

SAFETY DATA SHEET
AQUEOUS FORMALDEHYDE
SOLUTION AF (37- 40%)

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name FORMALDEHYDE SOLUTION

Synonym: Formalin, Methyl aldehyde,
Methylene glycol, Aqueous formaldehyde (37-40).

Contact Information

Company Name: Gameron Petro Industry Complex

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SECTION II: HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 3), H226

Acute toxicity, Oral (Category 3), H301

Acute toxicity, Inhalation (Category 2), H330

Acute toxicity, Dermal (Category 3), H311

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

Skin sensitization (Category 1), H317

Germ cell mutagenicity (Category 2), H341

Carcinogenicity (Category 1B), H350

Specific target organ toxicity - single exposure (Category 1), Eyes, Central nervous system,
H370

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

Short-term (acute) aquatic hazard (Category 2), H401

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS Label elements, including precautionary statements

Pictogram



Signal Word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapor.
H301 + H311	Toxic if swallowed or in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H370	Causes damage to organs (Eyes, Central nervous system).
H401	Toxic to aquatic life.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe mist or vapors.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing must not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284	Wear respiratory protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.
P333 + P313	IF skin irritation or rash occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS – none

SECTION 3: Composition/information on ingredients

Mixtures

Synonyms : Formalin

Component	Classification	Concentration
formaldehyde		
CAS-No. 50-00-0 EC-No. 200-001-8 Index-No. 605-001-00-x Registration Number 01-2119488953-20-XXXX	Flam. Liq. 4; Acute Tox. 3; Acute Tox. 2; Acute Tox.3; Skin Corr. 1B; Eye Dam. 1; Skin Sens. 1; Muta. 2; Carc. 1B; STOT SE 3; Aquatic Acute 2; H227, H301, H330, H311, H314, H318, H317, H341, H350, H335, H401 Concentration limits: >= 25 %: Skin Corr. 1B, H314; 5 - < 25 %: Eye Irrit. 2, H319; >= 5 %: STOT SE 3, H335; >= 0.2 %: Skin Sens. 1, H317; 5 - < 25 %: Skin Irrit. 2, H315; >= 25 %: Skin Corr. 1B, H314; 5 - < 25%: Skin Irrit. 2, H315; 5 - < 25 %: Eye Irrit. 2, H319; >= 5 %: STOT SE 3, H335; >= 0.2 %: Skin Sens. 1, H317;	>= 30 - < 50 %
Methanol		
CAS-No. 67-56-1 EC-No. 200-659-6 Index-No. 603-001-00-X Registration Number 01-2119433307-44-XXXX	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301, H331, H311, H370 Concentration limits: >= 10 %: STOT SE 1, H370; 3 - < 10 %: STOT SE 2, H371;	>= 10 - < 20 %

SECTION 4: First aid measures

Description of first-aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.
Remove contact lenses.

If swallowed

After swallowing: fresh air. Make victim drink ethanol (e.g. 1 drinking glass of a 40% alcoholic beverage). Call a doctor immediately (mention methanol ingestion). Only in exceptional cases, if no medical care is available within one hour, induce vomiting (only in fully conscious persons) and make victim drink ethanol again (approx. 0.3 ml of a 40% alcoholic beverage/kg body weight/hour). Do not attempt to neutralise.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media

Water Foam Carbon dioxide (CO₂) Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Carbon oxides

Carbon oxides

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapours possible in the event of fire.

Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

Environmental precautions

Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class

Storage class (TRGS 510): 3: Flammable liquids

Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

Control parameters
Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
formaldehyde	50-00-0	TWA	0.1 ppm	USA. ACGIH Threshold limit Values (TLV)
	Remarks	Dermal Sensitization Respiratory sensitization Confirmed human carcinogen		
		STEL	0.3 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Dermal Sensitization Respiratory sensitization Confirmed human carcinogen		
		TWA	0.016 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen		
		C	0.1 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen		
		PEL	0.75 ppm	OSHA Specifically Regulated Chemicals/Carcinogens
		OSHA specifically regulated carcinogen		
		STEL	2 ppm	OSHA Specifically Regulated Chemicals/Carcinogens
		OSHA specifically regulated carcinogen		
		PEL	0.75 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		STEL	2 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		TWA	0.016 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen		
		C	0.1 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen		
Methanol	67-56-1	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Danger of cutaneous absorption		
		STEL	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Danger of cutaneous absorption		

		ST	250 ppm 325 mg/m ³	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200 ppm 260 mg/m ³	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200 ppm 260 mg/m ³	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		PEL	200 ppm 260 mg/m ³	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		C	1,000 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		STEL	250 ppm 325 mg/m ³	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		TWA	200 ppm 260 mg/m ³	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
		Skin notation		
		STEL	250 ppm 325 mg/m ³	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
		Skin notation		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen
Methanol	67-56-1	Methanol	15 mg/l	Urine
	Remarks	End of shift (As soon as possible after exposure ceases)		

Exposure controls

Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment Eye/face

protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.4 mm Break through time: 480 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

Splash contact Material: Nitrile rubber

Minimum layer thickness: 0.2 mm Break through time: 60 min

Material tested: Dermatril® P (KCL 743 / Aldrich Z677388, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

Recommended Filter type: Filter type ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented. required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure

Do not let product enter drains. Risk of explosion

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

A)	Appearance	Form: liquid, clear Color: colorless
B)	Odor	pungent
C)	Odor Threshold	No data available
D)	pH	No data available
E)	Melting point/freezing point	No data available
f)	Initial boiling point and boiling range	100 °C 212 °F at 1,013 hPa
g)	Flash point	56 °C (133 °F) - closed cup
h)	Evaporation rate	1
I)	Flammability (solid, gas)	No data available
J)	Upper/lower flammability or explosive limits	Upper explosion limit: 70 %(V) Lower explosion limit: 7 %(V)
K)	Vapor pressure	53 hPa at 39 °C (102 °F)
L)	Vapor density	1.04 - (Air = 1.0)
M)	Density	1.09 g/cm ³ at 25 °C (77 °F) - lit.
	Relative density	No data available
N)	Water solubility	completely soluble
O)	Partition coefficient:n-octanol/water	log Pow: 0.35
P)	Autoignition temperature	No data available
Q)	Decomposition temperature	No data available
R)	Viscosity	No data available
S)	Explosive properties	Not classified as explosive.
T)	Oxidizing properties	none
U)	Relative vapor density	1.04 - (Air = 1.0)

SECTION 10: Stability and reactivity

Reactivity

Vapor/air-mixtures are explosive at intense warming.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .Contains the following stabilizer(s):

Methanol (>=10 - <1512 %)

Possibility of hazardous reactions

Risk of explosion with:

Nitromethanepersulfonic acid

Acids

phenol Nitric acid

hydrogen peroxide

peracetic acid nitrogen dioxide

Exothermic reaction with:

Bases

nitrides

polymerisation initiators

Sodium hydroxide

potassium permanganate

furfuryl alcohol

Strong oxidizing agents perchloric acid
Generates dangerous gases or fumes in contact with:
hydrochloric acid
magnesium carbonate

Conditions to avoid

Heating.

Incompatible materials

various metals, various alloys, Mild steel, Copper

Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects Mixture

Acute toxicity

Oral: No data available

Acute toxicity estimate Oral - 204.13 mg/kg (Calculation method)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Inhalation: No data available Dermal: No

data available No data available

Skin corrosion/irritation

Remarks: Mixture causes burns.

Serious eye damage/eye irritation

Remarks: Mixture causes serious eye damage. Risk of blindness!

Respiratory or skin sensitization

Mixture may cause an allergic skin reaction.

Germ cell mutagenicity

Evidence of genetic defects.

Carcinogenicity

Possible carcinogen.

IARC: 1 - Group 1: Carcinogenic to humans (formaldehyde)

NTP: Known - Known to be human carcinogen (formaldehyde)

OSHA: OSHA specifically regulated carcinogen (formaldehyde)

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Remarks: No data available
Mixture causes damage to organs. - Eyes, Central nervous system
Mixture may cause respiratory irritation.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

Warning: contains methanol. May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Other dangerous properties cannot be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

Liver - Irregularities - Based on Human Evidence Stomach - Irregularities - Based on Human Evidence

Components

Formaldehyde

Acute toxicity

LD50 Oral - Rat - 100 mg/kg Remarks: (Lit.)

LC50 Inhalation - Rat - male and female - 4 h - < 0.57 mg/l - vapor (OECD Test Guideline 403)

LD50 Dermal - Rabbit - 270 mg/kg

Remarks: (RTECS) No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Causes burns. - 20 h (OECD Test Guideline 404)

Serious eye damage/eye irritation

Remarks: Causes serious eye damage.

Respiratory or skin sensitization Local lymph node assay (LLNA) - Mouse Result: positive
(OECD Test Guideline 429)

Germ cell mutagenicity

Suspected of causing genetic defects.

Carcinogenicity

Presumed to have carcinogenic potential for humans

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Methanol

Acute toxicity

Acute toxicity estimate Oral - 100.1 mg/kg (Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Symptoms: Nausea, Vomiting

Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapor (Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Symptoms: Irritation symptoms in the respiratory tract.

Acute toxicity estimate Dermal - 300.1 mg/kg (Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation Remarks: (ECHA)

Remarks: Drying-out effect resulting in rough and chapped skin.

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation Remarks: (ECHA)

Respiratory or skin sensitization

Sensitisation test: - Guinea pig Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity

Based on available data the classification criteria are not met.

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster lung cells

Result: negative

Method: OECD Test Guideline 474

Species: Mouse - male and female - Bone marrow Result: negative

Carcinogenicity

Did not show carcinogenic effects in animal experiments.

Reproductive toxicity

Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

Causes damage to organs. - Eyes, Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute oral toxicity - Nausea, Vomiting

Acute inhalation toxicity - Irritation symptoms in the respiratory tract.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

SECTION 12: Ecological information

Toxicity

Mixture

No data available

Persistence and degradability

No data available

Bio accumulative potential

No data available

Mobility in soil

No data available

Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Endocrine disrupting properties

No data available

Other adverse effects

No data available

Components formaldehyde

Toxicity to fish static test LC50 - *Morone saxatilis* - 6.7 mg/l - 96 h

Remarks: (ECHA)

Toxicity to daphnia static test EC50 - *Daphnia pulex* (Water flea) -

and other aquatic invertebrates 5.8 mg/l - 48 h (OECD Test Guideline 202)

Toxicity to algae static test EC50 - *Desmodesmus subspicatus* (green algae) -

4.89 mg/l - 72 h

(OECD Test Guideline 201)

Toxicity to bacteria static test EC50 - activated sludge - 19 mg/l - 3 h (OECD Test Guideline 209)

Toxicity to daphnia semi-static test NOEC - *Daphnia magna* (Water flea) - \geq 6.4 mg/l

and other aquatic invertebrates - 21 d (OECD Test Guideline 211)

invertebrates

(Chronic toxicity)

Methanol

Toxicity to fish flow-through test LC50 - *Lepomis macrochirus* (Bluegill) -15,400.0 mg/l

- 96 h(US-EPA)
 Toxicity to daphnia and other aquatic invertebrates semi-static test EC50 - Daphnia magna (Water flea) - 18,260mg/l - 96 h (OECD Test Guideline 202)
 Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata (green algae) - ca. 22,000.0 mg/l - 96 h (OECD Test Guideline 201)
 Toxicity to bacteria static test IC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)
 Toxicity to fish (Chronic toxicity) NOEC - Oryzias latipes (Orange-red killifish) - 7,900 mg/l - 200 h
 Remarks: (External MSDS)

SECTION 13: Disposal considerations

Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations.
 Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)

UN number: 1198 Class: 3 (8) Packing group: III
 Proper shipping name: Formaldehyde solutions, flammable Reportable
 Quantity (RQ): 270 lbs
 Poison Inhalation Hazard: No

IMDG

UN number: 1198 Class: 3 (8) Packing group: III EMS-No: F-E, S-C
 Proper shipping name: FORMALDEHYDE SOLUTION, FLAMMABLE

IATA

UN number: 1198 Class: 3 (8) Packing group: III
 Proper shipping name: Formaldehyde solution, flammable

SECTION 15: Regulatory information

SARA 302 Components

Formaldehyde	CAS-No.	Revision Date
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50-00-0	2008-11-03	SARA 313 Components
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The following components are subject to reporting levels established by SARA Title III, Section 313:

formaldehyde	CAS-No.	Revision Date
	50-00-0	2008-11-03
	67-56-1	2007-07-01
Methanol		

SECTION 16: Other information

Further information

Version: 6.15 Revision Date: 08/31/2023 Sigma-Aldrich - 252549