

Material Safety Data Sheet

Conforms to 93/112/EC and ISO 11014-1

Responsible Name MSDS Specialist

? Section 1. Chemical Product and Company Identification**Product Name** 16% Formaldehyde Solution**Product no.** 28906 28908 1892258**Supplier** In USA:
Thermo Fisher Scientific
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723In Europe:
Perbio Science
Industriezone III
Industrielaan 27
9320 Erembodegem-Aalst
Belgium
Tel:+32 53 83 44 04
Fax:+32 53 83 76 38**Manufacturer** Pierce
3747 N. Meridian Road
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723
(815)968-7316 fax
www.thermo.com**In case of emergency** CHEMTREC:
800.424.9300
OUTSIDE US:
703.527.3887**Print date** 2/28/2007**Validation date** 2/28/2007**MSDS#** 7600**Use of the substance/preparation** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.**Section 2. Composition, Information on Ingredients****Substance/preparation** : Preparation

<u>Ingredient name</u>	<u>CAS number</u>	<u>%</u>	<u>EC number</u>	<u>Classification</u>
Formaldehyde	50-00-0	10 - 20	200-001-8	Carc. Cat. 3; R40 T; R23/24/25 C; R34 R43

Section 3. Hazards identification**United States** Review the most current and approved institutional guideline, protocol, standard operating procedure(s) and MSDS(s) for the proper handling of institutional materials/equipment associated with the use of this product.**Emergency overview** Warning!
CANCER HAZARD
CONTAINS MATERIAL WHICH CAN CAUSE CANCER
HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
MAY CAUSE ALLERGIC RESPIRATORY REACTION.
COMBUSTIBLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FIRE.

Do not ingest. Avoid contact with eyes, skin and clothing. Do not breathe vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.**Potential acute health effects****Eyes** Irritating to eyes.**Skin** Toxic in contact with skin. Irritating to skin.**Inhalation** Toxic by inhalation. Irritating to respiratory system. May cause sensitization by inhalation.**Ingestion** Toxic if swallowed.**Potential chronic health effects**

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Carcinogenic effects **CARCINOGENIC EFFECTS:** Classified 1 (Proven for human.) by IARC [formaldehyde]. Classified A2 (Suspected for human.) by ACGIH [formaldehyde].
MUTAGENIC EFFECTS: Classified SUSPECTED for human [formaldehyde]. Mutagenic for mammalian somatic cells. [formaldehyde]. Mutagenic for bacteria and/or yeast. [formaldehyde].
TERATOGENIC EFFECTS: Classified POSSIBLE for human [formaldehyde].

Medical conditions aggravated by overexposure Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.
Over-exposure signs/symptoms Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Not available.

Europe

Classification **Carc. Cat. 3; R40**
Xn; R20/21/22
C; R34
R43

Physical/chemical hazards Not applicable.

Human health hazards Harmful by inhalation, in contact with skin and if swallowed.
Causes burns.
Possible risk of irreversible effects.
May cause sensitization by skin contact.

Environmental hazards Not applicable.

See toxicological Information (section 11)

+ Section 4. First aid measures

Notice to reader Get immediate medical attention.

Effects and symptoms

Inhalation Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Over-exposure by inhalation may cause respiratory irritation. May be fatal if inhaled.

Ingestion May be fatal if swallowed. May cause burns to mouth, throat and stomach.

Skin contact Hazardous in case of skin contact (sensitizer). Slightly hazardous in case of skin contact (irritant). Corrosive to skin on contact. Skin contact may produce burns. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Eye contact Slightly hazardous in case of eye contact (irritant). Corrosive to eyes.

Aggravating conditions Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

First-Aid measures

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin contact In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Notes to physician Not available.

Protection of first-aiders Not available.

🔥 Section 5. Fire fighting measures

Flammability of the product Combustible.

Flash Points Closed cup: >60°C (140°F).

Fire hazards in presence of various substances Not available.

Fire fighting media and instructions Use an extinguishing agent suitable for surrounding fires.

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Protective clothing (fire) Be sure to use an approved/certified respirator or equivalent.

Hazardous thermal decomposition products These products are carbon oxides (CO, CO₂).

Section 6. Accidental release measures

Personal precautions Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Environmental precautions and clean-up methods Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Small spill and leak Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

◇ Section 7. Handling and storage

Handling Do not ingest. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Do not breathe vapor or mist. Wash thoroughly after handling.

Storage Keep container tightly closed. Keep container in a cool, well-ventilated area.

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Packaging materials

Suitable / Not suitable Use original container.

Czech Republic - Storage code III

Section 8. Exposure Controls, Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the workstation location.

Exposure Limit Values

Ingredient Name

Occupational Exposure Limits

United States

Formaldehyde

ACGIH (United States).
CEIL: 0.3 ppm
NIOSH (United States).
TWA: 0.016 ppm
OSHA PEL (United States).
TWA: 0.75 ppm
STEL: 2 ppm

Sweden

Formaldehyde

NGV: 0.5 ppm
 TGV: 1 ppm

Denmark

Formaldehyde

GV: 0.3 ppm

Norway

Formaldehyde

AN: 0.5 ppm

France

Formaldehyde

VME: 0.5 ppm
 VLE: 1 ppm

Netherlands

Formaldehyde

TGG: 1 ppm
 TGG 15 min: 2 ppm

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Germany

Formaldehyde MAK: 0.5 ppm

United Kingdom (UK)

Formaldehyde TWA: 2 ppm

Austria

Formaldehyde MAK: 0.5 ppm

Switzerland

Formaldehyde MAK-W: 0.5 ppm
KZG-W: 1 ppm

Belgium

Formaldehyde TWA: 1 ppm
STEL: 2 ppm

Turkey

Formaldehyde **NIOSH (United States).**
TWA: 0.016 ppm

Personal Protection

Eyes Splash goggles.

Body Lab coat.

Hands Gloves.

Respiratory Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

Feet Boots.

Protective Clothing
(Pictograms)



Section 9. Physical and chemical properties

Physical State Liquid. (Clear sparkling liquid.)

Color Colorless.

Odor Characteristic. (Slight.)

Molecular weight Not applicable.

Taste Not available.

pH (1% Soln/Water) Neutral.

Boiling/condensation point >93.33°C (200°F)

Melting/freezing point May start to solidify at 0°C (32°F) based on data for: water.

Critical temperature The lowest known value is 374.2°C (705.6°F) (water).

Specific Gravity 1.08 to 1.13 (Water = 1)

Vapor pressure 2.3 to 2.7 kPa (17 to 20 mm Hg) (at 20°C)

Vapor density 1 (Air = 1)

Evaporation rate >1 compared to Butyl acetate.

Viscosity Dynamic: The highest known value is 1 cP (water)

Dispersion properties See solubility in water, methanol, diethyl ether, acetone.

Solubility Easily soluble in cold water, hot water, methanol, acetone.
Partially soluble in diethyl ether.

Flash point Closed cup: >60°C (140°F).

Explosion limits Lower: 7% Upper: 73%



Section 10. Stability and reactivity

<i>Stability and Reactivity</i>	The product is stable.
<i>Conditions to avoid</i>	Not available.
<i>Materials to avoid</i>	Reactive with acids, alkalis.
<i>Hazardous polymerization</i>	Will not occur.
<i>Hazardous Decomposition Products</i>	Not available.



Section 11. Toxicological information

<i>Toxicity to Animals</i>	water:	
	ORAL (LD50):	Acute: >90000 mg/kg [Rat].
	formaldehyde:	
	ORAL (LD50):	Acute: 100 mg/kg [Rat]. 42 mg/kg [Mouse]. 260 mg/kg [Guinea pig].
	DERMAL (LD50):	Acute: 270 mg/kg [Rabbit].
	GAS (LC50):	Acute: 454 mg/m ³ 4 hour(s) [Mouse]. 505 mg/m ³ 2 hour(s) [Mouse]. 578 mg/m ³ 2 hour(s) [Rat]. 250 ppm 2 hour(s) [Rat].

Chronic Effects on Humans **CARCINOGENIC EFFECTS:** Classified 1 (Proven for human.) by IARC [formaldehyde]. Classified A2 (Suspected for human.) by ACGIH [formaldehyde].

MUTAGENIC EFFECTS: Classified SUSPECTED for human [formaldehyde]. Mutagenic for mammalian somatic cells. [formaldehyde]. Mutagenic for bacteria and/or yeast. [formaldehyde].

TERATOGENIC EFFECTS: Classified POSSIBLE for human [formaldehyde].

Other Toxic Effects on Humans Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive). Slightly hazardous in case of eye contact (irritant), of inhalation (lung irritant).

Special Remarks on Toxicity to Animals Not available.

Special Remarks on Chronic Effects on Humans Not available.

Special Remarks on Other Toxic Effects on Humans Not available.

Carcinogenicity Contains material which may cause cancer based on animal data. Risk of cancer depends on duration and level of exposure.

Mutagenicity No known significant effects or critical hazards.

Reproductive toxicity No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation No known significant effects or critical hazards.

Ingestion No known significant effects or critical hazards.

Skin No known significant effects or critical hazards.



Section 12. Ecological information

<i>Mobility</i>	Not available.
<i>Persistence/degradability</i>	Not available.
<i>Bioaccumulative potential</i>	Not available.
<i>Ecotoxicity</i>	Not available.
<i>Germany water class</i>	VCI WGK: No products were found.

Ecotoxicity data

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
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Formaldehyde	Minnows (LC50)	96 hour(s)	24.1 mg/l
	Bluegill. (LC50)	96 hour(s)	0.1 mg/l
	Daphnia (EC50)	96 hour(s)	20 mg/l

Other ecological information

Persistence/degradability

Ingredient name

BOD₅

COD

Ingredient name

Aquatic half-life

Photolysis

Bioaccumulative potential

Ingredient name

LogP_{ow}

BCF

Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.



Section 13. Disposal considerations

Waste Stream Not available.

Methods of disposal The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

European waste catalogue (EWC) Not available.

Hazardous waste The classification of the product may meet the criteria for a hazardous waste

Denmark – Carcinogenic waste Not available.

Denmark - Waste card number Not available.

Denmark - Waste group Not available.

Sweden - thermoset plastic waste Not available.

Sweden - Waste group Not available.

Austria - Waste catalogue Not available.

Norway - Waste number Not available.

Norway - Hazardous waste The classification of the product may meet the criteria for a hazardous waste

Switzerland - Waste code Not available.

Section 14. Transport information

Contact the supplier for all information regarding the proper transportation method for this material.



Section 15. Regulatory information

Label Requirements (Europe)

R40- Limited evidence of a carcinogenic effect. R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R34- Causes burns. R43- May cause sensitization by skin contact.
S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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Corrosive

HCS Classification
Combustible liquid
Toxic material
Irritating material
Sensitizing material
Carcinogen

U.S. Federal Regulations
 CA 8(b) inventory: 16% Formaldehyde Solution
 SARA 302/304/311/312 extremely hazardous substances: formaldehyde
 SARA 302/304 emergency planning and notification: formaldehyde
 SARA 302/304/311/312 hazardous chemicals: No products were found.
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.
 Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: No products were found.
 Clean air act (CAA) 112 accidental release prevention: No products were found.
 Clean air act (CAA) 112 regulated flammable substances: No products were found.
 Clean air act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

Form R - Reporting requirements	Product name	CAS number	Concentration
	: Formaldehyde	50-00-0	10 - 20

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations
 Illinois toxic substances disclosure to employee act: formaldehyde
 Illinois chemical safety act: formaldehyde
 New York release reporting list: formaldehyde
 Pennsylvania RTK: formaldehyde
 Minnesota: formaldehyde
 Massachusetts RTK: formaldehyde
 Massachusetts spill list: formaldehyde
 New Jersey: formaldehyde
 New Jersey spill list: formaldehyde
 Louisiana RTK reporting list: formaldehyde
 Louisiana spill reporting: formaldehyde

WHMIS (Canada)
 Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
 Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
 Class D-2A: Material causing other toxic effects (VERY TOXIC).
 Class D-2B: Material causing other toxic effects (TOXIC).

CEPA DSL: water; formaldehyde

International Regulations

EINECS Not available.

DSCL (EEC)
 R40- Limited evidence of a carcinogenic effect.
 R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
 R34- Causes burns.
 R43- May cause sensitization by skin contact.

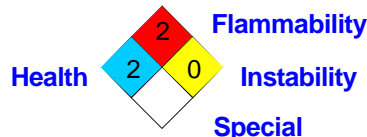
International Lists
 Australia (NICNAS): water
 Germany water class: formaldehyde
 Japan (METI): water
 Korea (TCCL): water
 Philippines (RA6969): water

State Regulations Illinois toxic substances disclosure to employee act: formaldehyde
 Illinois chemical safety act: formaldehyde
 New York release reporting list: formaldehyde
 Pennsylvania RTK: formaldehyde
 Minnesota: formaldehyde
 Massachusetts RTK: formaldehyde
 Massachusetts spill list: formaldehyde
 New Jersey: formaldehyde
 New Jersey spill list: formaldehyde
 Louisiana RTK reporting list: formaldehyde
 Louisiana spill reporting: formaldehyde

Section 16. Other information

Hazardous Material Information System (U.S.A.)	Health *	2
	Fire hazard	2
	Reactivity	0
	Personal protection	C

National Fire Protection Association (U.S.A.)



References Not available.

History of Document Changes Any information changes since last document version are marked with a triangle symbol.

Full text of R phrases referred to in sections 2 and 3 - Europe
 R40- Limited evidence of a carcinogenic effect.
 R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.
 R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
 R34- Causes burns.
 R43- May cause sensitization by skin contact.

Full text of classifications referred to in sections 2 and 3 - Europe
 Carc. Cat.3 - Carcinogen Category 3
 T - Toxic
 C - Corrosive
 Xn - Harmful

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Validated by MSDS Specialist on 2/28/2007.

Verified by MSDS Specialist.

Date of previous issue No Previous Validation

Printed 2/28/2007.

Version 1

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, 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 materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.