



GreenScreen Certified™





Standard for Firefighting Foam

Class A Foam Concentrates
Class B Foam Concentrates
Class A Wetting Agents
Class A&B Wetting Agents

Version 2.2(1e) • March 2023



Clean Production Action designs and delivers strategic solutions for green chemicals, sustainable materials and environmentally preferable products.

"GreenScreen Certified™" is a trademark of Clean Production Action.

The GreenScreen Certified™ Certification Marks are licensed exclusively by Clean Production Action. Additional information about Clean Production Action, GreenScreen® for Safer Chemicals, and the GreenScreen Certified™ Standard for Firefighting Foam: Class A Foam Concentrates, Class B Foam Concentrates, Class A Wetting Agents, Class A&B Wetting Agents is available at www.greenscreencertified.org.

© 2021 Clean Production Action, Inc. All rights reserved.

Reproduction or utilization of the content outside the bounds of the requirements described herein is not allowed without prior written permission from Clean Production Action.



Contents

Overview

1. Purpose	2
2. Scope	2
3. Service Options for Certification	4
4. Terms and Definitions	4

Certification Requirements

5. Summary of Requirements	9
6. Product Inventory	11
6.1 Additives Inventory	11
6.2 Chemical Inventory	11
7. GreenScreen Hazard Evaluation	12
7.1 Silver, Gold, and Platinum Screening Requirements	12
7.2 Gold Assessment Requirements	12
7.3 Platinum Assessment Requirements	13
8. Restricted Substances List (RSL)	14
9. Requirements for Microorganisms	15
10. Product-Level Analytical Testing	15
10.1 Analytical Testing—Total Organic Fluorine	15
10.2 Analytical Testing—Acute Aquatic Toxicity	16
11. Documentation Requirements	17
12. Certification and Licensing	17
13. Certification, Labeling and Duration	17
13.1 Disclaimer of Liability	17
13.2 Certification Mark	17
13.3 Use with Other Claims	18
13.4 Duration of Certification	18



Annexes

Annex 1	Certification Process Steps with Clean Production Action	19
Annex 2	Certification Process Steps with GreenScreen Certified Reviewer	20
Annex 3	RSL Reference List (Alkylphenols and Alkylphenol Ethoxylates)	21

List Of Tables

Table 1	Summary of Certification Requirements	9
Table 2	GreenScreen Certified Firefighting Foam Restricted Substances List Requirements	14
Table 3	Acute Aquatic Toxicity Test Methods	15



Version 2.2(1e) Revision Summary

This v2.2 update includes the addition of more comprehensive requirements for Section 10.1 Analytical Testing—Total Organic Fluorine to verify manufacturing practices and lack of PFAS contamination. The v2.2(1e) update includes a clarification on the environmental toxicity and fate ingredient-level criteria for the Gold level of certification (Section 7.2.3) and a clarification on determination of conformance using test data (Section 10).

Acknowledgments

The GreenScreen Certified™ Standard for Firefighting Foam: Class A Foam Concentrates, Class B Foam Concentrates, Class A Wetting Agents, Class A&B Wetting Agents provides the means for manufacturers to communicate their use of safer chemicals per the GreenScreen® for Safer Chemicals hazard assessment method. GreenScreen Certified ensures value, usability, and relevance for industry professionals wanting to excel in offering products with preferred chemistry for people and the planet.

Clean Production Action developed the GreenScreen Certified™ Standard for Firefighting Foam in consultation with a diverse group of stakeholders, including manufacturers, purchasers, and external scientific experts from consulting firms, non-profit organizations and government agencies.

This effort would not have been possible without the help of the technical peer reviewers who devoted their time and considerable expertise to the development of this standard. Providing advice and feedback during technical peer review shall in no way be construed as support for the final standard. The key contributors ultimately take responsibility for all content and any flaws or errors contained herein. In producing the final standard, we thank Ellen Goldberg, Beverly Thorpe, and Kayla Williams of Clean Production Action for their efforts in developing legal terms of use and website resources necessary to implement and launch the certification program.

Key Contributors

Shari Franjevic, GreenScreen Program Manager, Clean Production Action

Amy Hunsicker, Consulting to Clean Production Action

Mark S. Rossi, PhD, Executive Director, Clean Production Action

Technical Peer Reviewers

Audrey Rossard, Technical Manager, BIOEX

Erika Schreder, Science Director, Toxic-Free Future

Holly Davies, Senior Toxicologist, Washington Department of Health

Ian Ross, Global PFAS Lead, Arcadis

John Payne, Foam Research and Development Manager, Angus International Safety Group

Nigel Holmes, Principal Advisor Incident Management, Queensland Department of Environment and Science

Pamela Miller, Executive Director Alaska Community Action on Toxics and IPEN Co-Chair

Ted Schaeffer, Principal Consultant, Global Foam Technology PL

William L. Scogin, President & CEO, Verde Environmental, Inc. (Micro-Blaze)



OVERVIEW

1. PURPOSE

- 1.1** This guidance document outlines the requirements and process for the GreenScreen Certified™ Standard for Firefighting Foam: Class A Foam Concentrates, Class B Foam Concentrates, Class A Wetting Agents, Class A&B Wetting Agents (GreenScreen Certified Standard for Firefighting Foam), administered by Clean Production Action.
- 1.2** Clean Production Action awards a GreenScreen Certified Certification Mark via license to manufacturers and suppliers who have paid the required license fee and demonstrated that their product(s) meet one of the levels of increasingly stringent certification requirements described herein.

2. SCOPE

- 2.1** The GreenScreen Certified™ Standard for Firefighting Foam is for the evaluation of two different types of firefighting water additives designed for suppression NFPA Class A and/or Class B fires, namely 1) Firefighting Foam Concentrates¹ or 2) Wetting Agents.²
- 2.2** Product categories that are within the scope of this standard include but are not limited to:
 - 2.2.1** Firefighting Foam concentrates designed for Class B fires as defined by the NFPA Code of Standards; and
 - 2.2.2** Firefighting Foam concentrates designed for Class A fires as defined by the NFPA Code of Standards; and
 - 2.2.3** Firefighting Foam concentrates designed for more than one class of fire that includes Class A and/or Class B; and
 - 2.2.4** Wetting Agents designed for Class A&B fires as defined by the NFPA Code of Standards; and
 - 2.2.5** Wetting Agents designed for Class A fires as defined by the NFPA Code of Standards; and
 - 2.2.6** Wetting Agents designed for more than one class of fires that includes Class A and/or Class B.
- 2.3** Product categories that are outside of the scope of this standard include but are not limited to:
 - 2.3.1** Firefighting water additives, including foam concentrates or wetting agents, designed for suppression of one or more NFPA Classes of fuels that do not include Class A fuels or Class B fuels (i.e., NFPA fuel classifications of Class C, D, and/or K); and
 - 2.3.2** Discharge devices.

1 Firefighting Foam concentrates are included in the scope of NFPA 11 and UL 162 Listed

2 Wetting Agents are included in the scope of USDA, UL Classified, and NFPA 18



- 2.4** The Applicant for certification should contact Clean Production Action (greenscreen@cleanproduction.org) if questions arise as to whether certain products are within the scope of this standard.
- 2.5** GreenScreen Certified™ Certification Marks do not guarantee adherence to any other external quality, performance, or regulatory requirements.



3. SERVICE OPTIONS FOR CERTIFICATION

The process for achieving certification involves both a review of the product against the criteria and issuance of the certification. The review of the product can be done by a GreenScreen Certified Reviewer or by Clean Production Action. The process steps vary for each of these options and are described in detail in [Annex 1](#) and [Annex 2](#), respectively. Issuance of the certification is by Clean Production Action.

Compiling necessary data for certification requires intensive supply chain engagement that is outside the scope of the certification process. These services are offered by GreenScreen Certified Reviewers and Clean Production Action. Contact a GreenScreen Certified Reviewer or Clean Production Action for more information.

4. TERMS AND DEFINITIONS

TERM	DEFINITION
Additive	A chemical compound, chemical substance, or mixture of chemical substances intentionally added to impart a desired characteristic to a product or serve a particular function in the product (e.g., surfactant, solvent, stabilizer, or colorant). Additives can be polymeric or non-polymeric in nature.
Alkylphenols (AP)	Chemical compounds that consist of one or more alkyl chains bound to a phenol. Phenol consists of an aromatic ring and a hydroxyl group. An alkyl chain is an acyclic saturated hydrocarbon (consisting of hydrogen and carbon atoms arranged in a tree structure in which all carbon-carbon bonds are single) with the general formula C_nH_{2n+1} .
Alkylphenol Ethoxylates (APEOs)	Derivatives of alkylphenols prepared by a chemical reaction between ethylene oxide and an alkylphenol, resulting in an ethoxylated chain with the general formula $-(OC_2H_4)_nOH$ replacing the hydroxyl group.
Applicant	An organization or entity that submits a product formulation or formulations for certification according to a specific GreenScreen Certified™ standard.
Authorized GreenScreen Assessment	A GreenScreen assessment completed by an Authorized GreenScreen Practitioner™ for his or her registered organization only. An Authorized assessment can be upgraded to a Certified assessment through Clean Production Action and would then qualify for use in the GreenScreen Certified standard.
Authorized GreenScreen Practitioner™	An individual who has completed advanced training in the GreenScreen method, has demonstrated scientific expertise and capacity to perform a high-quality GreenScreen assessment, and is licensed by Clean Production Action to conduct GreenScreen assessments for his or her registered organization.
CASRN	Chemical Abstracts Service Registry Number (also known as “CAS#”).
Catalyst	Chemical compound or substance that causes or accelerates a chemical reaction without itself being affected.
Certification Level	One of the levels of requirements for safer chemicals in products specified in the GreenScreen Certified Standards.
Certified GreenScreen Assessment	A GreenScreen assessment completed by a Licensed GreenScreen Profiler or Clean Production Action Consulting Toxicologist (including an assessment performed by an Authorized GreenScreen Practitioner and upgraded to a Certified assessment through Clean Production Action). Note: The term “Certified GreenScreen Assessment” is distinct from a GreenScreen Certified Product. The former refers to the assessment of an individual chemical using the GreenScreen method (see https://www.greenscreenchemicals.org/learn/full-greenscreen-method). The latter refers to a product that Clean Production Action has verified to meet the GreenScreen Certified Standard for the relevant product category and the manufacturer has signed a license agreement with Clean Production Action.
Chemical	See Chemical Compound.



TERM	DEFINITION
Chemical Compound	A molecule (or molecular entity) composed of atoms of more than one element held together by chemical bonds and typically identified by CASRN. Synonyms used in this guidance include “chemical” or “compound.”
Chemical Mixture	“A mixture or a solution composed of two or more substances in which they do not react.” (GHS Rev. 8; https://unece.org/ghs-rev8-2019 , accessed 3/28/21)
Chemical Substance (Substance)	“A chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent, which may be separated without affecting the stability of the substance or changing its composition.” (REACH Article 3(1); http://www.reachonline.eu/REACH/EN/REACH_EN/article3.html , accessed 3/28/21). A chemical substance is comprised of constituents (i.e., chemical compounds and/or chemical elements), and a chemical substance can be a component within a mixture.
Class A Fire	“A fire in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics.” (NFPA Glossary of Terms 2018 Edition; https://www.nfpa.org/Codes-and-Standards/Resources/Glossary-of-Terms , accessed 3/28/21)
Class B Fire	“A fire in flammable liquids, combustible liquids, petroleum greases, tars, oils, oil-based paints, solvents, lacquers, alcohols, and flammable gases.” (NFPA Glossary of Terms 2018 Edition; https://www.nfpa.org/Codes-and-Standards/Resources/Glossary-of-Terms , accessed 3/28/21)
Direct Release Products	“Products that are intended for use in applications that result in their immediate release to the environment, so that they bypass sewage treatment or septic systems, shortening the time for degradation prior to entering sensitive environments. Home car washes, boat cleaners, and graffiti removers are examples of direct-release products.” (Safer Choice Criteria for Environmental Toxicity and Fate for Chemicals in Direct Release Products; http://www2.epa.gov/saferchoice/standard#tab-3 , accessed 3/28/21)
Discharge Device	“A device designed to discharge water or foam-water solution in a predetermined, fixed, or adjustable pattern. Examples include, but are not limited to, sprinklers, spray nozzles, and hose nozzles.” (NFPA Glossary of Terms 2018 Edition; https://nfpa.org/Codes-and-Standards/Resources/Glossary-of-Terms , accessed 3/28/21)
Foam Concentrate	“A concentrated liquid foaming agent as received from the manufacturer.” (NFPA Glossary of Terms 2018 Edition; https://nfpa.org/Codes-and-Standards/Resources/Glossary-of-Terms , accessed 3/28/21)
Firefighting Water Additive	“An agent that, when added to water in proper quantities, suppresses, cools, mitigates fire and/or vapors, and/or provides insulating properties for fuels exposed to radiant heat or direct flame impingement. Water additives can materially reduce the surface tension of water and increase its penetrating and spreading abilities. They also might provide enhanced cooling, emulsification, and foaming characteristics.” (NFPA Glossary of Terms 2018 Edition; https://nfpa.org/Codes-and-Standards/Resources/Glossary-of-Terms , accessed 3/28/21)
Genetically Modified Organisms (GMO)	“Organisms (i.e., plants, animals, or microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination.” (World Health Organization; https://www.who.int/health-topics/food-genetically-modified#tab=tab_1 , accessed 3/28/21)
GreenScreen Assessment	The assessment of an individual chemical using the GreenScreen method (see https://www.greenscreenchemicals.org/learn/full-greenscreen-method). An Authorized GreenScreen assessment and a Certified GreenScreen assessment are two types of GreenScreen assessments and reflect the type of assessor producing the assessment.
GreenScreen Benchmark™ Score	A score that is assigned to a chemical evaluated using the GreenScreen® for Safer Chemicals method. GreenScreen Benchmark scores range from 1 to 4, with each increasing Benchmark score defining progressively less hazardous chemicals. (GreenScreen Guidance and Resources; https://www.greenscreenchemicals.org/learn/full-greenscreen-method)



TERM	DEFINITION
GreenScreen Certified™ Certification Marks	The trademarked logos and phrase that may be licensed by Clean Production Action for use by a successful Applicant to describe the products that meet all of the requirements of a specified level of the GreenScreen Certified™ Standard for the relevant product category and as verified and approved by Clean Production Action.
GreenScreen Certified Reviewer	An organization approved by Clean Production Action to review products against the GreenScreen Certified standards. Reviewers also offer supply chain engagement services. Reviewers may be Licensed GreenScreen Profilers or Licensed GreenScreen Consultants.
GreenScreen List Translator™	A streamlined chemical hazard assessment method developed by Clean Production Action that produces a GreenScreen List Translator score. (GreenScreen Guidance and Resources Section IV; https://www.greenscreenchemicals.org/learn/guidance-and-method-documents-downloads)
GreenScreen List Translator™ Score	A score that is assigned to a chemical screened against all GreenScreen Specified Lists (Annex 11) using GreenScreen List Translator guidance. List Translator scores include LT-1, LT-P1, LT-UNK and NoGSLT. (GreenScreen Guidance and Resources Section IV; https://www.greenscreenchemicals.org/learn/guidance-and-method-documents-downloads)
Impurity	“An unintended constituent present in a substance as manufactured. It may, for example, originate from the starting materials or be the result of secondary or incomplete reactions during the production process. While it is present in the final substance, it was not intentionally added. In most cases impurities constitute less than 10% of the substance.” (ECHA; https://echa-term.echa.europa.eu , accessed 3/28/21)
Intentionally Added	Included to serve a desired function; not an impurity or a residual.
Licensed GreenScreen Profiler	An organization with expertise in toxicology and comparative chemical hazard assessment that is licensed by Clean Production Action to provide GreenScreen assessments for a fee to clients. (see https://www.greenscreenchemicals.org/assess/profilers)
Monomer	“A substance, which is capable of forming covalent bonds with a sequence of additional like or unlike molecules under the conditions of the relevant polymer forming reaction used for the particular process.” (REACH Article 3(6); http://www.reachonline.eu/REACH/EN/REACH_EN/article3.html , accessed 3/28/21)
Non-Disclosure Agreement (NDA)	A legally binding agreement between organizations for the purpose of protecting confidential information shared during the certification process.
Organohalogen	A chemical containing one or more halogen atoms (typically chlorine, bromine, fluorine, or iodine) bound to a carbon atom.



TERM	DEFINITION
Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)	<p>A class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom. The class includes all structural groups defined by Buck et al, 2011, as well as all new structural groups identified by OECD in 2018. The structural groups defined by Buck et al, 2011, include:</p> <ol style="list-style-type: none">1) Perfluoroalkyl substances: Substances for which all hydrogen atoms on all carbon atoms (except for carbons associated with functional groups) have been replaced by fluorine atoms;2) Polyfluoroalkyl substances: Substances for which all hydrogen atoms on at least one (but not all) carbon atom have been replaced by fluorine atoms;3) Fluoropolymers: Carbon-only polymer backbone with fluorine atoms directly bound;4) Perfluoropolyethers: Carbon and oxygen polymer backbone with fluorine atoms directly bound to carbon atoms; or5) Side-chain fluorinated polymers: Variable composition non-fluorinated polymer backbone with fluorinated side chains. <p>Additional groups defined by OECD, 2018, include perfluorinated alkanes, perfluorinated alkenes, perfluoroalkyl alcohols, perfluoroalkyl ketones, semi-fluorinated ketones, side-chain fluorinated aromatics, some hydrocarbons, hydrofluoroethers, and hydrofluoroolefins.</p> <p>(Buck, R. et al, 2011. Perfluoroalkyl and Polyfluoroalkyl Substances in the Environment: Terminology, Classification, and Origins. Integrated Environmental Assessment and Management 7(4): 513–541; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3214619, accessed 3/28/21; and Environment Directorate OECD, Toward a New Comprehensive Global Database of Per- and polyfluoroalkyl substances (PFAS): Summary Report on Updating the OECD, 2007, List of Per- and polyfluoroalkyl substances (PFAS), OECD Environment, Health and Safety Series on Risk Management No. 39, Paris 2018; http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV-JM-MONO(2018)7&doclanguage=en, accessed 3/28/21)</p> <p>The reference list of PFAS by chemical abstract service number as defined by the Organisation for Economic Development (OECD) is available here: http://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals, accessed 3/28/21.</p>
Polymer Mixture	A mixture comprised of a polymer substance and unreacted monomer(s).
Polymer Species	“Molecules characterized by the sequence of one or more types of monomer units. Such molecules must be distributed over a range of molecular weights, wherein differences in the molecular weight are primarily attributable to differences in the number of monomer units. Polymer species comprise the following: (a) a simple weight majority (i.e., 50%) of molecules containing at least three monomer units, which are covalently bound to at least one other monomer unit or other reactant; or (b) less than a simple weight majority of molecules of the same molecular weight.” In the context of this definition a “monomer unit” means the reacted form of a monomer in a polymer.” (REACH, Article 3(5); http://www.reachonline.eu/REACH/EN/REACH_EN/article3.html , accessed 3/28/21)
Polymer Substance	A substance comprised of constituents: polymer species, additives necessary to preserve stability, and impurities deriving from the manufacturing process used, but excluding any solvent, which may be separated without affecting the stability of the substance or changing its composition. (based on REACH Article 3(1); http://www.reachonline.eu/REACH/EN/REACH_EN/article3.html , accessed 3/28/21)
Polymeric Material	A mixture of one or more polymer substance(s) or polymer mixture(s), all other additives (i.e., intentionally added substances), and unintentional impurities.
Polymeric Material Impurities	Impurities imparted to the polymeric material from a source other than the intentionally added components.
Product	A finished good composed of additives and/or chemical substances.
Product Inventory Form	A form for listing the product contents for each product being certified. See form instructions and tables for additional required information.



TERM	DEFINITION
Product Review Report	The checklist and/or form used by Clean Production Action and/or a GreenScreen Certified Reviewer to document evaluation of a product for compliance with all GreenScreen Certified standard requirements.
Residual	Chemical or substance added upstream in the supply chain to serve a desired function: 1) In the additive or homogeneous material but not in the final product as placed on the market; or 2) In the production of the additive or homogeneous material. For example, this may refer to substances included in a manufacturing process to aid processing, as well as inputs to a reaction process such as reagents, catalysts, monomers or preservatives for raw materials.
Residual Monomer	An unintended impurity in a polymer substance. (GreenScreen Guidance and Resources; https://www.greenscreenchemicals.org/learn/guidance-and-method-documents-downloads)
Siloxanes	“Siloxanes, often also described as silicones, are molecules with an oxygen–silicon backbone (Si–O–Si), where each Si atom carries two organic groups, mostly methyl, ethyl, or phenyl groups. Depending on their molecular weight, siloxanes can be characterized as linear or cyclic volatile methylsiloxanes, polydimethylsiloxanes (PDMS), or polyethermethylsiloxanes (PEMS).” (Fromme Hermann. Cyclic Volatile Methylsiloxanes: Occurrence and Exposure. Reference Module in Earth Systems and Environmental Sciences. 2018; (https://www.sciencedirect.com/topics/medicine-and-dentistry/siloxane , accessed 3/28/21)
Substance Impurity	An impurity of a chemical substance or polymer substance, such as a residual catalyst. See also “Impurity.”
Substance Role	The specific purpose that a chemical serves in a material, product, or process. (Adapted from Tickner, Joel A. et al, “Advancing Safer Alternatives Through Functional Substitution”, DOI: 10.1021/es503328m, Environ. Sci. Technol. 2015, 49, 742–749; https://pubs.acs.org/doi/abs/10.1021/es503328m , accessed 3/28/21)
Unreacted Monomer	An intended component in a polymer mixture. (GreenScreen Guidance and Resources; https://www.greenscreenchemicals.org/learn/full-greenscreen-method)
Valid GreenScreen Assessment	A GreenScreen Assessment report that is not expired or been superseded. See GreenScreen Terms of Use for details .
Wetting Agent	“A concentrate that when added to water reduces the surface tension and increases its ability to penetrate and spread.” (NFPA Glossary of Terms 2018 Edition; https://nfpa.org/Codes-and-Standards/Resources/Glossary-of-Terms , accessed 3/28/21)



CERTIFICATION REQUIREMENTS

5. SUMMARY OF REQUIREMENTS

The certification requirements for each certification level are summarized in Table 1 below.

Each product must meet all requirements for the specified certification level in order to be awarded certification. See Sections 6 through 13 for complete program requirements.

TABLE 1: **Summary of Certification Requirements**

SECTION #	REQUIREMENTS	SILVER	GOLD	PLATINUM
6. Product Inventory	Product Inventory includes:			
	1) Additives Inventory of all additives; and 2) Chemical Inventory for all additives including: a) Intentionally added chemical compounds and substances at any level (i.e., > 0% by mass (0 ppm)) in the additive; and b) Impurities and residuals \geq 0.01% by mass (100 ppm) in the additive.	√	√	√
7. GreenScreen Hazard Evaluation	Screening with GreenScreen List Translator™:			
	1) Intentionally added chemical compounds at any level (i.e., > 0% by mass (0 ppm)) in the product.	√	√	√
	2) Impurities and residuals \geq 0.01% by mass (100 ppm) in the product.			
	Assessment with GreenScreen® for Safer Chemicals: ³			
	1) Intentionally added substances at any level (i.e., > 0% by mass (0 ppm)) in the product.		√	√
	2) Impurities and residuals \geq 0.01% by mass (100 ppm) in the product.			
None of the chemical compounds screened have a GreenScreen List Translator™ score of LT-1.	√	√	√	
None of the substances assessed have a score of GreenScreen Benchmark-1.	If available ⁴	√	√	
None of the substances assessed have a score of GreenScreen Benchmark-1, Benchmark-2, Benchmark-2 _{DG} , or Benchmark-2 _{TP} .			√	

3 For the Gold level, GreenScreen assessments are not required for chemicals in the Product Inventory that are on the US Environmental Protection Agency Safer Chemical Ingredients List (SCIL).

4 For the Silver level, GreenScreen assessments are preferentially used if they are freely and publicly available.



SECTION #	REQUIREMENTS	SILVER	GOLD	PLATINUM
7. GreenScreen Hazard Evaluation (continued)	Each substance meets US EPA Master Criteria for Environmental Toxicity & Fate.		√	√
	Each substance meets US EPA Safer Choice Criteria for Environmental Toxicity and Fate for Chemicals in Direct Release Products.			√
8. Restricted Substances List	Product meets all Restricted Substances List (RSL) requirements and thresholds.	√	√	√
9. Requirements for Microorganisms	Product meets requirements for microorganisms.	√	√	√
10. Product-level Analytical Testing	Product meets analytical testing requirements.	√	√	√



6. PRODUCT INVENTORY

A Product Inventory meeting the specifications outlined in this Section is required for certification. Primary and secondary packaging used to ship the product undergoing certification is outside the certification scope.

6.1 Additives Inventory

6.1.1 Identify 100% by mass of the additives in the product; and

6.1.2 List the following for each additive in the product:

1. Additive trade name,
2. Additive supplier name,
3. Additive function, and
4. Additive percent by mass (%) in product.

6.2 Chemical Inventory

6.2.1 Identify all intentionally added chemicals present at any level (i.e., > 0% by mass (0 ppm)) in each additive;

6.2.2 Identify impurities and residuals present $\geq 0.01\%$ by mass (100 ppm) in each additive; and

6.2.3 List the following information for each chemical in each additive:^{5,6}

1. Chemical name and CASRN,
2. Chemical percent by mass (%) in additive,
3. Substance role if intentionally added or residual, and
4. Description if impurity.

5 Note: Applicants can redact chemical name and CASRN only if accompanied by a valid GreenScreen Assessment. Where hazard scores are used for redacted chemical name(s), the name of the assessor and date of assessment must be provided along with a traceable alphanumeric ID number. Service options and provider directory available at: <https://www.greenscreenchemicals.org/assess/gs-professionals>.

6 For additives that are polymeric materials, each polymer species, monomer, and catalyst in a polymer substance or polymer mixture must be listed separately. Polymeric materials include one or more polymer substances and/or polymer mixtures and potentially one or more additives.



7. GREENSCREEN HAZARD EVALUATION

The Product Inventory completed in Section 6 will be used to evaluate the product using GreenScreen List Translator screening and/or chemical hazard assessment using GreenScreen for Safer Chemicals, depending on the certification level.

7.1 Silver, Gold, and Platinum Screening Requirements

7.1.1 Each intentionally added chemical compound present at any level (i.e., > 0% by mass (0 ppm)) and each impurity and each residual present \geq 0.01% by mass (100 ppm) in the product is screened with GreenScreen List Translator™.

7.1.2 Each screened chemical compound in the Product Inventory has a GreenScreen List Translator™ score of LT-P1, LT-UNK, or NoGSLT.⁷ No LT-1 scores are permitted in certified products. No GreenScreen Benchmark-1 scores are permitted in certified products when there is a freely and publicly available GreenScreen assessment.

7.1.3 Product-level Acute Aquatic Toxicity testing results in LC50 and/or EC50 values >10 mg/L for each of three groups of organisms: fish, aquatic invertebrates, and algae.

7.2 Gold Assessment Requirements

7.2.1 Each intentionally added substance present at any level (i.e., > 0% by mass (0 ppm)) and each impurity and each residual present \geq 0.01% by mass (100 ppm) in the product are assessed with GreenScreen for Safer Chemicals, with the following exception and modification:

1. Exception: GreenScreen assessments are not required for substances listed on the [US Environmental Protection Agency Safer Chemical Ingredients List \(USEPA SCIL\)](#). Presence on the SCIL list is considered equivalent to “not GreenScreen Benchmark-1.”
2. Modification: GreenScreen assessments of polymer substances for the Gold level of certification do not require a potential chemical of high concern analysis to be conducted (See Section 15.4 in the [GreenScreen® for Safer Chemicals Hazard Assessment Guidance](#)). Instead, each residual monomer and each catalyst present \geq 0.01% by mass (100 ppm) in the product must meet the requirement of 7.2.2.

7.2.2 Each assessed substance has a valid GreenScreen assessment and GreenScreen Benchmark score.⁸ No Benchmark-1 or Benchmark-1_p scores are permitted in certified products.⁹

⁷ Clean Production Action or a third-party GreenScreen Certified Reviewer screens each entry in the Product Inventory using GreenScreen List Translator. An Applicant may wish to perform an optional pre-screen of chemicals in the product inventory to determine if any have a GreenScreen List Translator score of LT-1 before applying to the program. Online tools that provide automation for GreenScreen List Translator scoring include [toxnot](#) and [Pharos Chemical and Materials Library](#).

⁸ An Applicant may use valid Certified GreenScreen assessment(s) obtained either through public databases or through commissioning an assessment. New Certified GreenScreen assessments are generated (typically by a Licensed GreenScreen Profiler) for all remaining substances. Authorized assessments generated by Authorized GreenScreen Practitioners and upgraded to Certified assessments through Clean Production Action qualify for use in the GreenScreen Certified™ Program.

⁹ For GreenScreen Benchmark-U, filling data gaps with the “worst-case” hazard level must result in a GreenScreen Benchmark score that fulfills the certification level requirements.



7.2.3 Each assessed substance meets the US EPA Master Criteria for Environmental Toxicity & Fate, with the following modification:

1. Modification: Preservatives must meet the Environmental Toxicity & Fate criteria for preservatives in the [US EPA Safer Choice Criteria for Colorants, Polymers, Preservatives, and Related Chemicals](#).

7.3 Platinum Assessment Requirements

7.3.1 Each intentionally added substance present at any level (i.e., > 0% by mass (0 ppm)) and each impurity and each residual present $\geq 0.01\%$ by mass (100 ppm) in the product are assessed with GreenScreen for Safer Chemicals.

7.3.2 Each assessed substance has a valid GreenScreen assessment and GreenScreen Benchmark score.¹⁰ No Benchmark-1, Benchmark-1_{TP}, Benchmark-1_{CoHC}, Benchmark-2, Benchmark-2_{DG}, or Benchmark-2_{TP} scores are permitted in certified products.¹¹

7.3.3 Each assessed substance in the Product Inventory meets the [Safer Choice Criteria for Environmental Toxicity and Fate for Chemicals in Direct Release Products](#).

¹⁰ An Applicant may use valid Certified GreenScreen assessment(s) obtained either through public databases or through commissioning an assessment. New Certified GreenScreen assessments are generated (typically by a Licensed GreenScreen Profiler) for all remaining substances. Authorized assessments generated by Authorized GreenScreen Practitioners and upgraded to Certified assessments through Clean Production Action qualify for use in the GreenScreen Certified™ Program.

¹¹ For GreenScreen Benchmark-U, filling data gaps with the “worst-case” hazard level must result in a GreenScreen Benchmark score that fulfills the certification level requirements.



8. RESTRICTED SUBSTANCES LIST (RSL)

All chemicals, impurities, and residuals in the Chemical Inventory are compared against the RSL and must meet the following requirements:¹²

- Products shall not contain RSL chemicals from chemical groups listed in Table 2 that are intentionally added at any level (i.e., > 0% by mass (0 ppm)) in the product.
- Products shall not contain RSL chemicals from chemical groups listed in Table 2 that are impurities or residuals in the product above the threshold specified in the table.

TABLE 2: **GreenScreen Certified Firefighting Foam Restricted Substances List Requirements**

RESTRICTED CHEMICAL GROUP	CHEMICAL GROUP MEMBERS	IMPURITY AND RESIDUAL THRESHOLD
Alkylphenols and Alkylphenol Ethoxylates	<ul style="list-style-type: none"> • Chemicals meeting either the definition of Alkylphenol or Alkylphenol Ethoxylate (See Section 4) and containing one or more alkyl chains with a carbon chain length of six carbons or more; • Includes but is not limited to chemicals in the RSL Reference List (See Annex 3) 	≥ 0.01% by mass (100 ppm) in the product
Organohalogens	<ul style="list-style-type: none"> • Chemicals meeting the definition of Organohalogen (See Section 4) 	≥ 0.01% by mass (100 ppm) in the product
Per- and Polyfluoroalkyl Substances (PFASs)	<ul style="list-style-type: none"> • Chemicals meeting the definition of PFAS (See Section 4): • Specified chemicals in the Comprehensive Global Database of PFASs by the Organisation for Economic Cooperation and Development (OECD) 	≥ 0.0001 % by mass (1 ppm) total organic fluorine in the product ¹³
Cyclic Volatile Methyl Siloxanes (VMS)	<ul style="list-style-type: none"> • Dodecamethylcyclohexasiloxane (D6), CASRN 540-97-6 • Decamethylcyclopentasiloxane (D5), CASRN 541-02-6 • Octamethylcyclotetrasiloxane (D4), CASRN 556-67-2 	≥ 0.01% by mass (100 ppm) in the product
Zero Discharge of Hazardous Chemicals Manufacturing Restricted Substances List	<ul style="list-style-type: none"> • Specified chemicals in the Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substances List version 2.0 (MRSL) 	Specified in ZDHC MRSL

¹² The RSL is intended to reflect best practices and thresholds listed may go beyond regulations. In cases where regulatory requirements are more stringent than the RSL requirements, the regulatory requirements must be met.

¹³ See Section 10.1 for product-level analytical testing requirements for Total Organic Fluorine.



9. REQUIREMENTS FOR MICROORGANISMS

- 9.1** Microorganisms intentionally added to products shall not be genetically modified organisms (GMOs), and must meet criteria for [NIH Risk Groups II, III, and IV](#).

10. PRODUCT-LEVEL ANALYTICAL TESTING

Manufacturers shall submit documentation demonstrating the product meets all analytical testing requirements. For purposes of determining conformance with these requirements, all specified limits are absolute limits, as defined in ASTM Practice E29, for Using Significant Digits in Test Data to Determine Conformance with Specifications.

10.1 Analytical Testing—Total Organic Fluorine

All levels of certification require the product to be tested for total organic fluorine. All products must meet the requirements specified below.

- 10.1.1** If none of the assets (equipment) used to produce the product under review for certification have any contact with PFAS at any time (i.e., production uses completely dedicated assets only), Applicant must meet Level 1 Total Organic Fluorine Testing Requirements.
- 10.1.2** If one or more of the assets used to produce the product under review for certification have any contact with PFAS at any time, Applicant must meet the Level 1 and Level 2 Total Organic Fluorine Testing Requirements.
- 10.1.3** Analytical testing is required on three product samples from three different lots to verify total organic fluorine content by combustion ion chromatography is below the RSL threshold of 0.0001% by mass (1 ppm).
- 10.1.4** The testing laboratory is selected by Clean Production Action. Clean Production Action provides the Applicants with information necessary to submit samples for testing.
- 10.1.5** Level 1 Total Organic Fluorine Testing Requirements: During the certification process, product-level total organic fluorine testing of each product is required on three samples; one sample each from three different production lots, runs, or batches. For Applicants subject to both Level 1 and Level 2 Total Organic Fluorine Testing Requirements, each of the three samples required for Level 1 shall be from the very start of a different run that was directly preceded by assets being used to produce PFAS-containing products.
- 10.1.6** Level 2 Total Organic Fluorine Testing Requirements for each product:
- 10.1.6.1 Applicant collects an attestation from each product manufacturer stating that all manufacturing facilities that make the product have robust procedures in place to minimize contamination from production of PFAS-containing products to ensure every product meets the requirement of < 1 ppm total organic fluorine. These procedures at a minimum must include cleaning protocols for changeovers from production of PFAS-containing products to PFAS-free products, validation, sampling and testing protocols, and corrective actions. Contamination may result from shared equipment, shared recycling of process chemicals, or use of recycled raw materials.



10.1.6.2 During the duration of a valid certification, total organic fluorine testing of each product is required on three samples per quarter (three-month period) from each manufacturing facility. Each of the samples shall be from the very start of a different run that was directly preceded by assets being used to produce PFAS-containing products. Analytical test results verifying the product contains < 1 ppm total organic fluorine shall be submitted to Clean Production Action once per year during annual renewal.

10.1.6.3 Throughout the duration of a valid certification, Clean Production Action shall be immediately informed if any product sample contains ≥ 1 ppm total organic fluorine.

10.2 Analytical Testing—Acute Aquatic Toxicity

Product-level data for determination of acute aquatic toxicity are required for each of the following groups of organisms: fish, aquatic invertebrates, and algae (all fresh water). Acceptable test method(s) are listed in Table 3 below. On a case by case basis, available data from alternative test methods may be accepted. Analytical testing must be from an independent, third-party laboratory that is ISO/IEC 17025 accredited and the accreditation scope includes the test method(s) being applied to meet the Table 3 requirements.

The data must be provided for the product as sold. The LC50 or EC50 value for each group of organisms must be >10 mg/L to be certified according to this standard. Data must be for tests performed no more than one year prior to the date of application for certification.

TABLE 3: Acute Aquatic Toxicity Test Methods

GROUP OF ORGANISMS	ACCEPTABLE TEST METHOD
Fish	OECD 203 or USEPA OPPT 850.1075
Aquatic Invertebrates	OECD 202 Part 1 Daphnia sp., Acute Immobilisation Test or USEPA OPPTS 850.1010 or 850.1035
Algae	OECD 201 or USEPA OPPTS 850.5400 Tiers I and II



11. DOCUMENTATION REQUIREMENTS

Clean Production Action performs a certification review of the following required documents against the certification requirements. All documentation is submitted by the Applicant.

1. Product Inventory
 - a. Additive Inventories
 - b. Chemical Inventories
2. Safety Data Sheets (SDSs)
3. GreenScreen List Translator scores¹⁴
4. GreenScreen assessments and Benchmark scores (Gold and Platinum only)
5. Results from analytical testing, including a signed attestation form for Product-level PFAS in Manufacturing

12. CERTIFICATION AND LICENSING

The Applicant must submit all required documentation as applicable to the certification level to Clean Production Action and sign a license agreement with Clean Production Action to be awarded certification. A license agreement is required to use a GreenScreen Certified Certification Mark on products and marketing materials.

A certificate for a certified product (or products) is issued by Clean Production Action after the certification review is complete and a license agreement is executed.

13. CERTIFICATION, LABELING AND DURATION

13.1 Disclaimer of Liability

Clean Production Action, as the developer of this standard, shall not incur any obligations or liability for any loss or damages, including, without limitation, indirect, consequential, special, or incidental damages, arising out of or in connection with the interpretation or adoption of, reliance upon, or any other use of this Standard by any party. Clean Production Action makes no express or implied warranty of merchantability or fitness for a particular purpose, nor any other express or implied warranty with respect to this Standard.

13.2 Certification Mark

The appropriate GreenScreen Certified Mark may appear on the product, packaging, secondary documents, and promotional materials, only in conjunction with the certified product. Only the core design mark or the design mark with the corresponding level for which the product has achieved certification may be used in conjunction with that certified product. All of the Applicant's use of the GreenScreen Certified Mark(s) shall be in accordance with the terms of the executed license agreement. No sub-licensing of the Mark(s) is allowed.

¹⁴ GreenScreen List Translator scores are generated by a GreenScreen Certified Reviewer or Clean Production Action.



The GreenScreen Certified Mark shall not be used in conjunction with any modifying terms, phrases, or graphic images that might mislead customers as to the extent or nature of the certification. Clean Production Action must review all uses of the GreenScreen Certified Mark prior to printing or publishing.

13.3 Use with Other Claims

The GreenScreen Certified Mark shall not appear in conjunction with any human health or environmental claims, unless verified and approved in writing by Clean Production Action.

13.4 Duration of Certification

Certificates for Version 2 of this standard are valid through July 31, 2026 and require annual renewal. Any changes to the product during the valid certification period (e.g., changes to chemical composition) must be reported to Clean Production Action immediately and may invalidate the certificate.

After the first year of the certificate, and each subsequent year during the valid duration, the licensee must renew the certificate by: 1) paying an annual renewal fee; 2) reporting any product changes; and 3) signing a statement by the CEO or a senior manager that no changes have been made to the product's chemical composition. At the time of annual renewal, recertification will be required if changes have occurred that may affect the product inventory and hazard assessment.

Certificate holders may choose to recertify the product(s) upon expiration of the certificate.



ANNEX 1 – CERTIFICATION PROCESS STEPS WITH CLEAN PRODUCTION ACTION

1. Applicant registers on the GreenScreen Certified website.
2. Applicant contacts Clean Production Action to begin the certification process.
3. Clean Production Action determines whether product(s) are within scope.
4. Clean Production Action sends the following Application materials:
 - a. Non-disclosure agreement (NDA); and
 - b. Application Form.
5. Applicant signs NDA and completes Application Form. Applicant sends signed NDA and signed Application Form to Clean Production Action.
6. Clean Production Action countersigns NDA and sends executed NDA to Applicant.
7. Clean Production Action sends Applicant an invoice.
8. Applicant pays the invoice.
9. Clean Production Action sends Applicant the following materials:
 - a. Product Inventory Form; and
 - b. Instructions for analytical testing.
10. Applicant submits the completed Product Inventory Form, Safety Data Sheets and GreenScreen assessment reports (for Gold and Platinum only) for all inputs including mixtures and polymers purchased from suppliers, and analytical testing results.
11. Clean Production Action performs product and certification reviews. Clean Production Action requests additional information from Applicant as needed.
12. Clean Production Action informs Applicant of the results of the product and certification reviews.
13. Applicant informs Clean Production Action whether they will proceed with a License Agreement for products that meet the certification requirements.
14. Clean Production Action sends Applicant a License Agreement.
15. Applicant signs and returns the License Agreement.
16. Clean Production Action countersigns the License Agreement and sends an executed copy to the Applicant.
17. Clean Production Action lists certified product(s) on the Clean Production Action website and sends Applicant certificate(s) for certified product(s).



ANNEX 2 – CERTIFICATION PROCESS STEPS WITH GREENSCREEN CERTIFIED REVIEWER

A2.1 Product Review Process using a GreenScreen Certified Reviewer

1. Applicant registers on the GreenScreen Certified website.
2. Applicant contacts Clean Production Action-approved GreenScreen Certified Reviewer to begin the product review process.
3. GreenScreen Certified Reviewer confirms with Clean Production Action that Applicant registered for GreenScreen Certified and determines whether product(s) are within scope.
4. Applicant hires GreenScreen Certified Reviewer to complete the product review.
5. GreenScreen Certified Reviewer informs Applicant of the results of the product review and provides Applicant a completed Product Review Report.

A2.2 Certification Process with CPA

1. Applicant submits completed Product Review Report to Clean Production Action to initiate certification review and licensing services.
2. Clean Production Action sends Applicant an invoice.
3. Applicant pays the invoice.
4. Clean Production Action performs certification review. Clean Production Action requests additional information from Applicant or GreenScreen Certified Reviewer, as needed.
5. Clean Production Action informs Applicant of the results.
6. Applicant informs Clean Production Action whether they will proceed with a License Agreement for products that meet the certification requirements.
7. Clean Production Action sends Applicant a License Agreement.
8. Applicant signs and returns the License Agreement.
9. Clean Production Action countersigns the License Agreement and sends an executed copy to the Applicant.
10. Clean Production Action sends Applicant certificate(s) for certified product(s).

ANNEX 3 – RSL REFERENCE LIST (ALKYLPHENOLS AND ALKYLPHENOL ETHOXYLATES)

Chemical group members belonging to the Alkylphenols and Alkylphenol Ethoxylates group include but are not limited to those listed in Table A1:

TABLE A1: **RSL Reference List for Alkylphenols and Alkylphenol Ethoxylates**

CHEMICAL NAME	CASRN
Phenol, 4-(1- ethyl-1,2- dimethylpropyl)-	30784-27-1
Phenol, 4-(1- ethyl-2,2- dimethylpropyl)-	861010-65-3
Phenol, 4-(1- ethyl-3- methylbutyl)-	854904-92-0
Phenol, 4-(1- ethylpentyl)-	6465-74-3
Phenol, 4-(1- methylhexyl)-	6863-24-7
Phenol, 4-(1- propylbutyl)-	6465-71-0
Phenol, 4-(1,1- diethylpropyl)-	37872-24-5
Phenol, 4-(1,1- dimethylpentyl)-	30784-31-7
Phenol, 4-(1,1,2- trimethylbutyl)-	861011-60-1
Phenol, 4(1,1,2,2tetramethylpropyl)-	72861-06-4
Phenol, 4-(1,1,3- trimethylbutyl)-	33104-11-9
Phenol, 4-(1,2- dimethylpentyl)-	854904-93-1
Phenol, 4-(1,2,2- trimethylbutyl)-	911371-06-7
Phenol, 4-(1,3- dimethylpentyl)-	71945-81-8
Phenol, 4-(1,3,3- trimethylbutyl)-	911371-07-8
Phenol, 4-(1,4- dimethylpentyl)-	857629-71-1
Phenol, 4-(3- ethylpentyl)-	911370-98-4
Phenol, 4-(3- methylhexyl)-	102570-52-5
Phenol, 4-(4- methylhexyl)-	1139800-98-8
Phenol, 4-(5- methylhexyl)-	100532-36-3
Phenol, 4-[2methyl-1-(1- methylethyl)propyl]-	1824346-00-0
Phenol, 4-heptyl-	1987-50-4
Phenol, 4-tert- heptyl-	288864-02-8
Phenol, heptyl derivs.	72624-02-3
2-Ethylhexylphenol	1331-54-0
2-n-Octylphenol	949-13-3
2-tert-Octylphenol	67554-50-1
4-n-Octylphenol	1806-26-4
4-Octylphenol	71902-25-5
4-Octylphenol polyethoxylate	26636-32-8
4-tert-Octylphenol	140-66-9
4-tert-Octylphenol diethoxylate	68310-57-6
C8 Branched alkyl phenol ethoxylate	68987-90-6



CHEMICAL NAME	CASRN
Ethanol, 2-(2-(4-(1,1,3,3-tetramethylbutyl)phenoxy)ethoxy)-	2315-61-9
Ethanol, 2-(octylphenoxy)- = Octylphenoethoxylate	1322-97-0
Isooctylphenol	11081-15-5
Octoxynol-1	2315-67-5
Octoxynol-9	9002-93-1
Octylphenoxy polyethoxyethanol	9036-19-5
Phenol, (1-methylheptyl)-	27985-70-2
Phenol, 2-(1,1,3,3-tetramethylbutyl)-	3884-95-5
Phenol, 2-(1-ethylhexyl)-	17404-44-3
Phenol, 2-(1-methylheptyl)-	18626-98-7
Phenol, 2-(1-propylpentyl)-	37631-10-0
Phenol, 2-sec-octyl-	26401-75-2
Phenol, 4-(1-ethylhexyl)-	3307-00-4
Phenol, 4-(1-methylheptyl)-	1818-08-2
Phenol, 4-(1-propylpentyl)-	3307-01-5
Phenol, 4-octyl-, branched	99561-03-2
Phenol, 4-sec-octyl-	27214-47-7
p-Isooctylphenol	27013-89-4
Poly(oxy-1,2-ethanediyl), -(octylphenyl)- -hydroxy-	9063-89-2
Poly(oxy-1,2-ethanediyl), -[(1,1,3,3-tetramethylbutyl) phenyl]- -hydroxy-, phosphate	52623-95-7
Poly(oxy-1,2-ethanediyl), -sulfo-(octylphenoxy)-, branched, sodium salt	69011-84-3
Poly(oxy-1,2-ethanediyl), -sulfo-[(1, 1,3,3-tetramethylbutyl)phenoxy]-, sodium salt	55348-40-8
Poly(oxy-1,2-ethanediyl), alpha-((1,1,3,3-tetramethylbutyl)phenyl)-omega-hydroxy-, phosphate	52276-83-2
Poly(oxy-1,2-ethanediyl), alpha-(3-octylphenyl)-omega-hydroxy	81642-15-1
Poly(oxy-1,2-ethanediyl), alpha-(4-isooctylphenyl)-omega-hydroxy-	51651-58-2
Poly(oxy-1,2-ethanediyl), alpha-(isooctylphenyl)-omega-hydroxy	9004-87-9
Polyethylene glycol benzyl (1,1,3,3-tetramethylbutyl)phenyl ether	60864-33-7
sec-Octylphenol	93891-78-2
tert-Octylphenol	27193-28-8
Triton® X-405	2497-59-8
(C9)Alkylated phenol	68081-86-7
14-(Nonylphenoxy)-3,6,9,12-tetraoxatetradecan-1-ol	26264-02-8
2,6-di-tert-butyl-4-nonylphenol	4306-88-1
2-[2-[2-(4-Nonylphenoxy)ethoxy]ethoxy]ethanol	51437-95-7
20-(4-Nonylphenoxy)-3,6,9,12,15,18-hexaoxaicosan-1-ol	27942-27-4
20-(Nonylphenoxy)-3,6,9,12,15,18-hexaoxaicosan-1-ol	27177-03-3
26-(4-Nonylphenoxy)-3,6,9,12,15,18,21,24-octaoxahexacosan-1-ol	14409-72-4



CHEMICAL NAME	CASRN
26-(Nonylphenoxy)-3,6,9,12,15,18,21,24-octaohexacosan-1-ol	42173-90-0
2-Nonylphenol	136-83-4
3-(1,1-Dimethylheptyl)phenol	70120-12-6
3,6,3-Nonylphenol-13C6	1173020-38-6
3,6,3-Nonylphenol-d2	1173020-19-3
3E2-Nonylphenol isomer	186825-39-8
3-Nonylphenol	139-84-4
4-(1,1,2-Trimethylhexyl)phenol	497103-56-7
4-(1,1,4-Trimethylhexyl)phenol	1988-28-9
4-(1,1,5-Trimethylhexyl)phenol	521947-27-3
4-(1,3,5-Trimethylhexyl)phenol	64114-43-8
4-(1-Ethyl-1,3-dimethylpentyl)phenol	186825-36-5
4-(1-Ethyl-1,4-dimethylpentyl)phenol	142731-63-3
4-(1-Ethyl-1-methylhexyl)phenol	52427-13-1
4-(2,4-Dimethylheptane-3-yl)phenol	1158978-65-4
4-(2,6-Dimethylheptyl)phenol	63085-63-2
4-(2-Ethyl-1,1-dimethylpentyl)phenol	478243-86-6
4-(Nonan-3-yl)phenol	17404-67-0
4-[2-Methyl-1-(1-methylethyl-d6)pentyl]phenol	1285987-04-3
4-N-Nonylphenol-2,3,5,6-D4,OD	358730-95-7
4-n-Nonylphenol-d4	1173019-62-9
4-Nonylphenol monoethoxylate	104-35-8
4-Nonylphenol	29832-11-9
4-Nonylphenol (branched)	84852-15-3
4-Nonylphenol (linear)	104-40-5
4-Nonylphenol diethoxylate	20427-84-3
4-t-Nonylphenol diethoxylate	156609-10-8
Barium Nonylphenolate, carbon dioxide, overbased	68515-89-9
Barium, carbonate 4-nonylphenol complexes	68442-67-1
Bariumbis(Nonylphenolate)	28987-17-9
C9-Alkylstrf phenol sulfides	68515-93-5
Calcium bis(nonylphenolate)	30977-64-1
Decaethylene glycol, isononylphenyl ether	65455-72-3



CHEMICAL NAME	CASRN
Dinonyl phenol	1323-65-5
Dinonylphenol ethoxylates, branched	68891-21-4
Dinonylphenol, branched	84962-08-3
Ethanol, 2-(2-(2-(2-(4-nonylphenoxy)ethoxy)ethoxy)ethoxy)-	7311-27-5
Ethanol, 2-(2-(nonylphenoxy)ethoxy)-	27176-93-8
Ethanol, 2-(4-nonylphenoxy)-	104-35-8
Ethanol, 2-(nonylphenoxy)-	27986-36-3
Ethoxylated Nonylphenol Phosphate	51811-79-1
Ethoxynonyl-benzene	28679-13-2
Isononylphenol	11066-49-2
Isononylphenol ethoxylate	37205-87-1
Nonoxynol-8	27177-05-5
Nonoxynol-9	26571-11-9
Nonylphenol (mixed isomers)	25154-52-3
Nonylphenol ethoxylate	37340-60-6
Nonylphenol phosphite (3:1)	26523-78-4
Nonylphenol polyethylene glycol ether	20636-48-0
Nonylphenol polyethylene glycol ether	27177-01-1
Nonylphenol polyethylene glycol ether	27177-08-8
Nonylphenol, branched	90481-04-2
Nonylphenol, branched, ethoxylated	68412-54-4; 37205-87-1
Nonylphenol, ethoxylated, monoether with sulfuric acid, sodium salt	9014-90-8
Nonylphenylpolyoxyethylene sulfosuccinate	54612-36-1
o-Isononylphenol	27938-31-4
p-(1,1-Dimethylheptyl)phenol	30784-30-6
p-(1-Methyloctyl)phenol	17404-66-9
Pentaoxaheptadecan-1-ol,17-(4-nonylphenoxy)-	34166-38-6
Phenol, 2-nonyl-, branched	91672-41-2
Phenol, 4-(1,1,2,4-tetramethylpentyl)-	851401-44-0
Phenol, 4-(1,1,3-trimethylhexyl)-	174305-83-0
Phenol, 4-(1,2,5-trimethylhexyl)-	142731-55-3
Phenol, 4-(1,2-dimethyl-1-propylbutyl)-	866790-13-8
Phenol, 4-(1,2-dimethylheptyl)-	142731-58-6



CHEMICAL NAME	CASRN
Phenol, 4-(1,3-dimethyl-1-propylbutyl)-	142731-65-5
Phenol, 4-(1,3-dimethylheptyl)-	122961-18-6
Phenol, 4-(1-ethyl-1,2-dimethylpentyl)-	866790-14-9
Phenol, 4-(1-ethyl-2,4-dimethylpentyl)-	66519-71-9
Phenol, 4-(2,4-dimethylheptyl)-	91000-35-0
Phenol, 4-(3-ethyl-1,3-dimethylpentyl)-	881201-77-0
p-Isononylphenol	24518-48-7
p-Isononylphenol	26543-97-5
p-Nonylphenol-13C6	211947-56-7
Poly(oxy(methyl-1,2-ethanediyl)), alpha-(nonylphenyl)-omega-hydroxy-	9064-15-7
Poly(oxy-1,2-ethanediyl), alpha-(1-oxo-2-propenyl)- omega-(nonylphenoxy)-	50974-47-5
Poly(oxy-1,2-ethanediyl), alpha-(2-nonylphenyl)-omega-hydroxy-	51938-25-1
Poly(oxy-1,2-ethanediyl), -sulfo-(nonylphenoxy)-, ammonium salt	9051-57-4
Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy	27942-26-3
Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched, phosphates	68412-53-3
Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-(nonylphenoxy)-, branched, ammonium salt	68649-55-8
Polyethylene glycol mono(branched p-nonylphenyl) ether	127087-87-0
Polyethylene glycol nonylphenyl ether	9016-45-9
Polyoxyethylene nonylphenyl ether	26027-38-3
Soprophor	37251-69-7
Zinc bis(nonylphenolate)	77194-15-1
Zinc bis(p-nonylphenolate)	74230-03-8
2-Dodecylphenol	5284-29-7
3-Dodecylphenol	29665-57-4
Dodecyl phenol	27193-86-8
Phenol, dodecyl-, branched	121158-58-5
Phenol, dodecyl-, branched [1]phenol, 2-dodecyl-, branched [2]phenol, 3-dodecyl-, branched [3]phenol, 4-dodecyl-, branched [4]phenol, (tetrapropenyl) derivatives [5]	210555-94-5
Phenol, dodecyl-, manuf. of, by-products from, high-boiling	90480-99-2
4-Dodecylphenol	104-43-8
Isododecylphenol	11067-80-4



Standard for Firefighting Foam

The GreenScreen Certified™ Standard for Firefighting Foam: Class A Foam Concentrates, Class B Foam Concentrates, Class A Wetting Agents, Class A&B Wetting Agents is for evaluation of firefighting water additives used for NFPA Class A and B fires. This standard provides the means for manufacturers to communicate their use of safer chemicals per the GreenScreen® for Safer Chemicals hazard assessment method. GreenScreen Certified ensures value, usability, and relevance for industry professionals wanting to excel in offering products with preferred chemistry for people and the planet.



1310 Broadway, Suite 101, Somerville, MA 02144
www.cleanproduction.org • 781.391.6743