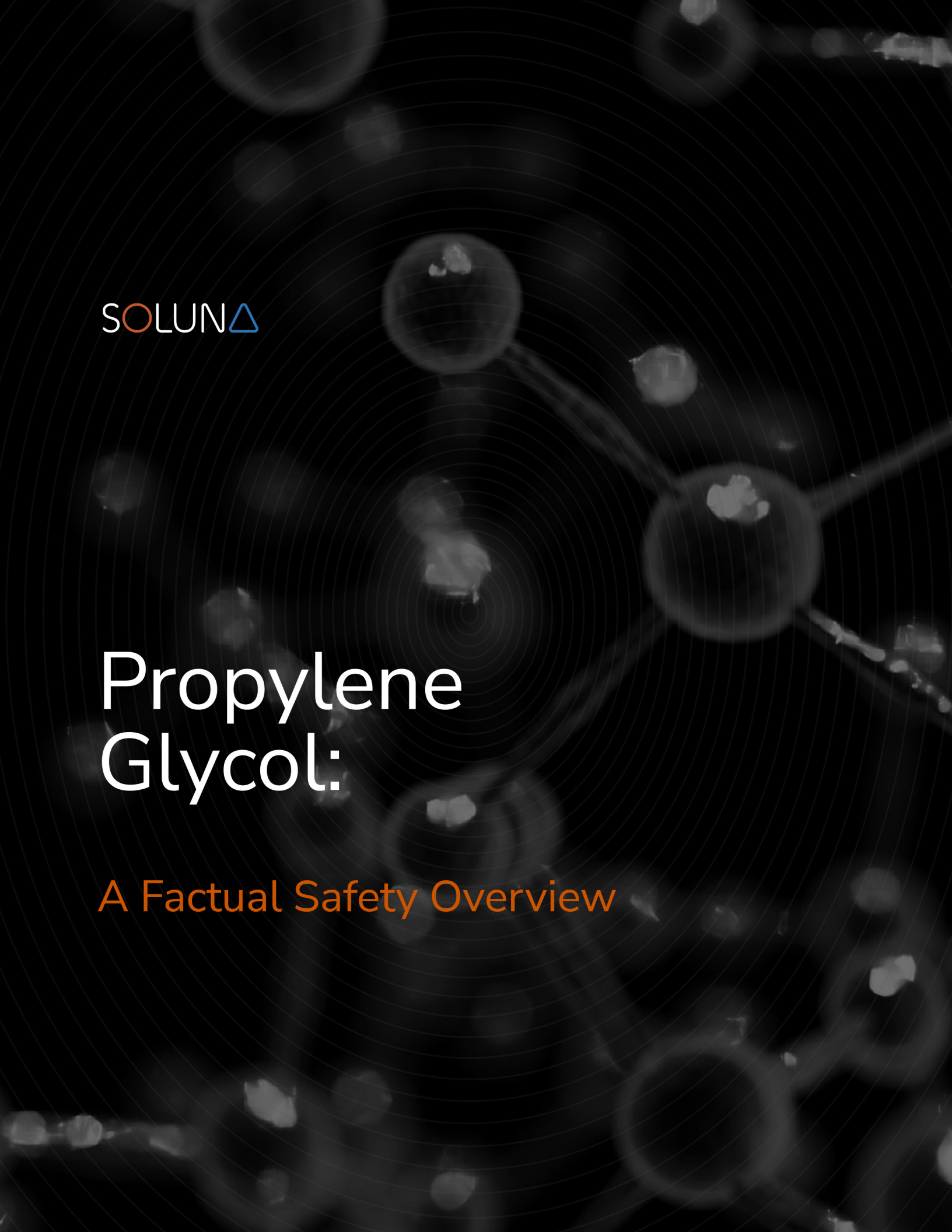


The background of the slide features a dark, textured molecular structure with several spherical nodes connected by thin lines. Overlaid on this is a series of faint, concentric circles that create a ripple effect across the entire page.

SOLUNA Δ

Propylene Glycol:

A Factual Safety Overview

Propylene Glycol: Quick-Read Summary

The key facts at a glance

Full explanation and sources in the accompanying white paper

September 2026

The basics

- Two different chemicals share the name “glycol.” Ethylene glycol is the toxic antifreeze used in cars; propylene glycol is the cooling fluid used here — a different chemical.
- Recognized as safe. The U.S. Food and Drug Administration classifies propylene glycol as “Generally Recognized as Safe,” and it is used every day in food, medicine, and cosmetics.
- Used diluted. In cooling systems it is typically mixed with water — commonly a 25% blend known as “PG25.”

Safety at a glance

- People: very low toxicity. The body clears it much like a food, and it is not a cancer-causing agent. Workers use standard gloves and eye protection as a precaution.
- Pets: far safer than antifreeze and permitted in dog food. The one exception is cats, which are sensitive to it, so it is not allowed in cat food. A spill is not the poisoning emergency an antifreeze spill would be.
- Environment: readily biodegradable with low toxicity to aquatic life. The only consideration is oxygen use as it breaks down in water — a matter of volume, not poison — so spills are contained, cleaned up, and disposed of properly.

An industry-standard choice

- The data center standard. The 25% blend is the coolant the data center industry has standardized on, and it aligns with the technical standards published by ASHRAE.
- Backed by major operators. The Open Compute Project, Meta, Dell, and Schneider Electric publish guidance recommending propylene glycol cooling fluids.

In brief

Propylene glycol is a low-hazard cooling fluid — the same substance found in food, medicine, and cosmetics. It poses very low risk to people, does not carry the poisoning danger of automotive antifreeze for pets, and breaks down naturally in the environment. It is the coolant the largest computing operators already rely on, not an experimental choice.



Propylene Glycol: A Factual Safety Overview

A plain-language summary of the published facts and sources
Compiled from public and government sources
September 2026

When designing a data center, one of the choices is the fluid that circulates through the cooling system that keeps the computing equipment from overheating. A couple options commonly considered: purified (deionized) water, or a mixture of roughly 25% propylene glycol and 75% water (PG25) or 50% propylene glycol and 50% water (PG50). Because “glycol” is an unfamiliar word to most people — and is easily confused with the toxic antifreeze used in cars — this document explains, in everyday terms, what propylene glycol is and what the science says about its safety for people, pets, and the environment.

The one thing to know first

There are two common “glycols.” Ethylene glycol is the poisonous one in automotive antifreeze. Propylene glycol — the glycol used in this kind of cooling — is a different chemical that is recognized as safe by the U.S. Food and Drug Administration and is used every day in food, medicine, and cosmetics. The two are often mixed up, so it is worth being clear: the fluid used for cooling is the safe one, not the toxic one.

What is propylene glycol?

Propylene glycol is a clear, nearly odorless liquid. You have almost certainly come into contact with it already. The U.S. Food and Drug Administration classifies it as “Generally Recognized as Safe” (GRAS) for use in food. [1] It shows up in salad dressings, cake mixes, and flavorings; in many medicines as the liquid that carries the active ingredient; in cosmetics and toothpaste; and as the fluid that makes the “fog” at concerts and theaters. In a cooling system it is valued because it protects pipes from freezing in cold weather and helps prevent corrosion.

Is it safe for people?

Yes. Propylene glycol has very low toxicity for humans. The body treats it much like a food: it is broken down and cleared, and it does not build up. [2] It is not a cancer-causing agent, and it does not harm reproduction. In an industrial setting the realistic exposures are minor — for example, splashing some on the skin or breathing a fine mist can cause mild, temporary irritation — and workers use standard gloves and eye protection as a precaution. At the diluted strengths used for cooling — commonly 25% or 50% propylene glycol — the fluid is gentler still. It would take swallowing a large amount to cause any meaningful effect.



Is it safe for pets and animals?

It is far safer than the antifreeze people rightly worry about. Ethylene glycol — the automotive kind — tastes sweet, and even a small amount a dog or cat laps up can be fatal. Propylene glycol does not carry that danger; most animals tolerate it well, and it is even permitted as an ingredient in dog food. [3] There is one specific exception worth naming honestly: cats are unusually sensitive to propylene glycol, which can affect their red blood cells. For that reason the FDA does not allow it in cat food, even though it allows it in dog food. [3] In practical terms for a facility, this means a propylene glycol spill is not the pet-poisoning emergency that an ethylene glycol spill would be — but, like any chemical, it is still kept contained and is not left where animals could drink it.

Is it safe for the environment?

Propylene glycol is one of the more environmentally friendly industrial fluids available. It is readily biodegradable — natural microbes break it down rather than it lingering for years — it does not build up in fish or wildlife, and it has low direct toxicity to aquatic life. [4] The one environmental point worth understanding is how it breaks down. When a large quantity enters a pond or stream, the microbes that digest it use up oxygen in the water as they work. If enough is released at once, the water can lose oxygen and stress fish and other aquatic life — the same reason airports carefully manage the de-icing fluid that runs off their runways. This is not about the chemical being poisonous; it is about volume. It is why a facility contains any spill, cleans it up, and disposes of used fluid properly rather than letting it run into a storm drain or waterway.

An industry-standard choice

The 25% propylene glycol blend is not an unusual or experimental choice — it is the coolant the data center industry has effectively standardized on for this kind of cooling. It is so common that it has earned its own shorthand in the field: “PG25.” It aligns with the technical standards most operators design to, published by ASHRAE, the professional body for heating, cooling, and refrigeration engineers. It is also well documented in the open literature. The Open Compute Project — an industry group whose members include many of the world’s largest technology companies — has published guidelines specifically on using propylene glycol cooling fluids in data centers. [5] Meta has documented propylene glycol cooling on its artificial-intelligence computing platforms,



[6] and major equipment makers including Dell [7] and Schneider Electric [8] publish guidance recommending it. In short, this is the same fluid that the largest computing operators in the world already rely on every day.

Standard handling and disposal

Because propylene glycol is a low-hazard fluid, standard industrial handling is straightforward. Common practice for glycol cooling fluids includes:

- Storing and containing the fluid so that any leak is captured rather than reaching soil or water.
- Keeping the product's Safety Data Sheet available on site, so its contents and handling instructions are documented for workers and first responders.
- Disposing of used fluid through approved channels rather than storm drains or surface water, consistent with local discharge permits.
- Reviewing the specific product's Safety Data Sheet, since some industrial blends include corrosion inhibitors that carry their own handling and disposal notes.

Summary

In brief

Propylene glycol is a low-hazard cooling fluid. It is the same substance found in food, medicine, and cosmetics; it poses very low risk to people; it does not carry the poisoning danger of automotive antifreeze for pets; and it breaks down naturally in the environment rather than persisting. Its main environmental consideration — oxygen use as it degrades in water — is managed through standard containment and disposal. It is also the coolant the data center industry has standardized on, used by the largest computing operators in the world. Compared with the toxic antifreeze it is often confused with, propylene glycol is a different, and far lower-hazard, chemical.

Sources

This overview is drawn from the following independent and government sources. Each can be reviewed directly at the link provided.

[1] U.S. Food and Drug Administration — Propylene glycol affirmed as Generally Recognized as Safe (GRAS), 21 CFR 184.1666. [ecfr.gov/current/title-21 §184.1666](https://ecfr.gov/current/title-21/§184.1666)

[2] Agency for Toxic Substances and Disease Registry (ATSDR / U.S. CDC) — Toxicological Profile for Propylene Glycol (human health and exposure) ncbi.nlm.nih.gov/books/NBK598027

[3] Merck Veterinary Manual — Propylene Glycol Toxicosis in Animals (safety in animals; sensitivity in cats). [merckvetmanual.com — Propylene Glycol Toxicosis](https://merckvetmanual.com/Propylene-Glycol-Toxicosis)



[4] U.S. Environmental Protection Agency — Propylene/Dipropylene Glycol Ecological Hazard Assessment (biodegradability and aquatic effects). [epa.gov — Ecological Hazard Assessment \(PDF\)](https://www.epa.gov/propylene-dipropylene-glycol-ecological-hazard-assessment)

Industry and engineering references (background on how the fluid is used in data centers, not safety findings):

[5] Open Compute Project — Guidelines for Using Propylene Glycol-Based Heat Transfer Fluids in Single-Phase Cold Plate-Based Liquid-Cooled Racks. [opencompute.org — Propylene Glycol Fluids Guidelines](https://opencompute.org/propylene-glycol-fluids-guidelines)

[6] Open Compute Project / Meta — Practices and Insights into Liquid Cooling on Meta's AI Training Platforms (2023). [opencompute.org — Liquid Cooling on Meta's AI Platforms](https://opencompute.org/liquid-cooling-on-meta-ai-platforms)

[7] Dell Technologies — Liquid Coolants Guidance for Technology Cooling System and Facility Water System. [delltechnologies.com — Liquid Coolants Guidance \(PDF\)](https://delltechnologies.com/liquid-coolants-guidance)

[8] Schneider Electric — What coolant should you use for data center liquid cooling? PG25, dielectric fluids, and ASHRAE recommendations (August 2026). [blog.se.com — PG25 & ASHRAE coolant guidance](https://blog.se.com/pg25-ashrae-coolant-guidance)

