequate cleaning possibilities with the materials / elements;
- The level of residue in the tank(s);
- Etc.

It may not be possible to find all the addressed specifications. In that case it is indicated that the particular specification is unknown.

The objective of this process stage is to assess if the provider of this cleaning service has sufficient start information from the user of the fire protection system to perform an adequate inward control enabling the provider to match this with its own quality control process enabling a known outcome of this process.

The provider of this service shall inform the user of the fire protection system that within this process there is no accountability for the performance of the fire protection system after the handover of the cleaned fire protection system.

5.3 Criteria to execute the cleaning or extraction process of the PFAS

The objective of this process step is to make logical mapping between the outcome of the validation process based on the specific cleaning method in relation to the received information from the user / owner of the object dictating the specific quality controls for this specific object.

This process stage sets minimal frameworks for the cleaning. The frameworks relate to environmental and safety requirements, management and coordination.

A first minimal input for this is the company risk analysis in the context of the legal permits and Safety & Health requirements.

A second minimal input is the MSDS of the cleaning substance.

The control and adjustment of the process is based on statistical process control (SPC).

Minimal requirements for this process stage are:

- Number and qualification of executing and control staff;
- Number and type of equipment for the executing of this process with specification on function, performance and certification, if applicable for quality, safety and environmental aspects;
- Number and type of testing equipment for the control of this process with specification on function, performance and certification if applicable for quality, safety and environmental aspects;
- Documentation such as instruction and registration;
- Minimal handover information and documentation.

5.3.1 Environmental & health requirements

PFAS cleaning can lead to environmental and safety risks. To minimize these risks, the following requirements are applied during cleaning:

- The flushing/cleaning area (possibly containing PFAS) is marked in accordance with applicable laws and regulations. Appropriate measures are being devised to prevent the spread of PFAS.

- The flushing/cleaning area is not entered without the necessary personal protective equipment and permission from the manager or coordinator.
- Work in the flushing/cleaning area is only carried out by authorized employees.
- A fire protection system that needs to be cleaned is always placed in a secondary containment, drip tray or similar facility.
- When installing or removing a fire protection system, materials are removed from the drip tray to prevent these materials or the fire protection system from being damaged.
- The fire protection system is deactivated for cleaning (note: a replacement fire protection system may be required).
- When setting up the cleaning equipment and cleaning, the necessary personal protective equipment is used (based on a risk analysis).
- All liquids and waste are stored in designated facilities, which are provided with labeling in accordance with legislation and regulations.
- Liquid-containing packaging is placed in a secondary storage, drip tray or similar facility.
- After cleaning, rinsing, auxiliary and protective equipment are stored in the designated location.
- Smoking, eating or drinking is not allowed in the immediate vicinity of the fire protection system to be cleaned.

5.4 Sampling & analyzing requirements

This process stage sets minimal frameworks for sampling and analysis. The frameworks cover environmental and safety regulations, sampling method, management, coordination, packaging, shipping, analysis and reporting.

Minimal process requirements for chapter 5.4 and 5.5 are:

- Information about the storage of the extracted PFAS elements at the location of the fire protection system;
- Information about the transport of the extracted PFAS elements from the location of the fire protection system to a collecting site;
- Information about the storage of the extracted PFAS elements at the collecting site of the PFAS elements;
- Information about the transport of the extracted PFAS elements from the collecting site to the end site;
- Number and qualification of executing parties / sub-contractors;
- Number and qualification of executing and control staff;
- Number and type of equipment for the executing of this process with specification on function, performance and certification, if applicable, for quality, safety and environmental aspects;
- Number and type of testing equipment for the control of this process with specification on function, performance and certification, if applicable, for quality, safety and environmental aspects;
- Documentation such as instructions and registration;
- Minimal handover information and documentation;
- The necessary licences to perform this process as service provider and necessary parties / sub-contractors.

5.4.1 Environmental & health requirements

Sampling can lead to environmental and safety risks. To minimize these risks, the following regulations are applied during sampling:

- Samples are only taken with permission from the manager or coordinator.
- Sampling activities are carried out by designated employees.
- Fire Protection systems are switched off during sampling.
- When taking a sample, the necessary personal protective equipment is used.

5.4.2 Sampling methods

A minimum of three samples shall be taken at different points in time. This can be done in two ways, namely by a swap sample or a sample of the rinse agent. The provider shall record how

much flushing agent has been used in relation to the size of the tank. The sampling method shall be based on the document in source 7.

Source 7 # [Bemonstering en analyse van PFAS-verbindingen in grond en grondwater, 25-6-2020 | Informatiepunt Leefomgeving \(iplo.nl\)](#)

Devices and aids shall not absorb or adsorb substances or influence the properties of samples. The cleaning provider samples the rinse water in such a way that the concentration of the parameters to be examined during and after taking the sample is influenced as little as possible by that procedure.

Samples shall be packed and preserved in such a way, that the concentrations of the analytes in the samples are influenced as little as possible by:

- adhesion of substances to the sample vessel and other packaging materials;
- volatilization of substances from samples;
- (photo)chemical conversion of substances in samples (under the influence of light);
- biological conversion of substances in the sample under the influence of micro-organisms;
- contamination by external influences.

Contextual note 5: If rinsing takes place with a substance that do not absorb PFAS, will this have a non-detect effect. It is known that rinsing with only water does not work.

5.4.3 Sampling packing, shipping and analyzing methods

The packaging, shipping and analyzing of the samples shall be performed based on the instruction of the selected laboratory.

The selected laboratory shall perform its services based on a valid accreditation in accordance with ISO 17025.

At least one sample from each extinguishing system is analyzed with a total oxidizable precursor stop assay (TOP assay). See source 3 and 4.

Contextual note 6: This is important because a broad group of PFAS can be analyzed with this TOP assay.

5.4.4 Reporting by the laboratory

The results of the analysis are made available to the provider by the laboratory in a clear report. The provider of the cleaning service shall make the results transparent to the customer.

5.5 Disposal of waste products

The objective of this process stage is to assess if the provider of this cleaning service has sufficient conformation to arrange proper disposal of the extracted PFAS elements and used materials.

The criteria for proper disposal or transformation of the extracted PFAS elements shall comply with European and local legislation.

5.5.1 Used fluids & materials

After the cleaning and sampling process, contaminated rinsing fluid, auxiliary and personal protective means are cleaned or disposed of as PFAS-containing waste.

5.5.2 Storage, disposal and processing

The waste materials are stored, disposed of and processed in such a way that PFAS demonstrably remains out of the environment.

The applicable laws and regulations shall also be complied with.

The storage of waste shall have to be included in the environmental permit.

The waste is processed by a waste processor with legal qualification like EVOA.

Source 7 # <https://business.gov.nl/regulation/importing-and-exporting-waste-materials-evoa/>

6 Factory Production Control Fire Protection Components by Kiwa

See TIC- scheme K21045.

Not applicable for this service.

7 Inspection of Fire Protection Systems by Kiwa

See TIC- scheme K21045.

Remark.

It is possible to have Kiwa inspect the performance by means of an extra inspection of the cleaned fire protection system based on the new foam used and the requirements in the basic engineering plan.

8 Marking

8.1 General

See TIC scheme K21045.

8.2 Certification mark

See TIC scheme K21045.

9 Requirements in respect of the quality system

This chapter contains the requirements in respect of the quality system which have to be met by the service provider.

9.1 Manager of the quality system of the service for the fire protection system

Within the service provider's organizational structure, an employee who will be in charge of managing the service provider's quality system must have been appointed.

The manager of the quality system is responsible:

- to have the latest version of the organisation's organogram communicated with Kiwa;
- to manage the internal audit of the quality system at least once a year;
- to manage the internal inspections of the design, installation and maintenance of the fire protection system according to the internal quality control scheme (IQC scheme).

9.2 Internal quality control / quality plan

The service provider shall have an internal quality control scheme (IQC scheme) which is applied. The standard for this quality plan is the EN16763 "Services for fire safety systems and security systems".

The following must be demonstrably recorded in this IQC scheme:

- which aspects are checked by the service provider;
- according to what methods such inspections are carried out;
- how often these inspections are carried out;
- in what way the inspection results are recorded and kept.

This IQC scheme should at least be an equivalent derivative of the model IQC scheme as shown in the Annex.

The service provider shall arrange following;

- The national governmental environment & safety permit to execute this process of cleaning and storage of the dangerous substance PFAS;
- The applicable accreditation based on IEC/ISO17025 for the executing of the analysis of the cleaning samples for process and end control.

Note; Requirements for subcontracting are described in paragraph 3.3 of EN16763.

9.3 Control of testing and measuring equipment

The service provider shall verify the availability of necessary testing and measuring equipment for demonstrating product conformity with the requirements in this evaluation guideline.

When required the equipment shall be kept calibrated (e.g. recalibration at interval).

The status of actual calibration of all equipment shall be demonstrated by traceability through an unique ID.

The service provider must keep records of the calibration results.

The service provider shall review the validity of previous measuring data when it is established during calibration that the equipment is not suitable anymore.

9.4 Procedures and working instructions

The service provider shall be able to submit the following:

- procedures for:
 - dealing with products/processes showing deviations;
 - corrective actions to be taken if non-conformities are determined;
 - dealing with complaints about products and/or services delivered;
- the working instructions and inspection forms used for design, installation and maintenance.

9.5 Requirements for staff of the service provider

Staff acting in critical stages of the process need to be qualified according the model in chapter 3.4 of EN16763 "Services for fire safety systems and security systems".

In this scheme following roles are defined:

"A" defined for the manager responsible for the total delivery or service process of the fire protection system and the stages verification and handover;

"B" defined for the staff responsible for the planning, design and commissioning process of the fire protection system or the service process.

"C" defined for the staff responsible for the installation or maintenance process of the fire protection system.

9.5.1 Requirements exams / diplomas fire protection systems

In its quality plan, it shall be specified per scope per role what exams or diplomas meet these requirements.

9.5.2 Requirements concerning verification staff cleaning of the foam fire protection system

| Function | Education | Experience |
|---|--|------------|
| Product manager of the cleaning service | Higher professional qualification in one of the following disciplines: <ul style="list-style-type: none">• Technical | 1 year |
| Executing cleaning & technical staff | Final and test terms of training determined and maintained by the product manager of the cleaning service | 1 year |

The education and experience of relevant personnel shall be verifiably documented.

9.6 Planning audit and sample inspections fire protection systems

The service provider shall arrange that Kiwa can perform its yearly audit and the necessary inspections on site. The supplier shall use the registration tools of Kiwa.

9.7 Health & Safety Risk Assessment (HSRA) and Task Risk Analysis (TRA)

Before the cleaning of the storage facility, an HSRA shall be drawn up.

This (substance-specific) HSRA should at least address following:

- Physical hazards,
- Health hazards,
- Environmental hazards,

as is referred to in the GHS = Globally Harmonized System of Classification and Labelling of Chemicals and in Regulation (EC) No 1272/2008 of 16 December 2008 on classification, labelling and packaging of substances and mixtures.

The HSRA & TRA shall be approved by an independent qualified Higher Safety Expert. (NL = HVK). An independent HSE person can also work for the same cleaning company, provided that it is demonstrably not involved with its relevant project.

The cleaning process shall be executed based on the labour hygienic strategy for humans arranged in 4 steps.

Step 1: Replace the hazardous substance with a non or less hazardous substance;

Step 2: Apply technical measures, work processes, equipment and materials that prevent or limit the risks;

Step 3: Take collective protection measures at the source or take organizational measures;

Step 4: Provide personal protective equipment for employees who are (or may be) exposed to hazardous substances.

Note; check following information

osha.europa.eu/
www.cer.eu/sites/default/files/pb_CG_Labour_26.9.23.pdf

10 Summary of tests and inspections

This chapter contains a summary of the following tests and inspections to be carried out in the event of certification:

- **initial investigation:** tests in order to ascertain that all the requirements in this scheme are met;
- **inspection test:** tests carried out after the certificate has been granted in order to ascertain whether the certified products continue to meet the requirements in this scheme;
- **inspections and audits of the quality system of the service provider:** monitoring compliance of the IQC scheme and procedures.

10.1 Test, inspection and audit matrix

| Description of requirement | Article no. scheme | Tests, inspections and audits within the scope of: | |
|--|--------------------|--|--|
| | | Pre-certification | Inspection by Kiwa after granting of certificate a,b) |
| Process requirements | | | |
| Per applicable scope and applicable manual / cleaning method | 4 | x | x |
| Testing performance of the service | | | |
| If needed per applicable scope and application manual | 5 | x | x |
| Quality system and Certification mark | | | |
| Quality system | 8 | x | X |
| Certification marking | 9 | | |

- a) In case the product or production process changes, it must be determined whether the performance requirements are still met.
- b) All product characteristics that can be determined within the visiting time (maximum 1 day) are determined by the inspector or by the service provider in the presence of the inspector. In case this is not possible, an agreement will be made between the certification body and the service provider about how the inspection will take place. The frequency of inspection visits is defined in chapter 10.2.1 of this scheme.

10.2 Inspection of the quality system of the service provider

The quality system of the service provider will be checked by Kiwa on the basis of the IQC scheme / Quality plan.

The inspection contains at least those aspects mentioned in the Kiwa Regulations for Certification and the requirements of the applicable standards.

10.2.1 Auditing the quality system of the service provider

The quality system of the service provider shall be audited internally by the service provider at least once a year.

The quality system of the service provider shall be audited externally by Kiwa at least once a year with a minimum audit time of 1 day.

10.2.2 *Inspecting of the output of the process of the service provider*

The installations / systems shall be inspected internally by the service provider according to the IQC scheme / Quality plan.

Kiwa shall inspect relevant samples of installations / systems in the service process at least once a year as is defined in the Kiwa Quality plan of the scheme and scope. The basic design of the installation / system can stipulate that an installation / system shall be inspected every year. Otherwise, a random inspection frequency is applicable according to the matrix in this chapter. Per sample inspection is no complete overview applicable of the service process. The inspection plan in control of the Kiwa Quality plan shall stipulate what needs to be inspected per year per service provider and what needs to be inspected per installation / system.

Matrix frequency samples inspection

| | System | Initial stage | Maintenance stage per year |
|---|---|----------------------------|--|
| G | Foam systems Stationary systems on sites and buildings; Fixed systems on fire brigade trucks. | Minimal 2 Minimal 1 | 1:25 with a minimum of 1 1:50 with a minimum of 1 |

10.3 **Design modification process**

Design modifications to the certified service process shall always be notified to Kiwa before being implemented in the service process. Kiwa shall assess to what extent the design modifications will require new type assessments of the service process. The modified service process may only be supplied with the Kiwa mark after written approval by Kiwa of the redesigned or new service process.

11 Agreements on the implementation of certification

See TIC scheme K21045.

12 Titles of standards

12.1 Public law rules

See TIC scheme K21045.

12.2 Standards / normative documents

See TIC scheme K21045. Additional standards or standards in conjunction with this subject are shown below.

| Number | Title | Version* |
|---------|--|------------|
| ISO2859 | Sampling procedures for inspection by attributes | |
| | Handreiking PFAS bemonsteren – Expertisecentrum PFAS Bemonstering en analyse van PFAS-verbindingen in grond en grondwater, 25-6-2020 Informatiepunt Leefomgeving (iplo.nl) | 1.0 - 2020 |

*) When no date of issue has been indicated, the latest version of the document is applicable for new systems. Kiwa shall inform the certificate holders about changes in version. For design, installation and maintenance, the version of the applicable standard is mentioned in the basic design.

already appointed (in)direct in scheme K21045.

12.3 Literature used

| Number | Title | Version* |
|--------|---|----------|
| | Milieurisico's van PFAS-houdend blusschuim - Nederlands Instituut Publieke Veiligheid (nipv.nl) | |
| | Per- and polyfluoroalkyl substances (PFAS) - ECHA (europa.eu) | |
| | pfas_report_jrc_19.05.2021_final_online(3).pdf | |
| | An overview of the uses of per- and polyfluoroalkyl substances (PFAS) - Environmental Science: Processes & Impacts (RSC Publishing) | |
| | aanvullend-onderzoek-naar-pfas-in-afvalwaterlozingen-rws-2021.pdf | |
| | Hoe+werkt+de+arbeidshygiënische+strategie.pdf | |
| | Wat is een arbeidshygiënische strategie? SER | |