

1. Identification

Product identifier	EPA Method 1666 Stock Standard Mixture - 1		
Other means of identification			
Item	M-EPA1666SS1F99		
Recommended use	For Laboratory Use Only		
Recommended restrictions	None known.		
Manufacturer/Importer/Supplier/Distributor information			
Manufacturer			
Company name	Chem Service, Inc.		
Address	660 Tower Lane West Chester, PA 19380 United States		
Telephone	Toll Free	800-452-9994	
	Direct	610-692-3026	
Website	www.chemservice.com		
E-mail	info@chemservice.com		
Emergency phone number	Chemtrec US	800-424-9300	
	Chemtrec outside US	+1 703-527-3887	

2. Hazard(s) identification

Physical hazards	Not classified.		
Health hazards	Acute toxicity, inhalation	Category 4	
	Carcinogenicity	Category 2	
Environmental hazards	Not classified.		
OSHA defined hazards	Not classified.		
Label elements			



Signal word	Warning		
Hazard statement	Harmful if inhaled. Suspected of causing cancer.		
Precautionary statement			
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing vapors. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.		
Response	If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed or concerned: Get medical advice/attention. Call a poison center/doctor if you feel unwell.		
Storage	Store locked up.		
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.		
Hazard(s) not otherwise classified (HNOC)	None known.		
Supplemental information	None.		

3. Composition/information on ingredients**Mixtures**

Chemical name	Common name and synonyms	CAS number	%
Water		7732-18-5	98.55
Furfural		98-01-1	0.25

Chemical name	Common name and synonyms	CAS number	%
Isobutyraldehyde		78-84-2	0.25
n-Amyl alcohol		71-41-0	0.25
n-Butyl alcohol		71-36-3	0.25
tert-Butyl alcohol		75-65-0	0.25
4-Methyl-2-pentanone		108-10-1	0.1
Isopropyl alcohol		67-63-0	0.1

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors and spray mists. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid inhalation of vapors and spray mists. Avoid prolonged exposure. Should be handled in closed systems, if possible. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
4-Methyl-2-pentanone (CAS 108-10-1)	PEL	410 mg/m3
		100 ppm
Furfural (CAS 98-01-1)	PEL	20 mg/m3
		5 ppm
Isopropyl alcohol (CAS 67-63-0)	PEL	980 mg/m3
		400 ppm
n-Butyl alcohol (CAS 71-36-3)	PEL	300 mg/m3
		100 ppm
tert-Butyl alcohol (CAS 75-65-0)	PEL	300 mg/m3
		100 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
4-Methyl-2-pentanone (CAS 108-10-1)	STEL	75 ppm
	TWA	20 ppm
Furfural (CAS 98-01-1)	TWA	2 ppm
Isopropyl alcohol (CAS 67-63-0)	STEL	400 ppm
	TWA	200 ppm
n-Butyl alcohol (CAS 71-36-3)	TWA	20 ppm
tert-Butyl alcohol (CAS 75-65-0)	TWA	100 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
4-Methyl-2-pentanone (CAS 108-10-1)	STEL	300 mg/m3
		75 ppm
	TWA	205 mg/m3
		50 ppm
Isopropyl alcohol (CAS 67-63-0)	STEL	1225 mg/m3
		500 ppm
	TWA	980 mg/m3
		400 ppm
n-Butyl alcohol (CAS 71-36-3)	Ceiling	150 mg/m3
		50 ppm
tert-Butyl alcohol (CAS 75-65-0)	STEL	450 mg/m3
		150 ppm
	TWA	300 mg/m3
		100 ppm

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
Isobutyraldehyde (CAS 78-84-2)	TWA	25 ppm
n-Amyl alcohol (CAS 71-41-0)	TWA	360 mg/m3
		100 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
4-Methyl-2-pentanone (CAS 108-10-1)	1 mg/l	Methyl isobutyl ketone	Urine	*
Furfural (CAS 98-01-1)	200 mg/l	Furoic acid, with hydrolysis	Urine	*
Isopropyl alcohol (CAS 67-63-0)	40 mg/l	Acetone	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Furfural (CAS 98-01-1)	Can be absorbed through the skin.
n-Butyl alcohol (CAS 71-36-3)	Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Furfural (CAS 98-01-1)	Skin designation applies.
n-Butyl alcohol (CAS 71-36-3)	Skin designation applies.

US - Tennessee OELs: Skin designation

Furfural (CAS 98-01-1)	Can be absorbed through the skin.
n-Butyl alcohol (CAS 71-36-3)	Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Furfural (CAS 98-01-1)	Can be absorbed through the skin.
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US NIOSH Pocket Guide to Chemical Hazards: Skin designation

n-Butyl alcohol (CAS 71-36-3)	Can be absorbed through the skin.
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US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Furfural (CAS 98-01-1)	Can be absorbed through the skin.
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Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other

Wear suitable protective clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Color Not available.

Odor Not available.

Odor threshold Not available.

pH Not available.

Melting point/freezing point 32 °F (0 °C) estimated

Initial boiling point and boiling range 212 °F (100 °C) estimated

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.

Vapor pressure 0.00001 hPa estimated

Vapor density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other information

Density 0.99799 g/cm3 estimated

Explosive properties Not explosive.

Oxidizing properties Not oxidizing.

Percent volatile 100 % estimated

Specific gravity 1 estimated

VOC 1.45 % estimated

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.

Conditions to avoid Contact with incompatible materials.

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation Harmful if inhaled.

Skin contact No adverse effects due to skin contact are expected.

Eye contact Direct contact with eyes may cause temporary irritation.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Harmful if inhaled.

Components	Species	Test Results
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4-Methyl-2-pentanone (CAS 108-10-1)

Acute

Inhalation

LC50

Rat

8.2 mg/l, 4 Hours

Components	Species	Test Results
Furfural (CAS 98-01-1)		
<u>Acute</u>		
Inhalation		
LC50	Rat	0.756 mg/l, 1 Hours
Oral		
LD50	Rat	90 - 112 mg/kg
Isobutyraldehyde (CAS 78-84-2)		
<u>Acute</u>		
Inhalation		
<i>Vapor</i>		
LC50	Rat	> 4.6 mg/l, 4 Hours
Isopropyl alcohol (CAS 67-63-0)		
<u>Acute</u>		
Oral		
LD50	Rat	4.7 g/kg
n-Amyl alcohol (CAS 71-41-0)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	2000 mg/kg
Oral		
LD50	Rat	2200 mg/kg
n-Butyl alcohol (CAS 71-36-3)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	3400 mg/kg
Oral		
LD50	Rat	790 mg/kg
tert-Butyl alcohol (CAS 75-65-0)		
<u>Acute</u>		
Oral		
LD50	Rat	3.5 g/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

4-Methyl-2-pentanone (CAS 108-10-1) 2B Possibly carcinogenic to humans.

Furfural (CAS 98-01-1) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
4-Methyl-2-pentanone (CAS 108-10-1)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 492 - 593 mg/l, 96 hours
Furfural (CAS 98-01-1)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 13.4 - 19.3 mg/l, 96 hours
Isopropyl alcohol (CAS 67-63-0)		
Aquatic		
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>) > 1400 mg/l, 96 hours
n-Amyl alcohol (CAS 71-41-0)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 607 - 841 mg/l, 48 hours
Fish	LC50	Inland silverside (<i>Menidia beryllina</i>) 180 mg/l, 96 hours
n-Butyl alcohol (CAS 71-36-3)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 1897 - 2072 mg/l, 48 hours
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>) 100 - 500 mg/l, 96 hours
tert-Butyl alcohol (CAS 75-65-0)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 4607 - 6577 mg/l, 48 hours
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 6130 - 6700 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

4-Methyl-2-pentanone	1.31
Furfural	0.41
Isopropyl alcohol	0.05
n-Amyl alcohol	1.4
n-Butyl alcohol	0.88
tert-Butyl alcohol	0.35

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information**DOT**

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

4-Methyl-2-pentanone (CAS 108-10-1)	Listed.
Furfural (CAS 98-01-1)	Listed.
Isobutyraldehyde (CAS 78-84-2)	Listed.
Isopropyl alcohol (CAS 67-63-0)	Listed.
n-Amyl alcohol (CAS 71-41-0)	Listed.
n-Butyl alcohol (CAS 71-36-3)	Listed.
tert-Butyl alcohol (CAS 75-65-0)	Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

4-Methyl-2-pentanone (CAS 108-10-1)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

4-Methyl-2-pentanone (CAS 108-10-1) 6715

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

4-Methyl-2-pentanone (CAS 108-10-1) 35 %WV

DEA Exempt Chemical Mixtures Code Number

4-Methyl-2-pentanone (CAS 108-10-1) 6715

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

4-Methyl-2-pentanone (CAS 108-10-1)	Low priority
Furfural (CAS 98-01-1)	High priority
Isobutyraldehyde (CAS 78-84-2)	High priority
Isopropyl alcohol (CAS 67-63-0)	Low priority
n-Butyl alcohol (CAS 71-36-3)	Low priority

US state regulations WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

4-Methyl-2-pentanone (CAS 108-10-1) Listed: November 4, 2011

US - California Proposition 65 - CRT: Listed date/Developmental toxin

4-Methyl-2-pentanone (CAS 108-10-1) Listed: March 28, 2014

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

4-Methyl-2-pentanone (CAS 108-10-1)
Isopropyl alcohol (CAS 67-63-0)
tert-Butyl alcohol (CAS 75-65-0)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	12-20-2017
Revision date	12-20-2017
Version #	02
NFPA ratings	Health: 2 Flammability: 0 Instability: 0

Disclaimer

The above information is believed to be correct on the date it was last revised and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded SDS must be made available to the employee within three months. RESPONSIBILITY for updates lies with the employer and not with CHEM SERVICE, Inc.

Persons not specifically and properly trained should not handle this chemical or its container. This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticide products, food additives or as household chemicals.

This Safety Data Sheet (SDS) is intended only for use with Chem Service, Inc. products and should not be relied on for use with materials from any other supplier even if the chemical name(s) on the product are identical! Whenever using an SDS for a solution or mixture the user should refer to the SDS for every component of the solution or mixture. Chem Service warrants that this SDS is based upon the most current information available to Chem Service at the time it was last revised. THIS WARRANTY IS EXCLUSIVE, AND CHEM SERVICE, INC. MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. This SDS is provided gratis and CHEM SERVICE, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES.

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