

Material Safety Data Sheet

Ozone

SECTION 1 – MATERIAL IDENTIFICATION			
Material Name:	Ozone		
Description:	Electronic radiation of air provides up to 2% ozone in air for onsite laboratory or commercial use. It can be produced in the liquid state, but shipping costs are too expensive. It is present in air at up to about 0.05ppm at sea level (variable) and is produced when air is exposed to electric discharge or UV radiation.		
Other Designations:	O ₃ , Triatomic Oxygen		
Manufacturer:	Usually produced on-site		
SECTION II – HAZARDS IDENTIFICATION		%	HAZARD DATA
Ozone gas in air		<2*	8-hr TWA 0.1ppm** or 0.2 mg/m ³ Human Inhalation TCL
*Level of ozone attainable in 'ozonised' air. Concentrated liquid can be obtained by cooling this ozonised air to 180°C			
**American Conference of Governmental Industrial Hygienists – Industrial Ventilation, A Manual of Recommended Practice, 18 th edition			
SECTION III – PHYSICAL DATA			
Boiling Point a 1 atm, Deg C	-112	Density Liquid at –183°C, g/ml	-1.57
Vapour Density (Air=1)	-1.65	Freezing Point, 1 atm, Deg C	-192
Water Solubility at 20°C, by wt	-3ppm	Molecular Weight	-48.00
Critical Temp, Deg C	-12.1		
Appearance & Odour:	A colourless to blue gas (dependent on concentration) with a pungent characteristic odour, which is detectable above 0.01ppm and becomes disagreeable (sulphur-like) above 1-2ppm. Olfactory fatigue develops rapidly. (Also, a dark blue liquid or solid)		
SECTION IV – FIRE AND EXPLOSION DATA			Lower
Flash Point & Method	Auto Ignition Temp	Flammability Limits/Air	Upper
N/A	N/A	N/A	
Extinguishing Media: When this material is involved in fire, use large amounts of water spray. This material increases the intensity of combustion as compared to the burning or exploding of material in air or with a comparable amount of O ₂ . Firefighting procedures depend on the surrounding materials. Self-contained breathing apparatus with full-face protection should be used by those fighting a fire in which this material is involved.			

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SECTION V – REACTIVITY DATA	
<p>Unstable at ordinary temperatures; spontaneously decomposes to O₂ and, thus is found in highest concentration only near the point of its generation. (It can be stored for prolonged periods as a liquid under cryogenic conditions).</p> <p>It is an oxidising agent for both organic and inorganic materials; it is a stronger oxidiser than O₂, but less strong than fluorine. Some of its reaction products, such as ozonides formed from unsaturated hydrocarbons, can be highly explosive. Solutions containing ozone can explode on warming.</p> <p>Keep away from heat, flame, strong reducing agents, and combustible materials, such as grease and oil.</p>	
SECTION VI – HEALTH HAZARD INFORMATION	TLV 0.1 ppm
<p>Excessive exposure is highly irritating and can be damaging to the eyes, nose, throat, and lungs. Exposure above 0.1 ppm produces headache as well as irritation of the respiratory tract, but symptoms subside when exposure stops. High concentrations and/or excessive duration of exposures above the TLV can produce nausea, pain in chest, cough, dyspnea, reduced visual acuity, fatigue, and pulmonary edema.</p> <p>Inhalation of >20 ppm for an hour or more (or 50 ppm for ½ hour) could be fatal. Symptoms of edema from excessive exposure can be delayed for one or more hours.</p> <p>Acute damage from ozone appears to be mainly from its oxidising effect on contact with tissue, but it may have chronic effects on the lung tumour acceleration.</p>	
FIRST AID:	<p><i>Eye Contact:</i> Get prompt medical help.</p>
	<p><i>Inhalation:</i> Remove to ozone-free air. Get medical help. Keep warm, quiet and at rest and observe for delayed pulmonary edema. Administration of O₂ has been recommended if breathing is laboured.</p>
SECTION VII – SPILL, LEAK AND DISPOSAL PROCEDURES	
<p>Evacuation of workers should be planned prior to emergency condition.</p> <p>Approved self-contained respiratory equipment with full face protection should be used by those involved in handling leaks and in emergency conditions. Detect leaks by exposing paper impregnated with 4% potassium iodide (dried) to suspected area. Paper turns brown if ozone is present.</p> <p>Provide ventilation to dilute and disperse small amounts of ozone into the outside atmosphere.</p> <p>Follow Federal, State and Local regulations.</p>	
SECTION VIII – SPECIAL PROTECTION INFORMATION	
<p>Provide general and local exhaust ventilation to meet TLV requirements in the workplace.</p> <p>Respirators of approved types must be available where overexposure to ozone is possible in a workplace. All exposures above 1 ppm must use full face protection and exposures above 5 ppm require an air-supplied or self-contained respirator. Cartridge or gas mask-type respirators with organic vapour-type cartridge(s) or canister are suitable only below 5 ppm ozone.</p> <p>Where ozone is generated, (or where liquid ozone is stored or used), explosion hazards and health hazards will exist and must be guarded against by proper planning, equipment, training, and work practice.</p>	
SECTION IX – SPECIAL PRECAUTIONS AND COMMENTS	
<p>Exclude from industrial exposures to ozone those individuals with a history of heart or lung problems. Also, certain individuals may be more susceptible to injury from ozone exposure than others; because of a certain enzyme deficiency, they may become ill from exposures which are readily endured by a normal worker.</p>	