TCI AMERICA

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	Flammable material; avoid heat and sources of ignition. **Irritating to skin, eyes, and the respiratory system.** **Refrigerate and vent pressure slowly before opening.** **Stench -- do not inhale, use under a fume hood.** **Handle and store under nitrogen.** **Light sensitive.**	

Section I. Chemical Product and Company Identification

Chemical Name **Isovaleraldehyde**

Catalog Number: I0192

Synonym: 3-Methylbutanal

Chemical Formula: $(CH_3)_2CHCH_2CHO$

CAS Number: 590-86-3

Supplier: TCI America
9211 N. Harborgate St.
Portland OR
1-800-423-8616

In case of Emergency Call: **Chemtrec®**
(800) 424-9300 (U.S.)
(703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Isovaleraldehyde	590-86-3	Min. 95.0 (T)	Not available.	Rat LD_{50} (inhalation) 42700mg/m^3 /4H Rat LD_{50} (oral) 5600mg/kg Rabbit LD_{50} (dermal) 3180mg/kg

Section III. Hazards Identification

Acute Health Effects

Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material.
Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Chronic Health Effects

CARCINOGENIC EFFECTS : Not available.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Not available.
DEVELOPMENTAL TOXICITY: Not available.
Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

Section IV. First Aid Measures

Eye Contact

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact

Wash with soap and water. Get medical attention if irritation develops.

Inhalation

If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.

Ingestion

INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. SEEK IMMEDIATE MEDICAL ATTENTION in case of ingestion of a radioactive material.

Section V. Fire and Explosion Data

Flammability: Flammable.

Auto-Ignition: Not available.

Flash Points: -40.55°C (-41°F).

Flammable Limits: Not available.

Combustion Products: These products are toxic carbon oxides (CO, CO_2).

Fire Hazards: Not available.

Continued on Next Page

Emergency phone number (800) 424-9300

Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Consult with local fire authorities before attempting large scale fire-fighting operations.

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Flammable material. Irritating material. Stench material. Light sensitive material. Refrigerate material. Handle and store under nitrogen. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information	FLAMMABLE. IRRITANT. STENCH. LIGHT-SENSITIVE. REFRIGERATE. HANDLE AND STORE UNDER NITROGEN. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, reducing agents, alkalis (bases).

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Exposure Limits	Not available.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Soluble in alcohol. Slightly soluble in water. Soluble in propylene glycol and oils. Soluble in water at 1.4 wt.%.
Specific Gravity	0.7977 (water=1)		
Molecular Weight	86.13	Partition Coefficient	Not available.
Boiling Point	91 to 93°C (195.8 to 199.4°F)	Vapor Pressure	4 kPa (@ 20°C)
Melting Point	-51°C (-59.8°F)	Vapor Density	2.96 (Air = 1)
Refractive Index	1.3902 @ 20°C	Volatility	Not available.
Critical Temperature	Not available.	Odor	Powerful Acrid.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light. Protect from air.
Incompatibilities	Reactive with oxidizing agents, strong reducing agents, strong alkalis (bases).

Section XI. Toxicological Information

RTECS Number	ES3450000
Routes of Exposure	Eye Contact. Ingestion. inhalation.
Toxicity Data	Rat LD_{50} (inhalation) 42700mg/m^3/4H Rat LD_{50} (oral) 5600mg/kg Rabbit LD_{50} (dermal) 3180mg/kg
Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Not available. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : Not available. **DEVELOPMENTAL TOXICITY**: Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

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Acute Toxic Effects	Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Isovaleraldehyde's production and use as a flavoring, in perfumes, in pharmaceuticals, and in synthetic resins may result in its release to the environment through various waste streams. If released to soil, isovaleraldehyde will have very high mobility. Volatilization of isovaleraldehyde may be important from moist and dry soil surfaces. Biodegradation of isovaleraldehyde may be an important fate process in soil based on an activated sludge study. If released to water, isovaleraldehyde will not adsorb to suspended solids and sediment, but should volatilize from water surfaces, with estimated half-lives for a model river and model lake of 4.7 hours and 4.3 days, respectively. An estimated BCF value of 2.8 suggests that isovaleraldehyde will not bioconcentrate in aquatic organisms. Biodegradation of isovaleraldehyde may be an important fate process in water based on an activated sludge study. If released to the atmosphere, isovaleraldehyde will exist in the vapor phase. Vapor-phase isovaleraldehyde is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals with an estimated half-life of about 14 hours. The general population will be exposed to isovaleraldehyde via inhalation of ambient air, ingestion of food and drinking water, and dermal contact with vapors, food, and other products containing isovaleraldehyde. Occupational exposure may be through inhalation and dermal contact with the compound.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissove or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and locl regulations when disposing of the substance.

Section XIV. Transport Information

DOT Classification	CLASS 3: Flammable liquid.
PIN Number	UN2058
Proper Shipping Name	Valeraldehyde
Packing Group (PG)	II
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
EINECS Number (EEC)	209-691-5
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R36/37/38- Irritating to eyes, respiratory system and skin.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

Version 1.0
Validated on 8/24/2001.
Printed 2/22/2005.

Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.