CID 3776

Isopropyl alcohol

Safety and Hazards

1.1 Hazards Identification

1.1.1 GHS Classification

Showing 1 of 5 View More

Pictogram(s)	 Flammable Irritant
Signal	Danger
GHS Hazard Statements	H225: Highly Flammable liquid and vapor [Danger Flammable liquids] H319: Causes serious eye irritation [Warning Serious eye damage/eye irritation] H336: May cause drowsiness or dizziness [Warning Specific target organ toxicity, single exposure; Narcotic effects]
Precautionary Statement Codes	P210, P233, P240, P241, P242, P243, P261, P264, P271, P280, P303+P361+P353, P304+P340, P305+P351+P338, P312, P337+P313, P370+P378, P403+P233, P403+P235, P405, and P501 (The corresponding statement to each P-code can be found at the GHS Classification page.)

▶ EU REGULATION (EC) No 1272/2008

1.1.2 Hazard Classes and Categories

Showing 2 of 5 View More

Flam. Liq. 2

STOT SE 3

Eye Irrit. 2

▶ EU REGULATION (EC) No 1272/2008

Flam. Liq. 2 (99.98%)

Eye Irrit. 2 (99.97%)

STOT SE 3 (100%)

▶ European Chemicals Agency (ECHA)

1.1.3 NFPA Hazard Classification

Showing 1 of 2 View More

NFPA 704 Diamond	 1-3-0
NFPA Health Rating	1 - Materials that, under emergency conditions, can cause significant irritation.
NFPA Fire Rating	3 - Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions.
NFPA Instability Rating	0 - Materials that in themselves are normally stable, even under fire conditions.

▶ Hazardous Substances Data Bank (HSDB)

1.1.4 EPA Safer Chemical

Chemical: Isopropanol

Green circle - The chemical has been verified to be of low concern based on experimental and modeled data.

▶ EPA Safer Choice

1.1.5 Health Hazards

Vapors cause mild irritation of eyes and upper respiratory tract; high concentrations may be anesthetic. Liquid irritates eyes and may cause injury; harmless to skin; if ingested causes drunkenness and vomiting. (USCG, 1999)

U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.

▶ CAMEO Chemicals

1.1.6 Fire Hazards

Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016)

U.S. Department of Transportation, Transport Canada, and Secretariat of Communications and Transport of Mexico, with collaboration from Argentina's Centro de Información Química para Emergencias. 2016 Emergency Response Guidebook. https://www.phmsa.dot.gov/hazmat/outreach-training/erg (accessed April 26, 2016).

▶ CAMEO Chemicals

Highly flammable. Vapour/air mixtures are explosive. Risk of explosion on contact with strong oxidants.

▶ ILO International Chemical Safety Cards (ICSC)

Flammable - 3rd degree

- NJDOH RTK Hazardous Substance List

1.1.7 Fire Potential

A very dangerous fire hazard when exposed to heat, flame or oxidizers.

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2149

- Hazardous Substances Data Bank (HSDB)

Ignites on contact with dioxygenyl tetrafluoroborate; chromium trioxide; potassium tert-butoxide... .

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2149

- Hazardous Substances Data Bank (HSDB)

1.1.8 Skin, Eye, and Respiratory Irritations

Mild irritation of the eyes, nose and throat was induced in human subjects exposed for 3 to 5 min to 400 ppm of isopropyl alcohol.

Clayton, G.D., F.E. Clayton (eds.) Patty's Industrial Hygiene and Toxicology. Volumes 2A, 2B, 2C, 2D, 2E, 2F: Toxicology. 4th ed. New York, NY: John Wiley & Sons Inc., 1993-1994., p. 2634

- Hazardous Substances Data Bank (HSDB)

The vapors are mildly irritating to the eyes, nose, and throat.

Association of American Railroads; Bureau of Explosives. Emergency Handling of Hazardous Materials in Surface Transportation. Association of American Railroads, Pueblo, CO. 2005, p. 507

- Hazardous Substances Data Bank (HSDB)

1.2 Safety and Hazard Properties

1.2.1 Flammable Limits

Lower flammable limit: 2.0% by volume; Upper flammable limit: 12.7% by volume @ 200 °F (93 °C)

National Fire Protection Association; Fire Protection Guide to Hazardous Materials. 14TH Edition, Quincy, MA 2010, p. 325-77

- Hazardous Substances Data Bank (HSDB)

Flammability

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

- The National Institute for Occupational Safety and Health (NIOSH)

1.2.2 Lower Explosive Limit (LEL)

2 % (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

CAMEO Chemicals

2.0%

Occupational Safety and Health Administration (OSHA); The National Institute for Occupational Safety and Health (NIOSH)

1.2.3 Upper Explosive Limit (UEL)

12 % (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

CAMEO Chemicals

12.7% at 200°F

Occupational Safety and Health Administration (OSHA)

1.2.4 Critical Temperature & Pressure

Critical temperature: 508.3 deg K; critical pressure: 4.7 MPa

Haynes, W.M. (ed.) CRC Handbook of Chemistry and Physics. 91st ed. Boca Raton, FL: CRC Press Inc., 2010-2011, p. 6-70

Hazardous Substances Data Bank (HSDB)

1.2.5 Physical Dangers

The vapour mixes well with air, explosive mixtures are easily formed.

ILO International Chemical Safety Cards (ICSC)

1.2.6 Explosive Limits and Potential

Moderately explosive when exposed to heat or flame.

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2149

Hazardous Substances Data Bank (HSDB)

Explosive limits , vol% in air: 2-12

ILO International Chemical Safety Cards (ICSC)

1.2.7 OSHA Standards

Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 400 ppm (980 mg/cu m).

29 CFR 1910.1000 (USDOL); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available

from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

Vacated 1989 OSHA PEL TWA 400 ppm (980 mg/cu m); STEL 500 ppm (1225 mg/cu m) is still enforced in some states.

NIOSH. NIOSH Pocket Guide to Chemical Hazards. DHHS (NIOSH) Publication No. 97-140. Washington, D.C. U.S. Government Printing Office, 1997., p. 366

Hazardous Substances Data Bank (HSDB)

1.2.8 NIOSH Recommendations

Recommended Exposure Limit: 10 Hour Time-Weighted Average: 400 ppm (980 mg/cu m).

NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)

Hazardous Substances Data Bank (HSDB)

Recommended Exposure Limit: 15 Minute Short-Term Exposure Limit: 500 ppm (1225 mg/cu m).

NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)

Hazardous Substances Data Bank (HSDB)

1.3 First Aid Measures

1.3.1 First Aid

EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop. SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment. INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing. INGESTION: DO NOT INDUCE VOMITING. Volatile chemicals have a high risk of being aspirated into the victim's lungs during vomiting which increases the medical problems. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. IMMEDIATELY transport the victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

CAMEO Chemicals

(See procedures)

Eye:Irrigate immediately - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin:Water flush - If this chemical contacts the skin, flush the contaminated skin with water. Where there is evidence of skin irritation, get medical attention.

Breathing:Respiratory support

Swallow:Medical attention immediately - If this chemical has been swallowed, get medical attention immediately.

▶ The National Institute for Occupational Safety and Health (NIOSH)

1.3.2 Inhalation First Aid

Fresh air, rest. Refer for medical attention.

▶ ILO International Chemical Safety Cards (ICSC)

1.3.3 Skin First Aid

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again.

▶ ILO International Chemical Safety Cards (ICSC)

1.3.4 Eye First Aid

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

▶ ILO International Chemical Safety Cards (ICSC)

1.3.5 Ingestion First Aid

Rinse mouth. Do NOT induce vomiting. Give nothing to drink. Refer for medical attention .

▶ ILO International Chemical Safety Cards (ICSC)

1.4 Fire Fighting

Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient. SMALL FIRE: Dry chemical, CO2, water spray or alcohol-resistant foam. Do not use dry chemical extinguishers to control fires involving nitromethane (UN1261) or nitroethane (UN2842). LARGE FIRE: Water spray, fog or alcohol-resistant foam. Do not use straight streams. Move containers from fire area if you can do it without risk. FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2016)

U.S. Department of Transportation, Transport Canada, and Secretariat of Communications and Transport of Mexico, with

collaboration from Argentina's Centro de Información Química para Emergencias. 2016 Emergency Response Guidebook. https://www.phmsa.dot.gov/hazmat/outreach-training/erg (accessed April 26, 2016).

▶ CAMEO Chemicals

Use water, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

▶ ILO International Chemical Safety Cards (ICSC)

1.4.1 Fire Fighting Procedures

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

Association of American Railroads; Bureau of Explosives. Emergency Handling of Hazardous Materials in Surface Transportation. Association of American Railroads, Pueblo, CO. 2005, p. 507

▶ Hazardous Substances Data Bank (HSDB)

Do not use a solid (straight) water stream as it may scatter and spread fire. /Isopropyl Alcohol, Reagent, ACS/

Spectrum Chemical Manufacturing Corporation; MSDS for Isopropyl Alcohol, Reagent, ACS (Preparation Date: April 19, 2011). Available from, as of November 23, 2011: https://www.spectrumchemical.com/MSDS/P4730.pdf

▶ Hazardous Substances Data Bank (HSDB)

1.4.2 Firefighting Hazards

Since vapor is heavier than air flashback along vapor trail may occur.

U.S. Coast Guard, Department of Transportation. CHRIS - Hazardous Chemical Data. Volume II. Washington, D.C.: U.S. Government Printing Office, 1984-5.

▶ Hazardous Substances Data Bank (HSDB)

1.5 Accidental Release Measures

1.5.1 Isolation and Evacuation

Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet). FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2016)

U.S. Department of Transportation, Transport Canada, and Secretariat of Communications and Transport of Mexico, with collaboration from Argentina's Centro de Información Química para Emergencias. 2016 Emergency Response Guidebook. https://www.phmsa.dot.gov/hazmat/outreach-training/erg (accessed April 26, 2016).

▶ CAMEO Chemicals

1.5.2 Spillage Disposal

Evacuate danger area! Consult an expert! Remove all ignition sources. Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable non-plastic containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Wash away remainder with plenty of water.

▶ ILO International Chemical Safety Cards (ICSC)

1.5.3 Cleanup Methods

Accidental Release Measures: Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces. /Isopropyl Alcohol, Reagent, ACS/

Spectrum Chemical Manufacturing Corporation; MSDS for Isopropyl Alcohol, Reagent, ACS (Preparation Date: April 19, 2011). Available from, as of November 23, 2011: https://www.spectrumchemical.com/MSDS/P4730.pdf

▶ Hazardous Substances Data Bank (HSDB)

Accidental Release Measures: Environmental Precautions: Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal. /Isopropyl Alcohol, Reagent, ACS/

Spectrum Chemical Manufacturing Corporation; MSDS for Isopropyl Alcohol, Reagent, ACS (Preparation Date: April 19, 2011). Available from, as of November 23, 2011: https://www.spectrumchemical.com/MSDS/P4730.pdf

▶ Hazardous Substances Data Bank (HSDB)

Accidental Release Measures: Methods for Cleaning Up: Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container. Clean contaminated surface thoroughly. /Isopropyl Alcohol, Reagent, ACS/

Spectrum Chemical Manufacturing Corporation; MSDS for Isopropyl Alcohol, Reagent, ACS (Preparation Date: April 19, 2011). Available from, as of November 23, 2011: https://www.spectrumchemical.com/MSDS/P4730.pdf

▶ Hazardous Substances Data Bank (HSDB)

1.5.4 Disposal Methods

SRP: The most favorable course of action is to use an alternative chemical product with less inherent propensity for occupational harm/injury/toxicity or environmental contamination. Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier. Ultimate disposal of the chemical must consider: the material's impact on air quality; potential migration in soil or water; effects on animal and plant life; and conformance with environmental and public health regulations.

▶ Hazardous Substances Data Bank (HSDB)

SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker

exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.

Hazardous Substances Data Bank (HSDB)

The following wastewater treatment technology has been investigated for isopropanol: Biological treatment.

USEPA; Management of Hazardous Waste Leachate, EPA Contract No.68-03-2766 p.E-3-E-22 (1982)

Hazardous Substances Data Bank (HSDB)

1.5.5 Preventive Measures

SRP: The scientific literature for the use of contact lenses by industrial workers is inconsistent. The benefits or detrimental effects of wearing contact lenses depend not only upon the substance, but also on factors including the form of the substance, characteristics and duration of the exposure, the uses of other eye protection equipment, and the hygiene of the lenses. However, there may be individual substances whose irritating or corrosive properties are such that the wearing of contact lenses would be harmful to the eye. In those specific cases, contact lenses should not be worn. In any event, the usual eye protection equipment should be worn even when contact lenses are in place.

Hazardous Substances Data Bank (HSDB)

Any clothing which becomes wet with liquid isopropyl alcohol should be removed immediately and not reworn until the isopropyl alcohol is removed from the clothing. Clothing should then be placed in closed containers for storage until it can be discarded or until provision can be made for the removal of isopropyl alcohol from the clothing. If the clothing is to be laundered or otherwise cleaned to remove the isopropyl alcohol, the person performing the operation should be informed of isopropyl alcohol's hazardous properties.

Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSH/OSHA - Occupational Health Guidelines for Chemical Hazards. DHHS(NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981., p. 3

Hazardous Substances Data Bank (HSDB)

If material not on fire and not involved in fire: Keep sparks, flames, and other sources of ignition away. Keep material out of water sources and sewers. Build dikes to contain flow as necessary. Attempt to stop leak if without undue personnel hazard. Use water spray to disperse vapors and dilute standing pools of liquid.

Association of American Railroads; Bureau of Explosives. Emergency Handling of Hazardous Materials in Surface Transportation. Association of American Railroads, Pueblo, CO. 2005, p. 507

Hazardous Substances Data Bank (HSDB)

Personnel protection: Avoid breathing vapors. Keep upwind. ... Do not handle broken packages unless wearing appropriate personal protective equipment. Wash away any material which may have contacted the body with copious amounts of water or soap and water.

Association of American Railroads; Bureau of Explosives. Emergency Handling of Hazardous Materials in Surface Transportation. Association of American Railroads, Pueblo, CO. 2005, p. 507

Hazardous Substances Data Bank (HSDB)

For more Preventive Measures (Complete) data for ISOPROPANOL (9 total), please visit the HSDB record page.

Hazardous Substances Data Bank (HSDB)

1.6 Handling and Storage

1.6.1 Nonfire Spill Response

Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor-suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparking tools to collect absorbed material. LARGE SPILL: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor, but may not prevent ignition in closed spaces. (ERG, 2016)

U.S. Department of Transportation, Transport Canada, and Secretariat of Communications and Transport of Mexico, with collaboration from Argentina's Centro de Información Química para Emergencias. 2016 Emergency Response Guidebook. https://www.phmsa.dot.gov/hazmat/outreach-training/erg (accessed April 26, 2016).

▶ CAMEO Chemicals

1.6.2 Safe Storage

Fireproof. Separated from strong oxidants. Cool. Well closed.

▶ ILO International Chemical Safety Cards (ICSC)

1.6.3 Storage Conditions

Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Sensitive to light. Store in light-resistant containers. Keep away from heat and sources of ignition. Store in a segrated and approved area. Store away from incompatible materials. /Isopropyl Alcohol, Reagent, ACS/

Spectrum Chemical Manufacturing Corporation; MSDS for Isopropyl Alcohol, Reagent, ACS (Preparation Date: April 19, 2011). Available from, as of November 23, 2011: https://www.spectrumchemical.com/MSDS/P4730.pdf

▶ Hazardous Substances Data Bank (HSDB)

Store in tightly closed containers in a cool, well ventilated area away from heat.

Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 2002. 4th ed.Vol 1 A-H Norwich, NY: Noyes Publications, 2002., p. 1353

▶ Hazardous Substances Data Bank (HSDB)

1.7 Exposure Control and Personal Protection

1.7.1 Recommended Exposure Limit (REL)

REL-TWA (Time Weighted Average)

400 ppm (980 mg/m³)

▶ Occupational Safety and Health Administration (OSHA)

REL-STEL (Short Term Exposure Limit)

500 ppm (1225 mg/m³)

- Occupational Safety and Health Administration (OSHA)

TWA 400 ppm (980 mg/m^3) ST 500 ppm (1225 mg/m^3)

- The National Institute for Occupational Safety and Health (NIOSH)

1.7.2 Permissible Exposure Limit (PEL)

PEL-TWA (8-Hour Time Weighted Average)

400 ppm (980 mg/m³)

- Occupational Safety and Health Administration (OSHA)

CAPEL-STEL (California PEL - Short Term Exposure Limit)

500 ppm (1225 mg/m³)

- Occupational Safety and Health Administration (OSHA)

TWA 400 ppm (980 mg/m^3) See Appendix G

- The National Institute for Occupational Safety and Health (NIOSH)

1.7.3 Immediately Dangerous to Life or Health (IDLH)

2000 ppm (NIOSH, 2016)

*National Institute of Occupational Safety and Health. NIOSH Pocket Guide to Chemical Hazards (full website version). **https://www.cdc.gov/niosh/npg** (accessed August 2016).*

- CAMEO Chemicals

2000 ppm (Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.)

NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)

- Hazardous Substances Data Bank (HSDB)

2000 ppm

- Occupational Safety and Health Administration (OSHA)

2000 ppm [10%LEL]

See: 67630

- The National Institute for Occupational Safety and Health (NIOSH)

1.7.4 Threshold Limit Values (TLV)

8 hr Time Weighted Avg (TWA): 200 ppm; 15 min Short Term Exposure Limit (STEL): 400 ppm

American Conference of Governmental Industrial Hygienists; 2011 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices . Cincinnati, OH 2011, p. 50

Hazardous Substances Data Bank (HSDB)

A4; Not classifiable as a human carcinogen.

American Conference of Governmental Industrial Hygienists; 2011 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices . Cincinnati, OH 2011, p. 50

Hazardous Substances Data Bank (HSDB)

Biological Exposure Index (BEI): Determinant: acetone in urine; Sampling Time: end of shift at end of workweek; BEI: 40 mg/L. The determinant may be present in biological specimens collected from subjects who have not been occupationally exposed, at a concentration which could affect interpretation of the result. Such background concentrations are incorporated in the BEI value. The determinant is nonspecific, since it is also observed after exposure to other chemicals.

American Conference of Governmental Industrial Hygienists; 2011 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices . Cincinnati, OH 2011, p. 106

Hazardous Substances Data Bank (HSDB)

200 ppm as TWA; 400 ppm as STEL; A4 (not classifiable as a human carcinogen); BEI issued.

ILO International Chemical Safety Cards (ICSC)

500 mg/m3, 200 ppm; peak limitation category: II(2); pregnancy risk group: C

ILO International Chemical Safety Cards (ICSC)

TLV-TWA (Time Weighted Average)

200 ppm [2001]

Occupational Safety and Health Administration (OSHA)

TLV-STEL (Short Term Exposure Limit)

400 ppm [2001]

Occupational Safety and Health Administration (OSHA)

1.7.5 Other Standards Regulations and Guidelines

In Czechoslovakia a Max allowable concn of about 200 ppm ... Romania (1975) 160 ppm; East Germany (1973) 80 ppm; Japan (1975) and Western European nations, 400 ppm.

American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986., p. 337

Hazardous Substances Data Bank (HSDB)

1.7.6 Inhalation Risk

A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20 °C; on spraying or dispersing, however, much faster.

▶ ILO International Chemical Safety Cards (ICSC)

1.7.7 Effects of Short Term Exposure

The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system. Exposure far above the OEL could cause unconsciousness.

▶ ILO International Chemical Safety Cards (ICSC)

1.7.8 Effects of Long Term Exposure

Repeated or prolonged contact with skin may cause dryness and cracking.

▶ ILO International Chemical Safety Cards (ICSC)

1.7.9 Allowable Tolerances

Unless specifically excluded, residues resulting from the use of the following substances as either an inert or an active ingredient in a pesticide chemical formulation, including antimicrobial pesticide chemicals, are exempted from the requirement of a tolerance under FFDCA section 408, if such use is in accordance with good agricultural or manufacturing practices. 2-Propanol is included on this list.

40 CFR 180.950 (USEPA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

▶ Hazardous Substances Data Bank (HSDB)

1.7.10 Personal Protective Equipment (PPE)

Skin: Wear appropriate personal protective clothing to prevent skin contact. Eyes: Wear appropriate eye protection to prevent eye contact. Wash skin: The worker should immediately wash the skin when it becomes contaminated. Remove: Work clothing that becomes wet should be immediately removed due to its flammability hazard(i.e. for liquids with flash point Change: No recommendation is made specifying the need for the worker to change clothing after the work shift. (NIOSH, 2016)

National Institute of Occupational Safety and Health. NIOSH Pocket Guide to Chemical Hazards (full website version). https://www.cdc.gov/niosh/npg (accessed August 2016).

▶ CAMEO Chemicals

Personal Protective Equipment: Eye protection: goggles, safety glasses with side-shields. Skin and body protection: chemical resistant apron, long sleeved clothing, gloves. Respiratory protection: vapor respirator, . be sure to use an approved/certified respirator or equivalent. /Isopropyl Alcohol, Reagent, ACS/

Spectrum Chemical Manufacturing Corporation; MSDS for Isopropyl Alcohol, Reagent, ACS (Preparation Date: April 19, 2011). Available from, as of November 23, 2011: https://www.spectrumchemical.com/MSDS/P4730.pdf

▶ Hazardous Substances Data Bank (HSDB)

The following materials are acceptable: neoprene, PVC, paracril/PVC, chlorinated polyethylene, butyl rubber, natural

rubber, nitrile, vitron. Unacceptable: PVA. Conditionally acceptable: polyurethane. Note: This ... is ... a guide only. The user is advised to contact the protective clothing manufacturer regarding the specific applicability & limitations of a material under proposed conditions of use.

Ecology and Environment Inc. Toxic Substance Storage Tank Containment. Park Ridge, NJ: Noyes Publications, 1985., p. 161

▶ Hazardous Substances Data Bank (HSDB)

Personnel protection: Wear appropriate chemical protective gloves, boots and goggles.

Association of American Railroads; Bureau of Explosives. Emergency Handling of Hazardous Materials in Surface Transportation. Association of American Railroads, Pueblo, CO. 2005, p. 507

▶ Hazardous Substances Data Bank (HSDB)

Breakthrough times greater than one hour reported by (normally) two or more testers for neoprene and nitrile rubber. Some data (usually from immersion tests) suggesting breakthrough times greater than one hour are not likely for natural rubber. No data for butyl rubber, neoprene/styrene-butadiene rubber, nitrile rubber/polyvinyl chloride, polyethylene, polyvrethane, polyvinyl alcohol, and viton. Some data suggesting breakthrough times of approximated an hour or more for polyvinyl chloride.

ACGIH; Guidelines Select of Chem Protect Clothing Volume #1 Field Guide p.61 (1983)

▶ Hazardous Substances Data Bank (HSDB)

For more Personal Protective Equipment (PPE) (Complete) data for ISOPROPANOL (9 total), please visit the HSDB record page.

▶ Hazardous Substances Data Bank (HSDB)

(See protection codes)

Skin:Prevent skin contact - Wear appropriate personal protective clothing to prevent skin contact.

Eyes:Prevent eye contact - Wear appropriate eye protection to prevent eye contact.

Wash skin:When contaminated

Remove:When wet (flammable)

Change:No recommendation

▶ The National Institute for Occupational Safety and Health (NIOSH)

1.7.11 Respirator Recommendations

NIOSH/OSHA

Up to 2000 ppm:

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

(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister

(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)

(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 organic vapor canister

Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

- The National Institute for Occupational Safety and Health (NIOSH)

1.7.12 Fire Prevention

NO open flames, NO sparks and NO smoking. NO contact with strong oxidizing agents. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.

- ILO International Chemical Safety Cards (ICSC)

1.7.13 Inhalation Prevention

Use ventilation, local exhaust or breathing protection.

- ILO International Chemical Safety Cards (ICSC)

1.7.14 Skin Prevention

Protective gloves.

- ILO International Chemical Safety Cards (ICSC)

1.7.15 Eye Prevention

Wear safety spectacles or eye protection in combination with breathing protection.

- ILO International Chemical Safety Cards (ICSC)

1.7.16 Ingestion Prevention

Do not eat, drink, or smoke during work.

- ILO International Chemical Safety Cards (ICSC)

1.8 Stability and Reactivity

1.8.1 Air and Water Reactions

Highly flammable. Water soluble.

CAMEO Chemicals

1.8.2 Reactive Group

Alcohols and Polyols

CAMEO Chemicals

1.8.3 Reactivity Alerts

Highly Flammable

Peroxidizable Compound

CAMEO Chemicals

1.8.4 Reactivity Profile

ISOPROPANOL reacts with air or oxygen to form dangerously unstable peroxides. Contact with 2-butanone increases the rate of peroxide formation. An explosive reaction occurs when it is heated with (aluminum isopropoxide + crotonaldehyde). Forms explosive mixtures with trinitromethane and hydrogen peroxide. Reacts with barium perchlorate to form a highly explosive compound. Ignites on contact with dioxygenyl tetrafluoroborate, chromium trioxide and potassium-tert-butoxide. Vigorous reactions occur with (hydrogen + palladium), nitroform, oleum, COCl2, aluminum triisopropoxide and oxidizing agents. Reacts explosively with phosgene in the presence of iron salts. Incompatible with acids, acid anhydrides, halogens and aluminum (NTP, 1992). Isopropanol can react with PCl3, forming toxic HCl gas. (Logsdon, John E., Richard A. Loke., "Isopropyl Alcohol." Kirk-Othmer Encyclopedia of Chemical Technology. John Wiley & Sons, Inc. 1996.).

National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

CAMEO Chemicals

1.8.5 Hazardous Reactivities and Incompatibilities

During distillation of 2-propanol recovered from the reduction of crotonaldehyde with aluminium isopropoxide, a violent explosion occurred. This was attributed either to peroxidized diisopropyl ether (a possible by-product) or to peroxidized crotonaldehyde.

Bretherick, L. Handbook of Reactive Chemical Hazards. 4th ed. Boston, MA: Butterworth-Heinemann Ltd., 1990, p. 391

Hazardous Substances Data Bank (HSDB)

Forms explosive mixtures with trinitromethane; hydrogen peroxide (similar in power and sensitivity to glyceryl nitrate). Reacts with barium perchlorate to form the highly explosive propyl perchlorate.

Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2149

Hazardous Substances Data Bank (HSDB)

When a stream of hydrogen entrained isopropyl alcohol vapors and palladium particles, the mixture caught fire on exposure to air.

National Fire Protection Association; Fire Protection Guide to Hazardous Materials. 14TH Edition, Quincy, MA 2010, p. 491-96

▶ Hazardous Substances Data Bank (HSDB)

Two explosions occurred during laboratory distillation of isopropanol, one with a sample stored for 4 yr. No cause was apparent, but presence of traces of ketone(s) promoting peroxidation is a possibility. Previously, the presence of 0.36 molar peroxide had been reported in a 99.5% pure sample of isopropanol stored for several months in a partially full clear glass bottle in strong daylight.

Bretherick, L. Handbook of Reactive Chemical Hazards. 4th ed. Boston, MA: Butterworth-Heinemann Ltd., 1990, p. 391

▶ Hazardous Substances Data Bank (HSDB)

For more Hazardous Reactivities and Incompatibilities (Complete) data for ISOPROPANOL (18 total), please visit the HSDB record page.

▶ Hazardous Substances Data Bank (HSDB)

1.8.6 Peroxide Forming Chemical

Chemical	2-Propanol
Class (* = UMN Designation)	B*: Compounds that form peroxides on concentration (distillation/evaporation)
Peroxide Concentration Over Time	28 samples 0-100 ppm 1->10 yrs (listed as 2-propanol)
Reference(s)	Kelly
Incident Involved	Several detonations have occured during laboratory distillations. See Bretherick's for references to specific incidents.
Additional Reference(s)	https://cen.acs.org/articles/94/i31/Chemical-safety-peroxide-formation-isopropanol.html Renfrew, M. M., J. Chem. Educ., 1983, 60(9), A229 Bonafede, J. D., J. Chem. Educ., 1984, 61, 632 Redemann, C. E., J.Amer. Chem. Soc., 1942,64, 3049 Mirafzal, G. A. et al., J. Chem. Educ., 1988, 65(9), A226–229 Bohanon, J. T., Chem. Eng. News, 1989, 67(1),4

▶ Lab and Research Safety, University of Minnesota

1.9 Transport Information

1.9.1 DOT Emergency Guidelines

/GUIDE 129: FLAMMABLE LIQUIDS (Polar/Water-Miscible/Noxious)/ Fire or Explosion: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or

explosion hazard. Containers may explode when heated. Many liquids are lighter than water.

U.S. Department of Transportation. 2012 Emergency Response Guidebook. Washington, D.C. 2012

Hazardous Substances Data Bank (HSDB)

/GUIDE 129: FLAMMABLE LIQUIDS (Polar/Water-Miscible/Noxious)/ Health: May cause toxic effects if inhaled or absorbed through skin. Inhalation or contact with material may irritate or burn skin and eyes. Fire will produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control or dilution water may cause pollution.

U.S. Department of Transportation. 2012 Emergency Response Guidebook. Washington, D.C. 2012

Hazardous Substances Data Bank (HSDB)

/GUIDE 129: FLAMMABLE LIQUIDS (Polar/Water-Miscible/Noxious)/ Public Safety: CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover. As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

U.S. Department of Transportation. 2012 Emergency Response Guidebook. Washington, D.C. 2012

Hazardous Substances Data Bank (HSDB)

/GUIDE 129: FLAMMABLE LIQUIDS (Polar/Water-Miscible/Noxious)/ Protective Clothing: Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

U.S. Department of Transportation. 2012 Emergency Response Guidebook. Washington, D.C. 2012

Hazardous Substances Data Bank (HSDB)

For more DOT Emergency Guidelines (Complete) data for ISOPROPANOL (8 total), please visit the HSDB record page.

Hazardous Substances Data Bank (HSDB)

1.9.2 DOT ID and Guide

1219 129

DOT Emergency Response Guidebook; The National Institute for Occupational Safety and Health (NIOSH)

1.9.3 Shipping Name/ Number DOT/UN/NA/IMO

UN 1219; Isopropanol or Isopropyl alcohol

Hazardous Substances Data Bank (HSDB)

IMO 3.2; Isopropanol or Isopropyl alcohol

Hazardous Substances Data Bank (HSDB)

1.9.4 Standard Transportation Number

49 092 05; Isopropanol

- Hazardous Substances Data Bank (HSDB)

1.9.5 Shipment Methods and Regulations

No person may /transport,/ offer or accept a hazardous material for transportation in commerce unless that person is registered in conformance ... and the hazardous material is properly classed, described, packaged, marked, labeled, and in condition for shipment as required or authorized by ... /the hazardous materials regulations (49 CFR 171-177)./

49 CFR 171.2; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of November 22, 2011: https://www.ecfr.gov

- Hazardous Substances Data Bank (HSDB)

The International Air Transport Association (IATA) Dangerous Goods Regulations are published by the IATA Dangerous Goods Board pursuant to IATA Resolutions 618 and 619 and constitute a manual of industry carrier regulations to be followed by all IATA Member airlines when transporting hazardous materials.

International Air Transport Association. Dangerous Goods Regulations. 47th Edition. Montreal, Quebec Canada. 2006., p. 207

- Hazardous Substances Data Bank (HSDB)

The International Maritime Dangerous Goods Code lays down basic principles for transporting hazardous chemicals. Detailed recommendations for individual substances and a number of recommendations for good practice are included in the classes dealing with such substances. A general index of technical names has also been compiled. This index should always be consulted when attempting to locate the appropriate procedures to be used when shipping any substance or article.

International Maritime Organization. International Maritime Dangerous Goods Code. London, UK. 2004., p. 52

- Hazardous Substances Data Bank (HSDB)

1.9.6 DOT Label

Flammable Liquid

- CAMEO Chemicals

1.9.7 UN Classification

UN Hazard Class: 3; UN Pack Group: II

- ILO International Chemical Safety Cards (ICSC)

1.10 Regulatory Information

1.10.1 Atmospheric Standards

This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of

continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Isopropanol is produced, as an intermediate or a final product, by process units covered under this subpart.

40 CFR 60.489 (USEPA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

1.10.2 State Drinking Water Guidelines

(CT) CONNECTICUT 2300 ug/l

USEPA/Office of Water; Federal-State Toxicology and Risk Analysis Committee (FSTRAC). Summary of State and Federal Drinking Water Standards and Guidelines (11/93) To Present

Hazardous Substances Data Bank (HSDB)

1.10.3 TSCA Requirements

Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. 2-Propanol is included on this list. Effective date: 12/15/86; Sunset date: 12/15/96.

40 CFR 716.120 (USEPA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

1.10.4 FIFRA Requirements

Unless specifically excluded, residues resulting from the use of the following substances as either an inert or an active ingredient in a pesticide chemical formulation, including antimicrobial pesticide chemicals, are exempted from the requirement of a tolerance under FFDCA section 408, if such use is in accordance with good agricultural or manufacturing practices. 2-Propanol is included on this list.

40 CFR 180.950 (USEPA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

Based on the reviews of the generic data for the active ingredients ethanol and isopropanol, the Agency has sufficient information on the health effects and on their potential for causing adverse effects in fish and wildlife and the environment. The Agency has determined that ethanol and isopropanol products, labeled and used as specified in this Reregistration Eligibility Decision, will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, the Agency concludes that products containing ethanol and isopropanol for all uses are eligible for reregistration.

USEPA/Office of Pesticide Programs; Reregistration Eligibility Decision Document - Aliphatic Alcohols p.28 EPA 738-R-95-013 (April 1995). Available from, as of October 10, 2011: https://www.epa.gov/pesticides/reregistration/status.htm

Hazardous Substances Data Bank (HSDB)

As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their continued use. Under this pesticide

reregistration program, EPA examines newer health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether the use of the pesticide does not pose unreasonable risk in accordance to newer saftey standards, such as those described in the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA '88 were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern than those on List C, and with List C containing pesticides of greater concern than those on List D. Isopropanol is found on List D. Case No: 4003; Pesticide type: insecticide, fungicide, herbicide, antimicrobial; Case Status: RED Approved 3/95; OPP has made a decision that some/all uses of the pesticide are eligible for reregistration, as reflected in a Reregistration Eligibility Decision (RED) document .; Active ingredient (AI): isopropanol; AI Status: OPP has completed a Reregistration Eligibility Decision (RED) for the case/AI.

United States Environmental Protection Agency/ Prevention, Pesticides and Toxic Substances; Status of Pesticides in Registration, Reregistration, and Special Review. (1998) EPA 738-R-98-002, p. 290

Hazardous Substances Data Bank (HSDB)

1.10.5 FDA Requirements

Isopropyl alcohol (without residue) may be used in inks for marking food supplements in tablet form, gum, and confectionery.

21 CFR 73.1 (USFDA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

Diluents in color additive mixtures for drug use exempt from certification. Ingested drugs (general use) - Substance: isopropyl alcohol; Restrictions: In color coatings for pharmaceutical forms, no residue.

21 CFR 73.1001 (USFDA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

Isopropanol is a food additive permitted for direct addition to food for human consumption as a synthetic flavoring substance and adjuvant in accordance with the following conditions: a) they are used in the minimum quantity required to produce their intended effect, and otherwise in accordance with all the principles of good manufacturing practice, and b) they consist of one or more of the following, used alone or in combination with flavoring substances and adjuvants generally recognized as safe in food, prior-sanctioned for such use, or regulated by an appropriate section in this part.

21 CFR 172.515 (USFDA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

Isopropyl alcohol may be present in the following foods under the conditions specified: (a) In spice oleoresins as a residue from the extraction of spice, at a level not to exceed 50 parts per million. (b) In lemon oil as a residue in production of the oil, at a level not to exceed 6 parts per million. (c) In hops extract as a residue from the extraction of hops at a level not to exceed 2.0 percent by weight: Provided, that, (1) The hops extract is added to the wort before or during cooking in the manufacture of beer. (2) The label of the hops extract specifies the presence of the isopropyl alcohol and provides for the use of the hops extract only as prescribed by paragraph (c)(1) of this section.

21 CFR 173.240 (USFDA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

Isopropanol is an indirect food additive for use only as a component of adhesives.

21 CFR 175.105 (USFDA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of October 7, 2011: https://www.ecfr.gov

Hazardous Substances Data Bank (HSDB)

1.11 Other Safety Information

1.11.1 Toxic Combustion Products

Hazardous Combustion Products: Carbon monoxide; carbon dioxide. /Isopropyl Alcohol, Reagent, ACS/

Spectrum Chemical Manufacturing Corporation; MSDS for Isopropyl Alcohol, Reagent, ACS (Preparation Date: April 19, 2011). Available from, as of November 23, 2011: https://www.spectrumchemical.com/MSDS/P4730.pdf

Hazardous Substances Data Bank (HSDB)

1.11.2 History and Incidents

... Mass poisoning involving 372 men who had consumed a soln of 82% methanol and 18% isopropanol /was reported/.

O'Donoghue, J.L. (ed.). Neurotoxicity of Industrial and Commercial Chemicals. Volume II. Boca Raton, FL: CRC Press, Inc., 1985., p. 82

Hazardous Substances Data Bank (HSDB)