

Material Safety Data Sheet

from Genium's Reference Collection
Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855



No. 353

DIACETONE
(Revision C)
Issued: December 1983
Revised: November 1988

226

SECTION 1. MATERIAL IDENTIFICATION

27

Material Name: DIACETONE

Description (Origin/Uses): Used as a solvent for nitrocellulose, cellulose acetate, celluloid, waxes, fats, and oils; in metal cleaning compounds and degreasers; and in stripping aids for textiles.

Other Designations: Diacetone Alcohol; 4-Hydroxy-4-Methylpentanone-2; 4-Hydroxy-4-Methyl-2-Pentanone; 4-Hydroxy-2-Keto-4-Methylpentane; $C_5H_{10}O_2$; CAS No. 0123-42-2

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek* Buyers' Guide (Genium ref. 73) for a list of suppliers.

HMIS
H 1 R 1
F 2 I 3
R 0 S 2
PPG* K 4
*See sect. 8



SECTION 2. INGREDIENTS AND HAZARDS

%

EXPOSURE LIMITS

Diacetone, CAS No. 0123-42-2

Ca 100*

OSHA PEL
8-Hr TWA: 50 ppm, 240 mg/m³

ACGIH TLV, 1988-89
TLV-TWA: 50 ppm, 240 mg/m³

Toxicity Data**
Rat, Oral, LD₅₀: 4000 mg/kg
Mouse, Oral, LD₅₀: 3950 mg/kg
Mouse, Intraperitoneal, LD₅₀: 933 mg/kg

*The acetone-free grade of diacetone contains little or no acetone. Consult with your supplier about the purity of your purchased product; different technical grades have varying amounts of free acetone.
**See NIOSH, RTECS (SA9100000), for additional data with references to irritative effects.

SECTION 3. PHYSICAL DATA

Boiling Point: 336°F 169°C

Melting Point: Ca -58°F (-50°C)

Vapor Pressure: Ca 1 Torr at 68°F (20°C)

Vapor Density (Air = 1): 4

% Volatile by Volume: Ca 100

Appearance and Odor: A colorless, flammable liquid; mild, pleasant, characteristic odor with an odor threshold (100% recognition) of 1.7 ppm.

Comments: Commercial grades of diacetone may contain appreciable amounts of acetone; the physical properties will vary with the exact composition of the purchased product.

Molecular Weight: 116 Grams/Mole

Solubility in Water (%): Complete

Specific Gravity ($H_2O = 1$): 0.9406 at 68°F (20°C)

Evaporation Rate (n-Butyl Acetate = 1): 0.14

SECTION 4. FIRE AND EXPLOSION DATA

LEL

UEL

Flash Point and Method

Autoignition Temperature

Commercial Grades*

**

1.8% v/v

6.9% v/v

Extinguishing Media: Diacetone can be a dangerous fire hazard when exposed to sources of ignition such as heat, sparks, open flame, or lighted tobacco products. Use "alcohol" foam, water spray, dry chemical, or carbon dioxide to put out diacetone fires. Use water spray to reduce the rate of burning and to cool containers. Large diacetone fires should be extinguished by "alcohol" foam or water, using a blanketing effect to smother the fire. Unusual Fire or Explosion Hazards: Diacetone vapor is heavier than air and may travel a considerable distance to a low-lying source of ignition and flash back to its origin. Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

*Flash Point and Method: 55°F (13°C) OC; 48°F (8°C) CC; Acetone-free 136°F (58°C)

**Autoignition Temperature: Commercial Grade, 1118°F (603°C); Acetone-free, 1190°F (643°C)

SECTION 5. REACTIVITY DATA

Stability/Polymerization: Diacetone is stable in closed containers during routine operations. Hazardous polymerization cannot occur.

Chemical Incompatibilities: Diacetone can react dangerously with amines, strong oxidizing agents, pyridines, ammonia, isocyanates,

inorganic acids, and caustics. Conditions to Avoid: Avoid all exposure to sources of ignition and to incompatible chemicals. Hazardous

Products of Decomposition: Thermal-oxidative degradation of diacetone can produce toxic gases such as carbon monoxide, mesityl oxide, and partial products of oxidation.

SECTION 6. HEALTH HAZARD INFORMATION

Carcinogenicity: Diacetone is not listed as a carcinogen by the NTP, IARC, or OSHA.

Summary of Risks: Inhalation of high concentrations of diacetone causes irritation of the respiratory system, coughing, shortness of breath, headache, dullness, and narcotic effects. However, the irritating effects of diacetone are expected to preclude or prevent severe exposure.

Accidental eye contact with liquid diacetone causes immediate irritation and possible transient corneal tissue damage. Human volunteers exposed to 100 ppm for 15 minutes complained of irritation of the eyes, nose, and throat; when the exposure was increased to 400 ppm, chest discomfort was also noted. Medical Conditions Aggravated by Long-Term Exposure: Persons with histories of respiratory or skin

SECTION 6. HEALTH HAZARD INFORMATION, cont.

diseases may be at increased risk from occupational exposure to diacetone alcohol. **Target Organs:** Skin, eyes, respiratory system. **Primary Entry:** Inhalation, skin contact/absorption. **Acute Effects:** Irritation of the eyes, nose, and throat. Prolonged or repeated skin contact with diacetone alcohol can cause defatting of the skin, which can progress to dermatitis. **Chronic Effects:** None reported. **FIRST AID:** Eyes. Immediately flush eyes, including under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 minutes. Skin. Rinse the affected area with flooding amounts of water and then wash it with soap and water. Inhalation. Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have qualified medical personnel administer oxygen as required. Ingestion. Unlikely. Should this type of exposure occur, give the exposed person 2 to 3 glasses of water to drink and induce vomiting to dilute the material. If a significant amount is ingested, call a poison control center before inducing vomiting. Low levels of ingestion are unlikely to be toxic, and the risks associated with vomiting are greater than those associated with simple dilution. Never give anything by mouth to someone who is unconscious or convulsing. Get medical help (in plant, paramedic, community) for all exposures. Seek prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, evacuate unnecessary personnel, eliminate all sources of ignition immediately, and provide adequate ventilation. Cleanup personnel need protection against skin or eye contact with this liquid as well as inhalation of its vapor (see sect. 8). Contain large spills and collect waste or absorb it with an inert material such as sand, earth, or vermiculite. Use nonsparking tools to place waste liquid or absorbent into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways. **Waste Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations

Listed as an Air Contaminant (29 CFR 1910.1000 Subpart Z).

EPA Designations (40 CFR 302.4): Not Listed

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing is possible, wear a full face shield. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). **Respirator:** Use a NIOSH-approved respirator per Genium reference 88 for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine operations (spills or cleaning reactor vessels and storage tanks), wear an SCBA. **Warning:** Air-purifying respirators will not protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious gloves, boots, aprons, and gauntlets, etc., to prevent prolonged or repeated skin contact with this material. Neoprene is suggested. **Ventilation:** Install and operate general and local maximum, explosion-proof ventilation systems powerful enough to maintain airborne levels of this material below the OSHA PEL standard cited in section 2. Local exhaust ventilation is preferred because it prevents dispersion of the contaminant into the general work area by eliminating it at its source. Consult the latest edition of Genium reference 103 for detailed recommendations. **Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work areas. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from your shoes and equipment. **Comments:** Practice good personal hygiene; always wash thoroughly after using this material and before eating, drinking, smoking, using the toilet, or applying cosmetics. Keep it off your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area. Do not inhale diacetone vapor.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage/Segregation: Store diacetone in closed containers in a cool, dry, well-ventilated area away from sources of ignition, strong oxidizers, and incompatible chemicals (see sect. 5). Protect containers from physical damage. Brass, lead, or bronze should not be used as storage containers because contamination problems are likely. **Special Handling/Storage:** Outside, isolated, or detached storage is recommended for diacetone. Recommended storage material includes carbon steel, 304 stainless steel, and aluminum. Lining the interior of these containers with baked phenolic resins may provide additional storage protection. **Engineering Controls:** Make sure all engineering systems (production, transportation) are of maximum explosion-proof design. To prevent static sparks, electrically ground and bond all containers or pipelines used in shipping, transferring, reacting, production, and sampling operations. **Other:** Use safety cans for handling small amounts of diacetone. **Comments:** The shipping regulations that apply to diacetone depend upon the flash point of the actual product. Be sure to ascertain the flash point of the product to be transported and examine all pertinent shipping regulations.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Diacetone Alcohol

DOT Hazard Class: Combustible Liquid or Flammable Liquid
(varies with the actual flash point of the diacetone alcohol product)

ID No. UN1148

DOT Label: None or Flammable Liquid

IMO Shipping Name: Diacetone Alcohol

IMO Hazard Class: 3.2 or 3.3

(varies with the flash point)

IMO Label: Flammable Liquid

IMDG Packaging Group: II

References: 1, 26, 38, 84-94, 100, 116, 117, 120, 122.

DO 085335
CONFIDENTIAL

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corp. extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

Prepared by PJ Igoe, BS

Industrial Hygiene Review: DJ Wilson, CIH

Medical Review: MJ Hardies, MD