Sigma-Aldrich®
Lab & Production Materials

MilliporeSigma

Biodegradable Greener Surfactants

Minimize Your Environmental Footprint

We believe that green chemistry will contribute to a better tomorrow. With a growing portfolio of greener alternatives, there are now more choices to reduce the ecological impact of your research while still delivering quality and efficacy so your results are not compromised.

To help aid you in reducing the environmental footprint of your research, we offer numerous chemically stable products that break down into innocuous degradation products and do not persist in the environment at the end of their function.

These products are aligned with the “Design for Degradation” principle of The 12 Principles of Greener Chemistry to meet your research and production needs.

TERGITOL™ 15-S and ECOSURF™ surfactants are readily biodegradable per OECD 301F (>60% biodegradation within 28 days).

Biodegradable without compromised quality

Catalog No.	Product Name
15S7	TERGITOL™ 15-S-7
15S9	TERGITOL™ 15-S-9
STS0001	TERTIGOL™ 15-S-30
STS0002	TERGITOL™ 15-S-40
STS0003	TERGITOL™ 15-S-40 solution
STS0005	Triton™ CG-110
STS0006	ECOSURF™ EH-9
STS0007	ECOSURF™ SA-9
STS0012	ECOSURF™ EH-9 solution 90% in water
STS0013	TERGITOL™ 15-S-5
STS0014	TERGITOL™ 15-S-15
STS0015	ECOSURF™ EH-3
STS0016	ECOSURF™ EH-6
STS0017	ECOSURF™ SA-4
STS0018	ECOSURF™ SA-7
STS0019	TERGITOL™ 15-S-3
STS0020	TERGITOL™ 15-S-12
STS0021	TERGITOL™ 15-S-20 solution

Explore our complete range of greener alternatives at:

SigmaAldrich.com/greenchemistry

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

12 principles
of Green Chemistry

An icon has been added to identify our Greener alternative products. Products with this icon fulfill one of the three criteria.

- Products reengineered by our scientists to significantly improve their environmental footprint
- Products that align with the 12 Principles of Green Chemistry
- Products that help make greener alternatives possible through enabling technologies

The 12 Principles of Green Chemistry were proposed to encourage scientists to use more sustainable chemical processes and products. These principles are represented by the icons below to provide a quick reference for the classification of our greener substitutes and biorenewable alternatives.

1


Prevention
It is better to prevent waste than to treat or clean up waste after it has been created.

2


Atom Economy
Synthetic methods should be designed to maximize the incorporation of all materials used in the process into the final product.

3


Less Hazardous Chemical Syntheses
Wherever practicable, synthetic methods should be designed to use and generate substances that possess little or no toxicity to human health and the environment.

4


Designing Safer Chemicals
Chemical products should be designed to affect their desired function while minimizing their toxicity.

5


Safer Solvents and Auxiliaries
The use of auxiliary substances (e.g., solvents, separation agents, etc.) should be made unnecessary wherever possible and innocuous when used.

6


Design for Energy Efficiency
Energy requirements of chemical processes should be recognized for their environmental and economic impacts and should be minimized. If possible, synthetic methods should be conducted at ambient temperature and pressure.

7


Use of Renewable Feedstocks
A raw material or feedstock should be renewable rather than depleting whenever technically and economically practicable.

8


Reduce Derivatives
Unnecessary derivatization (use of blocking groups, protection/ deprotection, temporary modification of physical/chemical processes) should be minimized or avoided if possible, because such steps require additional reagents and can generate waste.

9


Catalysis
Catalytic reagents (as selective as possible) are superior to stoichiometric reagents.

10


Design for Degradation
Chemical products should be designed so that at the end of their function they break down into innocuous degradation products and do not persist in the environment.

11


Real-time Analysis for Pollution Prevention
Analytical methodologies need to be further developed to allow for real-time, in-process monitoring and control prior to the formation of hazardous substances.

12


Inherently Safer Chemistry for Accident Prevention
Substances and the form of a substance used in a chemical process should be chosen to minimize the potential for chemical accidents, including releases, explosions, and fires.

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