

## Material Safety Data Sheet

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Version 1.8

According to 91/155/EEC

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1 - Product and Company Information

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Product Name HYDRANAL-METHANOL DRY, FOR  
DETERMINATION OF WATER ACCORDING TO  
KARK FISCHER (MAX. 0,01 % H2O)

Product Number 34741

Company Sigma-Aldrich Company Ltd.  
The Old Brickyard  
New Road, Gillingham SP8 4XT  
United Kingdom

Technical Phone # 44-(0)-1747-833000  
Fax 44-(0)-1747-833313  
Emergency Phone # 44-(0)-1747-833100

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2 - Composition/Information on Ingredients

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Product Name	CAS #	EC no	Annex I Index Number
METHANOL	67-56-1	200-659-6	603-001-00-X

Formula CH4O  
Molecular Weight 32.04 AMU  
Synonyms Alcool methylique (French) \* Alcool metilico  
(Italian) \* Bieleski's solution \* Carbinol \*  
Colonial Spirit \* Columbian Spirit \* Metanolo  
(Italian) \* Methanol (ACGIH) \* Methyl alcohol  
(DOT:OSHA) \* Methylol \* Methylalkohol (German) \*  
Methyl hydrate \* Methyl hydroxide \* Metylowy  
alkohol (Polish) \* Monohydroxymethane \*  
Pyroxylic Spirit \* RCRA waste number U154 \* Wood  
alcohol \* Wood naphtha \* Wood Spirit \* METHYL  
ALCOHOL \* WOOD ALCOHOL

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3 - Hazards Identification

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## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Highly flammable. Toxic by inhalation, in contact with skin and if  
swallowed. Toxic: danger of very serious irreversible effects  
through inhalation, in contact with skin and if swallowed.

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4 - First Aid Measures

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## AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give  
artificial respiration. If breathing is difficult, give oxygen.

## AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for  
at least 15 minutes. Remove contaminated clothing and shoes.  
Call a physician.

#### AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

#### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

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### 5 - Fire Fighting Measures

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#### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

#### SPECIAL RISKS

Specific Hazard(s): Flammable liquid. Emits toxic fumes under fire conditions.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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### 6 - Accidental Release Measures

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#### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### ENVIRONMENTAL PRECAUTION(S)

Do not allow material to enter drains or water courses.

#### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

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### 7 - Handling and Storage

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#### HANDLING

Directions for Safe Handling: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Conditions of Storage: Keep container closed. Keep away from heat, sparks, and open flame.

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### 8 - Exposure Controls / Personal Protection

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#### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Use only in a chemical fume hood.

#### GENERAL HYGIENE MEASURES



MP/MP Range	-98 °C	
Flash Point	11 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	385 °C	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	Lower: 6 % Upper: 36 %	
Vapor Pressure	97.68 mmHg	20 °C
SG/Density	0.791 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	0.79 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Miscible.	

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## 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Materials to Avoid: Acids, Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## 11 - Toxicological Information

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RTECS NUMBER: PC1400000

### ACUTE TOXICITY

LDLO

Oral

Man

6422 mg/kg

Remarks: Brain and Coverings:Changes in circulation (hemorrhage,thrombosis, etc.). Lungs, Thorax, or Respiration:Dyspnea. Gastrointestinal:Nausea or vomiting.

LDLO

Oral

Human

428 mg/kg

Remarks: Behavioral:Headache. Lungs, Thorax, or Respiration:Other changes.

LDLO

Oral

Human

143 mg/kg

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Optic nerve neuropathy. Lungs, Thorax, or Respiration:Dyspnea. Gastrointestinal:Nausea or vomiting.

LD50  
Oral  
Rat  
5628 mg/kg

LC50  
Inhalation  
Rat  
64,000 ppm  
4H

LD50  
Intraperitoneal  
Rat  
7529 MG/KG

LD50  
Intravenous  
Rat  
2131 MG/KG

LD50  
Oral  
Mouse  
7300 mg/kg

LD50  
Intraperitoneal  
Mouse  
10765 MG/KG

LD50  
Subcutaneous  
Mouse  
9800 MG/KG

LD50  
Intravenous  
Mouse  
4710 MG/KG

LD50  
Oral  
Monkey  
7000 mg/kg  
Remarks: Behavioral:Muscle weakness. Behavioral:Ataxia.  
Behavioral:Coma.

LD50  
Oral  
Rabbit  
14200 mg/kg

LD50  
Skin  
Rabbit  
15800 mg/kg

LD50  
Intraperitoneal  
Rabbit  
1826 MG/KG

LD50  
Intravenous  
Rabbit  
8907 MG/KG

LD50  
Intraperitoneal  
Guinea pig  
3556 MG/KG

LD50  
Intraperitoneal  
Hamster  
8555 MG/KG

#### IRRITATION DATA

Skin  
Rabbit  
20 mg  
24H  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
40 mg  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
100 mg  
24H  
Remarks: Moderate irritation effect

#### SIGNS AND SYMPTOMS OF EXPOSURE

Methyl alcohol may be fatal or cause blindness if swallowed.  
Cannot be made non-poisonous. Ingestion can cause: Nausea,  
headache, and vomiting. Gastrointestinal disturbances.  
Dizziness. Weakness. Confusion. Drowsiness. Unconsciousness. May  
cause convulsions.

#### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.  
Skin Absorption: Toxic if absorbed through skin.  
Eye Contact: Causes eye irritation.  
Inhalation: Toxic if inhaled. Material may be irritating to  
mucous membranes and upper respiratory tract.  
Ingestion: Toxic if swallowed.

#### TARGET ORGAN INFORMATION

Eyes. Kidneys. Liver. Heart. Central nervous system.

#### CHRONIC EXPOSURE - MUTAGEN

Human  
300 MMOL/L  
Cell Type: lymphocyte

DNA inhibition

Rat  
10 UMOL/KG  
Oral  
DNA damage

Mouse  
7900 MG/L (+S9)  
Cell Type: lymphocyte  
Mutation in microorganisms

Mouse  
1 GM/KG  
Oral  
Cytogenetic analysis

Mouse  
75 MG/KG  
Intraperitoneal  
Cytogenetic analysis

#### CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 35295 MG/KG  
Route of Application: Oral  
Exposure Time: (1-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Newborn: Biochemical and metabolic.

Species: Rat  
Dose: 20000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (1-22D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Cardiovascular (circulatory) system. Specific Developmental Abnormalities: Urogenital system.

Species: Rat  
Dose: 20000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (7-15D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Endocrine system.

Species: Rat  
Dose: 10000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (7-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat  
Dose: 5200 UL/KG  
Route of Application: Oral  
Exposure Time: (10D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Urogenital system.

Species: Mouse  
Dose: 40 GM/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Mouse  
Dose: 4 GM/KG  
Route of Application: Oral  
Exposure Time: (7D PREG)  
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 1500 PPM/6H  
Route of Application: Inhalation  
Exposure Time: (7-9D PREG)  
Result: Specific Developmental Abnormalities: Central nervous system.

Species: Mouse  
Dose: 5000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Mouse  
Dose: 2000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat  
Dose: 7500 MG/KG  
Route of Application: Oral  
Exposure Time: (17-19D PREG)  
Result: Effects on Newborn: Behavioral.

Species: Rat  
Dose: 35295 MG/KG  
Route of Application: Oral  
Exposure Time: (1-15D PREG)  
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated ). Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat  
Dose: 20 GM/KG  
Route of Application: Oral

Exposure Time: (6-15D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).  
Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Species: Rat  
Dose: 200 PPM/20H  
Route of Application: Oral  
Exposure Time: (78W MALE)  
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse  
Dose: 7500 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).  
Effects on Embryo or Fetus: Fetal death.

Species: Mouse  
Dose: 15000 PPM  
Route of Application: Inhalation  
Exposure Time: (7-9D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).  
Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Mouse  
Dose: 5 GM/KG  
Route of Application: Intraperitoneal  
Exposure Time: (5D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

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## 12 - Ecological Information

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### ECOTOXICOLOGICAL EFFECTS

Test Type: LC50 Fish  
Species: Onchorhynchus mykiss (Rainbow trout)  
Time: 96 h  
Value: 19,000 mg/l

Test Type: LC50 Fish  
Species: Cyprinus carpio  
Time: 48 h  
Value: 36,000 mg/l

Test Type: EC50 Daphnia  
Species: Daphnia magna  
Time: 48 h  
Value: 24,500 mg/l

Test Type: EC100 Daphnia  
Species: Daphnia magna  
Time: 24 h  
Value: 10,000 mg/l

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## 13 - Disposal Considerations

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## SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

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## 14 - Transport Information

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### RID/ADR

UN#: 1230  
Class: 3  
PG: II  
Proper Shipping Name: Methanol

### IMDG

UN#: 1230  
Class: 3  
PG: II  
Subrisk: 6.1  
Proper Shipping Name: Methanol  
Marine Pollutant: No  
Severe Marine Pollutant: No

### IATA

UN#: 1230  
Class: 3  
PG: II  
Subrisk: 6.1  
Proper Shipping Name: Methanol  
Inhalation Packing Group I: No

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## 15 - Regulatory Information

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### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 603-001-00-X

INDICATION OF DANGER: F T

Highly Flammable. Toxic.

R-PHRASES: 11 23/24/25 39/23/24/25

Highly flammable. Toxic by inhalation, in contact with skin and if swallowed. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

S-PHRASES: 7 16 36/37 45

Keep container tightly closed. Keep away from sources of ignition - no smoking. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### COUNTRY SPECIFIC INFORMATION

#### Germany

WGK: 1

#### SWITZERLAND

SWISS POISON CLASS: 3

#### NORWAY

Labelling for organic solvents where the package is 1 liter or more.

YL-tall m3/l: 8507

YL-group: 5

Safety phrases: 38 42 210

In case of insufficient ventilation, wear suitable respiratory equipment. During fumigation/spraying wear suitable respiratory equipment. Use compressed air- or fresh air line breathing apparatus in confined spaces.

Declaration Number: 1931

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## 16 - Other Information

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### WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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