

Nitrogen dioxide

 [cdc.gov/niosh/npg/npgd0454.html](https://www.cdc.gov/niosh/npg/npgd0454.html)

Synonyms & Trade Names

Dinitrogen tetroxide, Nitrogen peroxide

CAS No.

10102-44-0

RTECS No.

QW9800000

DOT ID & Guide

1067 124

Formula

NO₂

Conversion

1 ppm = 1.88 mg/m³

IDLH

13 ppm

See: 2017-202

Exposure Limits

NIOSH REL

ST 1 ppm (1.8 mg/m³)

OSHA PEL

C 5 ppm (9 mg/m³) See Appendix G

Measurement Methods

NIOSH 6014;

OSHA ID182

See: NMAM or OSHA Methods

Physical Description

Yellowish-brown liquid or reddish-brown gas (above 70°F) with a pungent, acrid odor.
[Note: In solid form (below 15°F) it is found structurally as N₂O₂.]

Molecular Weight

46.0

Boiling Point

70°F

Freezing Point

15°F

Solubility

Reacts

Vapor Pressure

720 mmHg

Ionization Potential

9.75 eV

Specific Gravity

1.44 (Liquid at 68°F)

Flash Point

NA

Upper Explosive Limit

NA

Lower Explosive Limit

NA

Relative Gas Density

2.62

Noncombustible Liquid/Gas, but will accelerate the burning of combustible materials.

Incompatibilities & Reactivities

Combustible material, water, chlorinated hydrocarbons, carbon disulfide, ammonia [Note: Reacts with water to form nitric acid.]

Exposure Routes

inhalation, ingestion, skin and/or eye contact

Symptoms

irritation eyes, nose, throat; cough, mucoid frothy sputum, decreased pulmonary function, chronic bronchitis, dyspnea (breathing difficulty); chest pain; pulmonary edema, cyanosis, tachypnea, tachycardia

Target Organs

Eyes, respiratory system, cardiovascular system

Personal Protection/Sanitation

(See protection codes)

Skin: Prevent skin contact

Eyes: Prevent eye contact

Wash skin: When contaminated

Remove: When wet or contaminated

Change: No recommendation

Provide: Eyewash, Quick drench

First Aid

(See procedures)

Eye: Irrigate immediately

Skin: Water flush immediately

Breathing: Respiratory support

Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

Up to 20 ppm:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode^f

(APF = 50) Any self-contained breathing apparatus with a full facepiece

(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern^g

Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also

INTRODUCTION ICSC CARD: 0930 MEDICAL TESTS: 0164

Page last reviewed: October 30, 2019