1 Material/preparation and company designation

Trade name
KF 37E coolant
Material usage/preparation
Antifreeze for the relevant EWM welding systems
Manufacturer/supplier
EWM AG
Street
Dr. Günter Henle Str. 8
Country/Postcode/Town
Germany, D-56271 Mündersbach
Contact point for tech. information
Application technology (Tel. +49 (0) 2680/181-290)
Telephone/fax/email
+49 (0)2680/181-335/+49 (0)2680/181-244/email: qm@ewm.de
Emergency hotline
+44 (171) 635 91 91
National Poison Inform. Centre Medical Toxicology Unit Avalonley Road London SE14 5ER

2 Possible hazards

2.1 Classification of the substance or blend

Categorization of blend KF 37E according to ordinance (EC) No. 1272/2008
Hazardous substances: Ethanol (ethyl alcohol) (Index No: 603-002-00-5) (CAS: 64-17-5)
Signal word: Warning
Pictogram GHS02

Flammable liquid, (category 3)
H226 Flammable liquid and vapour
Categorization of blend KF 37E according to guideline 67/548/EEC of the Council:
Hazard symbol: Not given
Hazardous substances: Ethanol (ethyl alcohol) (CAS: 64-17-5)
R phrases (full text)
R10 - Flammable
S phrases (full text)
S7 Keep container tightly closed
S16 Keep away from sources of ignition - No smoking

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2.2 Labelling elements

Classification of the KF 37E packaging according to the EC regulation No 1272/2008
Hazardous substances: Ethanol (ethyl alcohol) (Index No: 603-002-00-5) (CAS: 64-17-5)
Signal word: Warning
Pictogram GHS02

Hazard statements
H226 Flammable liquid and vapour

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements – Response
P303 + P361 + P353 If on skin (or hair: Remove immediately all contaminated clothing) Rinse skin with water/shower.

Precautionary statements – Storage
P403 + P235 Store in a well ventilated place. Keep cool

2.3 Other hazards

Adverse effects on human health:
Irritant to skin and mucous membranes. Degreasing effect on skin, possibly resulting in cracks which increase the risk of infections. Contact with eyes may cause damage to the eyes. Mists have a narcotic effect, depending on concentration and duration of exposure. Symptoms of intoxication include dizziness (drunkenness), headaches, feeling feverish, a feeling of pressure in the eyes (and stomach), fatigue/drowsiness.

Hazards to the environment:
Evaporates quickly when released in unconfined areas (especially with high temperatures). The vapours are heavier than air and may spread far from the point of release. Forms explosive mixture with air. The liquid mixes with water without limit. When large amounts are released into water, an explosive mixture of alcohol and air may form above the water.

Most severe adverse effects regarding the physical-chemical properties:
The blend is classified and labelled as inflammable. May form inflammable/explosive mixtures on contact with air. The vapours are heavier than air and accumulate near the ground. They may reach sources of ignition and explode.

3 Composition/information on the components

Chemical characterisation
Ethanol denatured in aqueous solution
Dangerous constituents
ETHANOL; EC No.: 200-578-6; CAS No.: 64-17-5 index number 603-002-00-5
Percentage: <36% synonyms: ethyl alcohol
2-Methyl-1-propanol; EC No.: 201-148-0; CAS No.: 78-83-1 index number 603-108-00-1
Percentage: approx. 0.45%
Synonyms: Isobutanol, 2-Methylpropane-1-ol,
Iso-Butanol, Isobutyl alcohol
WATER; EC No. 231-791-2; CAS No. 7732-18-5
Percentage: approx. 63%
Classification: n/a
Classification of pure ethanol according to ordinance (EC) No. 1272/2008
Signal word: Danger
Pictogram GHS02

Flammable liquid, (category 2)
H225 Flammable liquid and vapour
Classification **according to directive 67/548/EEC of the Council:**
Hazard symbol: F – highly flammable

highly flammable

R phrases (full text):
R11 – highly flammable
S phrases (full text)
S7 Keep container tightly closed
S16 Keep away from sources of ignition – No smoking

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Classification of Isobutanol according to the EC regulation No 1272/2008
Signal word: Danger
Pictogram GHSO2+GHSO5+GHSO7

Flammable liquid, category 3	H226 Flammable liquid and vapour
Serious eye damage, category 1	H318 Causes serious eye damage
Skin irritation, category 2	H315 Causes skin irritation
Specific Target Organ Toxicity (single exposure), category 3 (STOT SE 3)	H335+H336 May cause respiratory irritation May cause drowsiness or dizziness

Classification of Isobutanol according to the directive 67/548/EEC:
Hazard symbol: Xi – irritant

R 37/38 Irritating to respiratory system and skin
R 41 Risk of serious damage to eyes
R 10 Flammable
R 67 Vapours may cause drowsiness and dizziness

The substance contains other constituents in a concentration that has no effect on the overall classification of the substance.

4 First aid measures

4.1 Description of first-aid measures:

General instructions:
Remove any clothes contaminated with product immediately.
On inhaling
Ensure fresh air
Contact a doctor in the event of any ongoing problems.
In the event of a loss of consciousness, move and transport the person in secure recovery position.
On skin contact
Wash off immediately with water and soap and rinse thoroughly.
Seek help from a doctor in the event of skin irritation.
On contact with eyes
Rinse eyes for several minutes with open eyelids under running water.
Contact a doctor in the event of any ongoing problems.
On swallowing
Rinse out mouth and drink plenty of water.
Contact a doctor in the event of any ongoing problems.
Notes for doctor
The following symptoms may occur:
Headache, dazed state, dizziness, loss of consciousness, nausea.

5 Fire control measures

Fire class B: liquid or melting materials, suitable extinguishing agents.
CO2, dry powder or water spray jet.
Fight larger fires with a water spray jet or alcohol-resistant foam.
Special hazard from the material, its combustion products, or resulting gases.
Poisonous gases may form when heated or as a result of fire (e.g. carbon monoxide).
Special protective equipment:
Self-contained respiratory protection equipment Wear full-coverage protective suit

6 What to do in case of unintentional release

Personal precautionary measures
Use respiratory protection and wear protective equipment. Keep unprotected people away.
Environmental protective measures
Prevent entry into sewage and the ground. Inform responsible authorities if larger volumes enter a body of water or sewage system.
Cleaning/absorption process
Absorb with liquid-binding material (sand, gravel, acid-binding agents, universal binding agents, sawdust).
Dispose of contaminated material as waste according to Point 13. Provide adequate ventilation.

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7 Handling and storage

Safe handling notices
Keep container tightly closed
Provide good ventilation/extraction at work area. Avoid aerosol formation.
Fire and explosion protection notices
Keep away form sources of ignition – do not smoke.
Take measures against electrostatic charges.
Storage conditions
Storage temperature: Room temperature, do not store above 25 °C.
Shield from heat and direct sunlight.
Requirements for storage areas and containers
Always store in containers that are equal to the original containers. Store in a cool location.
Storage alongside other materials
Do not store together with acids. Store separate from oxidising agents.
VCI storage class: 3A
Specific use
Industrial antifreeze

8 Exposure limitation and personal safety equipment

Additional notices for the design of technical systems:
Whenever possible, work in a closed system with extraction. When openly handling larger volumes or during the formation of aerosols, work only with local extraction and potentially use respiratory protection.

Occupational Exposure Limit (OEL) Germany
ETHANOL; EC No.: 200-578-6; CAS No.: 64-17-5
Specification: TRGS 900 – Occupational Exposure Limit (D) (version from 7/2/2013)
Value: 500 ppm / 1000 mg/m3
Peak limit: 2 – max. twice OEL- exceed 4 times per shift for 1 h
Teratogenic: Y substances, with which there is no reason to fear teratogenic risks when the OEL and biological tolerance value (BTV) are maintained.
2-methyl-1-propanol (ISOBUTANOL); EC No.: 201-148-0; CAS No.: 78-83-1
Specification: TRGS 900 – Occupational Exposure Limit (D) (version from 7/2/2013)
Value: 100 ml / 310 mg/m3
Peak limit: 1-max. single OEL exceed time 15 min., 4 times per shift, 1 h interval teratogenic: C substances, with which there is no reason to fear teratogenic risks when the OEL and biological tolerance value (BTV) are maintained.
Personal protective equipment
General protective and hygienic measures
Immediately remove contaminated clothing Wash hands before breaks and upon conclusion of work
Do not inhale gases and vapours/aerosols. Avoid contact with eyes and skin.
Do not eat or drink while working.
Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Filter A
Hand protection:
Wear hand protection according to DIN EN 374 (consult with glove manufacturer). If wearing gloves is not possible for safety reasons (e.g. when working with rotating machines): Use protective hand cream. Consult with works doctor for proper hand cream.
Note: Contrary to notification 220 and REACH-V, specification of glove material is not adequate. Breakthrough times depend not only on the glove material, but also on the manufacturing process. For this reason, it is important to consult with the glove manufacturer.
Gloves made from polychloroprene - CR (0.5 mm), nitrile rubber/nitrile latex - NBR (0.35 mm), butyl rubber - butyl (0.5 mm) or fluoro rubber - FKM (0.4 mm) are most likely to be suitable. The following glove materials are not suitable due to degradation, strong swelling, or short breakthrough times: natural rubber/natural latex - NR, polyvinyl chloride - PVC
Eye protection:
Use sealing protective glasses according to EN 166:2001

Personal protection:
Solvent-resistant protective clothing

9 Physical and chemical properties

Appearance

Physical state:	liquid
Colour:	colourless
Odour:	smells of alcohol

Safety information
Explosion hazard:
The product is not explosive but may form explosive vapours.

Lower explosion limit:	3.9 Vol % (ethanol)
Upper explosion limit:	20.5 Vol % (ethanol)
Vapour pressure:	Not given
Density: (20 °C)	0.960 g/cm³
Solubility in water:	Completely soluble
pH value:	Not given
Boiling point:	Approx. 80 °C
Flash point:	Approx. 28 °C
Ignition temperature:	Approx. 425 °C

Other information

Conductivity	< 25 µS
Melting point/melting point range	approx. -20 °C

No other physical and chemical data determined.

10 Stability and reactivity

Conditions to avoid
Contact with open flame, contact with hot surfaces, formation of concentrations at explosion limits.
Materials to avoid
Aluminium, acid chlorides, strong oxidants and reductive agents, alkali metals, alkaline earth metals, peroxides
Hazardous decomposition products
Carbon monoxide and carbon dioxide during thermal decomposition
No decomposition when used as intended.

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11 Information on toxicology

Product information:
Toxicological experiences with people: *see Ch. 2.3*
Acute toxicity:
There is no animal experimentation data for this product. According to animal experimentation data of the ingredients: LD_{50} (rat, oral): > 14 g/kg

Information on the ingredients:
Pure ethanol:
Primary absorption paths Occupational exposure largely through the respiratory tract, but also minor exposure through the skin. Ethanol is essentially 100% resorbed in the gastrointestinal tract.

Metabolism and expulsion:
Resorbed ethanol is distributed throughout the body primarily in aqueous compartments. It penetrates the blood-brain barrier and the placenta. More than 90% of the resorbed dose is metabolised in the liver, the rest is expelled unchanged through the kidneys or exhaled.

Acute toxicity:
Toxic effects: see Ch. 2.3
Animal experimentation data with single exposure:
LD_{50} (oral, rat): > 7060 mg/kg [GESTIS]
LC_{50} (inhalative, rat): 95.6 mg/l [RTECS]
Chronic toxicity:
With repetitive contact liquid ethanol has a degreasing effect on the skin and can cause irritative inflammations. The dependency effect of ethanol (alcohol) is common knowledge.
a) Sensitization:
There is no indication of sensitization. Test by Magnusson and Kligman: negative
b) Carcinogenicity:
Long-term consumption of ethanol in the form of alcoholic beverages can cause tumours in the mouth and throat area, larynx, feed pipe, liver, and presumably also in the mammary gland and in the intestine. In an occupational setting, the cancer risk contribution is considered negligible.
c) Mutagenicity:
Mutagenic effects of ethanol have been clearly documented in animal experiments, whereby dosages are clearly within the toxic range. In an occupational setting, the mutagenic potential is considered negligible.
d) Reproductive toxicity:
There is no reason to fear a risk of reproductive harm when the OEL/BAT value is maintained. A reproductively harmful effect (foetal alcohol syndrome) is clearly documented after oral absorption of high doses. However, the concentration of ethanol in maternal blood at which these effects appear are at a magnitude that is not reached during inhalative exposure in an occupationally relevant concentration range.

Pure 2-Methyl-1-propanol:
Main paths of absorption: The primary absorption path for 2-methyl-1-propanol is through the respiratory tract but 2-methyl-1-propanol may also be absorbed through the skin in a non-negligible way. Absorption through the digestive tract is rapid and nearly 100%.
Metabolism and expulsion: Resorbed methyl-1-propanol is oxidized in the body - probably faster than ethanol - to isobutyric acid via isobutyraldehyde and then goes into the tricarbonic acid cycle and is further decomposed partially to CO2.

Acute toxicity: During occupational handling, medium to strong eye irritation is observed. The skin irritant effect is minor. Exposure to vapours may cause irritation of the eyes, nose, throat, as well as CNS disturbances that may manifest themselves as headaches, dizziness, drowsiness, etc. However, these effects are expected only at concentrations above 100 ppm.

Toxicological animal experimentation data with single exposure:
LD_{50} (oral, rat): 2460 mg/kg [GESTIS],
LC_{50} (inhalative, rat): 24 mg 7 l / 4h [Merck]
LD_{50} (dermal, rabbits): 3400 mg/kg [GESTIS]

Chronic toxicity: Repetitive contact with liquid may lead to defatting of the skin and resulting inflammation.

Sensitization There is no indication of sensitization.
Carcinogenicity: There is no indication of carcinogenicity.
Mutagenicity: Sufficient information is not available (microbiological tests have had negative or questionable results).
Reproductive toxicity: There is no reason to fear a risk of reproductive harm when the OEL/BAT value is maintained.

Other information: None

12 Data on eco-toxicity

The product is weakly hazardous to waters (German Water Hazard Class (WGK) 1) No additional data is available for this product.
The following data is for the pure ingredient:

Pure ethanol:
Eco-toxic effects: Biologically easily decomposed. Bioaccumulation is not expected. Rapid abiotic decomposition in the air. Harmful effect on water organisms (as on people) at high concentrations. No disturbances in clarification plants are expected when handled properly. See also Ch. 2.3

Eco-toxicity data:

Fish toxicity:	
Fishes:	42 - 14200 mg/ l / 96h; average value: 11000 mg/ l / 96h [GESTIS]
Leuciscus idus:	LC50: 8140 mg/l / 48 h [Merck]
Crustaceans:	LC50: 1030 - 1190 mg/ l / 48h; average value: 1110 mg / l / 48h [GESTIS]
Daphnia toxicity:	Daphnia: EC0: 7800 mg/l [Merck]
Daphnia magna:	EC50: 9268 - 14221 mg/l / 48 h [Merck]
Bacteria toxicity:	Pseudomonas putida:EC5: 6500 mg/l / 16 h [Merck]
Algae toxicity:	Scenedesmus quadricauda: IC5: 5000 mg/l / 7 d [Merck]
Protozoa:	Entosiphon sulcatum: EC5: 65 mg/l / 72 h [Merck]

Additional data (all [Merck]):

BSB5:	0.93 - 1.67 g/g
CSB:	1.99 g/g
ThSB:	2.10 g/g
Biological degradability:	94%: easily biologically degradable (OECD test guidelines 301E)
Distribution log P(o/w):	-0.32 (bioaccumulation is not expected)

German Water Hazard Class: 1 (weakly hazardous to water) German Regulatory Framework for substances hazardous to water (*VwVwS*) Exhibit 1, No. 96

Result of PBT evaluation
Not classified as PBT or vPvB

Pure 2-Methyl-1-propanol:
Eco-toxic effects: biologically easily degradable. Bioaccumulation is not expected. Harmful effect on water organisms at high concentrations. No disturbances in clarification plants are expected when handled properly.

Eco-toxicity data:

Fish toxicity:	
Fishes:	1330 - 2030 mg/ l / 96h; average value: 1510 mg/ l / 96h [GESTIS]
Pimephalis promelas:	LC50: 1430 mg/ l / 96 h [Merck]
Crustaceans:	LC50: 3720 - 20700 mg/ l / 48h; average value: 9280 mg / l / 48h [GESTIS]
Daphnia toxicity:	Daphnia magna: EC50: 1439 mg/l / 48h[Merck]

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Bacteria toxicity:	Photobakterium phosporeum: EC50: 1225 mg/l / 15 min (Microtox test) [Merck]
Algae toxicity:	Desmodesmus subspicatus: IC50: 1250 mg/l / 48h Merck]
Protozoa:	Entosiphon sulcatum: IC5: 295 mg/l / 72 h [Merck]

Additional data (all [Merck]):

BOD:	64% of ThSB / 5d
COD:	100% of ThSB
ThSB:	2060 g/g
Biological degradability:	99% / 14d: easily biodegradable (modified OECD screening test)
Distribution log P(o/w):	0.79 (25°C, experimental) (bioaccumulation is not expected)

German Water Hazard Class: 1 (weakly hazardous to water) German Regulatory Framework for substances hazardous to water (*VwVwS*) Exhibit 2, No. 131

13 Disposal instructions

Product:
Dispose in observance of official regulations.
Before disposal through combustion, the product should be purified for reuse whenever possible.
It is recommended to discuss the exact disposal code with the disposer.
Disposal code according to German Waste Index Ordinance (*AVV*)
14 06 03*
Disposal name: other solvents and solvent mixtures:
Waste soaked with the product (e.g. absorption materials): Disposal code: 15 02 03
Waste name: Absorption and filter materials, wiping cloths, and protective clothing with the exception of those that fall under 15 02 02*
(disposal code and designations according to *AVV*)
Cleaned or completely emptied packaging
Uncontaminated or cleaned packaging may be submitted for disposal.
Recommended cleaning agent: Water
a) Plastic packaging Disposal code: 15 01 02 waste designation:
Plastic packaging
b) Metal packaging Disposal code: 15 01 04
Waste designation: Metal packaging (disposal code and designations according to *AVV*).

14 Information on transport

Inland transport ADR/RID
Classification

Class:	3	**Hazard number:**	30
UN number:	1170	**Classification code:**	F1

Product designation
Ethanol (ethyl alcohol), SOLUTION
Hazard inducer
ETHANOL
Tunnel limitations: D/E packaging

Packaging group:	III
Hazard label:	3

Remarks:
none

Sea shipment IMDG / GGVSee
Classification

IMDG code:	3	**EmS:**	F-E, S-D
UN number:	1170	**Marine pollutant:**	no

Product designation
Ethanol (ethyl alcohol), SOLUTION
Hazard inducer
ETHANOL
Packaging

Packaging group:	III
Hazard label:	3

Remarks:
none

Air transport ICAO- TI and IATA- DGR
Classification

Class:	3
UN number:	1170

Product designation
Ethanol (ethyl alcohol), SOLUTION
Hazard inducer
ETHANOL
Packaging

Packaging group:	III
Hazard label:	3

Remarks:
none

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15 Legal regulations

Applicable legislation for this substance or blend
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending Regulation (EC) No 1907/2006
Commission Regulation (EU) No 453/2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Act No. 258/2000 Coll., on protection of public health, amended by later Acts
Government Regulation No. 361/2007 Coll. setting out the conditions for occupational health. No. 356/2003 Coll. regulating chemical substances and preparations, amended by later Acts.
Safety evaluation
No safety evaluation for the substances in this preparation have been carried out.
National regulations in Germany
Water hazard class
Class (German *WGK*): 1 slightly hazardous to water (self-assessment)
TA-Luft (German Emission Control Act)
Fig. 5.2.5: Organic substances, with the exception of dusty substances:
max. mass concentration: 50 mg/m3 or max. mass flow:
0.50 kg/h (calculated as total carbon)
Statutory order on hazardous incidents (12. BImSchV)
Exhibit I - No. 7b: Volume threshold: Sentence 1: 5,000,000 kg
Sentence 2: 50,000,000 kg
Statutory order on solvents (31. BImSchV)
VOC percentage <36.5%

Other regulations, limitations, and prohibitory ordinances:
Employment limitations according to the German Youth Labour Law (*JArbSchG*) (94/33/EC).
BG chemical information sheet BGI 621: Solvent
Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
US Toxic Substances Control Act
All components of this product are listed on the TSCA Inventory, exempted from listing according to 40 CFR 720.30 or comply with the PMN Polymer Exemption 40 CFR 723 250.
European Inventory of Existing Commercial Chemical Substances (EINECS)
All components of this product are either listed on the European Inventory of Existing Commercial Chemical Substances or exempted from listing.

16 Other information

Abbreviations:
AVV: European Waste Directory Ordinance
BOD: Biological Oxygen Demand
CAS no.: Number from the Chemical Abstract System
COD: Chemical Oxygen Demand
EINECS: European Inventory of Existing Commercial Substances
GESTIS: Substance database of the Institute for Occupational Safety and Health of the Germa Social Accident Insurance (IFA)

LC50: Lethal concentration for 50% of laboratory animals
LD50: Lethal dose for 50% of laboratory animals
TLV: Threshold Limit Value
Merck: Current safety data sheet from Merck, Darmstadt
OECD: Organisation for Economic Cooperation and Development
RTECS: Register of Toxic Effects of Chemical Substances
TA-Luft: Technical instructions for maintaining air purity

ThOD: Theoretical Oxygen Demand
TRHS: Technical Rules for Hazardous Substances VCI: Verband der Chemischen Industrie e.V.
VOC: Volatile Organic Carbons VwVwS: Regulatory Framework for substances hazardous to water WHG: Water Management Act

List of H phrases (complete text) stated in section 2 of this Material Safety Data Sheet
The complete text of the H phrases is given in sections 2 and 3.
List of R phrases (complete text) stated in section 2 of this Material Safety Data Sheet
The complete text of the R phrases is given in sections 2 and 3.
Data sheet issued by:
QM Dept. (Telephone +49 (0) 2680 / 1810

The information provided in this safety data sheet relates only to the named product and has been prepared to the best of our knowledge and experience, and is not necessarily exhaustive. It does not provide assurance of the properties of the described product. In the event of appearance of unanticipated effects or properties of this product, the safety data sheet is not a replacement for consultation with trained technical experts. The user is responsible for handling according to existing laws. They do not provide assurance of the properties of the described product. In the event of appearance of unanticipated effects or properties of this product, the safety data sheet is not a replacement for consultation with trained technical experts.

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