

SAFETY MEMO

January 10th, 2022 – Ozone (O₃) – CAS#10028-15-6



Did you know?

What is Ozone?

Ozone (O₃) is a highly reactive gas that is naturally occurring in the ozone layer, as well as at ground level in the atmosphere (troposphere). It is clear at low concentrations, and blue at higher concentrations with a distinctive pungent odor that can be detected around 0.02-0.05 ppm. Water-soluble, ozone is highly reactive and unstable, reacting and decomposing to oxygen gas in normal ambient conditions and in water.

Where do we find it?

Ozone is often used in the following ways:

- Disinfectant and sterilization in food and beverage processing.
- Water purification.
- Wastewater treatment.

How to protect yourself?

- Ensure there is adequate ventilation at points of use or containment.
- Protect storage areas from sunlight.
- Avoid contact with eyes and skin.
- Avoid inhalation, use a full face-self contained breathing apparatus if entering areas with a potentially high concentration of ozone.
- Install gas detection and alarm systems.
- Do not store with flammable substances or near ignition sources.
- Be sure to contain and prevent all ozone spills and releases, as they are harmful to plant and aquatic life.

Why is it a hazard?

Ozone is an oxidizing agent and therefore increases the risk of fires and may aid combustion. Additionally, the release of ground-level ozone is harmful to plant and aquatic life due to its ability to inhibit photosynthesis. Ozone is also an irritant for skin and eyes. If inhaled, ozone can cause headaches, cough, dry throat, heavy chest and shortness of breath. This is especially important

for those with pre-existing respiratory issues, such as asthma.

The exposure limit for an 8 hour duration is 0.1ppm, the short term exposure limit is around 0.3ppm, and at 5ppm ozone is immediately dangerous to life or health.¹



Design Considerations

Adequate ventilation is critical to worker safety. Ozone detectors and alarms should be installed in all locations where a leak or high concentration of ozone is possible. Ensure emission levels are within local code compliance. Finally, ensure ozone is stored away from incompatible materials (reducing compounds, flammable materials) and ignition sources.

An ozone destruct unit should be used in the off gassing of ozone, which uses heat or a catalyst to break down the ozone before it is released into the atmosphere.

Here are some additional examples of typical mitigation and containment measures that can be implemented:

- Equipment Design (instrumentation, automation, detection devices, compatible materials);
- SOPs.

¹ Combined information from OSHA, ANSI/ASTM, ACGIHH, and NIOSH, per the MSDS.

