Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 03.11.2014 Version number 3 Revision: 03.11.2014

* **SECTION 1: Identification of the substance/mixture and of the company/undertaking**

· **1.1 Product identifier**
· Trade name: **Hardener B-Liquid**

· Article number: 30423
· **1.2 Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.
· Application of the substance / the mixture Hardening agent/ Curing agent

· **1.3 Details of the supplier of the safety data sheet**
· Manufacturer/Supplier: AKEMI chemisch technische Spezialfabrik GmbH
Lechstrasse 28
D 90451 Nürnberg
Tel. +49(0)911-642960
Fax. +49(0)911-644456
e-mail info@akemi.de

· Further information obtainable from: Laboratory
· **1.4 Emergency telephone number:** Product Safety Department AKEMI chemisch technische Spezialfabrik GmbH
Tel. +49(0)911-64296-59
Reachable during the following office hours:
Monday – Thursday from 07:30 a.m. to 16:30 p.m.
Friday from 07:30 a.m. to 13:30 p.m.

* **SECTION 2: Hazards identification**

· **2.1 Classification of the substance or mixture**
· Classification according to Regulation (EC) No 1272/2008


GHS02 flame

Org. Perox. CD H242 Heating may cause a fire.


GHS03 flame over circle

Ox. Liq. 1 H271 May cause fire or explosion; strong oxidiser.


GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.


GHS07

Acute Tox. 4 H302 Harmful if swallowed.

· Classification according to Directive 67/548/EEC or Directive 1999/45/EC


C; Corrosive

R34: Causes burns.


Xn; Harmful

R22: Harmful if swallowed.


O; Oxidising

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R7: May cause fire.

· Information concerning particular hazards for human and environment: The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

· Classification system: The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

· **2.2 Label elements**

· Labelling according to Regulation (EC) No 1272/2008 The product is classified and labelled according to the CLP regulation.

· Hazard pictograms

GHS02 GHS03 GHS05 GHS07

· Signal word Danger

· Hazard-determining components of labelling:
2-Butanone, peroxide
hydrogen peroxide solution

· Hazard statements
H271 May cause fire or explosion; strong oxidiser.
H242 Heating may cause a fire.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

· Precautionary statements

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read label before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220	Keep away from reducing agents, heavy metal compounds, acids and alkalis.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P405	Store locked up.
P410	Protect from sunlight.
P411+P235	Store at temperatures not exceeding 30°C. Keep cool.
P420	Store away from reducing agents.
P501	Dispose of contents/container in accordance with local/ regional/national/international regulations.

· **2.3 Other hazards**

· Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

* **SECTION 3: Composition/information on ingredients**

· **3.2 Chemical characterization: Mixtures**

· Description: Mixture of substances listed below with nonhazardous additions.

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· Dangerous components:

CAS: 1338-23-4 EINECS: 215-661-2	2-Butanone, peroxide C R34; Xn R22; E R2; O R7 Self-react. B, H241; Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox. 4, H332	25-50%
CAS: 7722-84-1 EINECS: 231-765-0 Index number: 008-003-00-9 Reg.nr.: 01-2119485845-22	hydrogen peroxide solution C R35; Xn R20/22; O R8 R5 Ox. Liq. 1, H271; Skin Corr. 1A, H314; Acute Tox. 4, H302; Acute Tox. 4, H332	<12.5%
CAS: 78-93-3 EINECS: 201-159-0 Index number: 606-002-00-3 Reg.nr.: 02-2119752535-35-0000 01-2119457290-43	butanone Xi R36; F R11 R66-67 Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336	1-5%

· Additional information: For the wording of the listed risk phrases refer to section 16.

SECTION 4: First aid measures

· **4.1 Description of first aid measures**

· General information: Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

· After inhalation: Take affected persons into fresh air and keep quiet.
In case of unconsciousness place patient stably in side position for transportation.

· After skin contact: Immediately wash with water and soap and rinse thoroughly.
Immediately rinse with water.

· After eye contact: Call a doctor immediately.
Rinse opened eye for several minutes under running water. Then consult a doctor.

· After swallowing: Rinse out mouth and then drink plenty of water.
Call for a doctor immediately.
Drink plenty of water and provide fresh air. Call for a doctor immediately.

· **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.

· **4.3 Indication of any immediate medical attention and special treatment needed** No further relevant information available.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**

· Suitable extinguishing agents: CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· **5.2 Special hazards arising from the substance or mixture** Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
Carbon monoxide (CO)

· **5.3 Advice for firefighters**

· Protective equipment: Wear self-contained respiratory protective device.

· Additional information Cool endangered receptacles with water spray.

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SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Keep away from ignition sources.
Wear protective equipment. Keep unprotected persons away.

· **6.2 Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.

· **6.3 Methods and material for containment and cleaning up:**
Send for recovery or disposal in suitable receptacles.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

*
SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Keep receptacles tightly sealed.
Store in cool, dry place in tightly closed receptacles.
Open and handle receptacle with care.
Prevent formation of aerosols.
Keep away from heat and direct sunlight.
Do not refill residue into storage receptacles.
Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.
Ensure good ventilation/exhaustion at the workplace.
Restrict the quantity stored at the work place.

· Information about fire - and explosion protection:
Protect from heat.
Protect against electrostatic charges.
Prevent impact and friction.
Use explosion-proof apparatus / fittings and spark-proof tools.
Fumes can combine with air to form an explosive mixture.
Wear shoes with conductive soles.
Keep ignition sources away - Do not smoke.

· **7.2 Conditions for safe storage, including any incompatibilities**
· Storage:
· Requirements to be met by storerooms and receptacles:
Store only in the original receptacle.
Store in a cool location.
Prevent any seepage into the ground.

· Information about storage in one common storage facility:
Store away from reducing agents.
Do not store together with reducing agents, heavy-metal compounds, acids and alkalis.

· Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
Protect from heat and direct sunlight.
Protect from contamination.

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· Storage class: 5.2
· **7.3 Specific end use(s)** No further relevant information available.

* **SECTION 8: Exposure controls/personal protection**

· Additional information about design of technical facilities: No further data; see item 7.

· **8.1 Control parameters**

· Ingredients with limit values that require monitoring at the workplace:

1338-23-4 2-Butanone, peroxide	
WEL	Short-term value: 1.5 mg/m³, 0.2 ppm
7722-84-1 hydrogen peroxide solution	
WEL	Short-term value: 2.8 mg/m³, 2 ppm Long-term value: 1.4 mg/m³, 1 ppm
78-93-3 butanone	
WEL	Short-term value: 899 mg/m³, 300 ppm Long-term value: 600 mg/m³, 200 ppm Sk, BMGV

· DNELs

7722-84-1 hydrogen peroxide solution		
Inhalative	DNEL (Kurzzeit-akut)	3 mg/m³ Air (ARB)
		1.93 mg/m³ Air (BEV)
	DNEL (Langzeit-wiederholt)	1.4 mg/m³ Air (ARB)
		0.21 mg/m³ Air (BEV)

· PNECs

7722-84-1 hydrogen peroxide solution	
PNEC (fest)	0.0023 mg/kg Trockengew (BO)
	0.047 mg/kg Trockengew (MWS)
	0.047 mg/kg Trockengew (SWS)
PNEC (wässrig)	0.0126 mg/l (SW)
	4.66 mg/l (WAS)

· Ingredients with biological limit values:

78-93-3 butanone	
BMGV	70 µmol/L Medium: urine Sampling time: post shift Parameter: butan-2-one

· Additional information: The lists valid during the making were used as basis.

· **8.2 Exposure controls**
· Personal protective equipment:
· General protective and hygienic measures:
Do not eat, drink, smoke or sniff while working.
Use skin protection cream for skin protection.
Clean skin thoroughly immediately after handling the product.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.

· Respiratory protection: In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

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· Protection of hands: Preventive skin protection by use of skin-protecting agents is recommended.
After use of gloves apply skin-cleaning agents and skin cosmetics.
The protection gloves to be used have to comply with the specifications of the directive 89/686/EC and the directive derived decree EN374, respectively, e.g. the above listed protection glove type. The mentioned permeation times´ data were generated and verified with material samples of the recommended protection glove type in the scope of laboratory anylyses of the company KCL GmbH in compliance with EN374.
This recommendation refers exclusively to the material safety data sheet referenced product delivered by Akemi and the indicated field of application. In case of product dilution or in case of mixture with different substances or chemicals, and in condition of EN374 deviation the producer of CE-approved protection gloves must be contacted for detailed information (e.g., KCL GmbH, Germany, 36124 Eichenzell, internet: http://www.kcl.de).

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· Material of gloves
Butyl rubber, BR
Nitrile rubber, NBR
Chloroprene rubber, CR
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· Penetration time of glove material
Value for the permeation: Level ≤ 6, 480 min
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· For the permanent contact gloves made of the following materials are suitable:
Butyl rubber, BR
Butoject (KCL, Art No. 897, 898)
Nitrile rubber, NBR
Dermatril (Art No. 740, 741, 742)
Camatril (KCL, Art No. 730, 731, 732, 733)
Chloroprene rubber, CR
Camapren (KCL, Art No. 720, 722, 726)

· As protection from splashes gloves made of the following materials are suitable:
Nitrile rubber, NBR
Dermatril (KCL, Art No. 740, 741, 742)
Camatril (KCL, 730, 731, 732, 733)
Chloroprene rubber, CR
Camapren (KCL, Art No. 720, 722, 726)

· Not suitable are gloves made of the following materials:
Natural rubber, NR
Leather gloves
Strong material gloves

· Eye protection:

Tightly sealed goggles

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· Body protection: Protective work clothing

* **SECTION 9: Physical and chemical properties**

· **9.1 Information on basic physical and chemical properties**	
· General Information	
· Appearance:	
Form:	Fluid
Colour:	Colourless
· Odour:	Characteristic
· pH-value:	Not applicable
· Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	81 °C
· Flash point:	Not applicable.
· Ignition temperature:	555 °C
· Decomposition temperature:	> +60 °C (SADT)
· Self-igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Vapour pressure at 20 °C:	1.9 hPa
· Density at 20 °C:	1.12 g/cm³
· Solubility in / Miscibility with water:	Not miscible or difficult to mix.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	2.5 %
Solids content:	2.6 %
· **9.2 Other information**	No further relevant information available.

* **SECTION 10: Stability and reactivity**

· **10.1 Reactivity**
· **10.2 Chemical stability**
· Thermal decomposition / conditions to be avoided: Rapid decomposition by heating (e. g. direct sunlight or heater).

· **10.3 Possibility of hazardous reactions** Self accelerating decomposition above > + 60 °C.
Reacts with reducing agents.
Reacts with heavy metals.
Reacts with amines.
Reacts with acids, alkalis and oxidizing agents.

· **10.4 Conditions to avoid** No further relevant information available.

· **10.5 Incompatible materials:** Rapid decomposition by dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).

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· **10.6 Hazardous decomposition products:** Hydrocarbons, carbondioxide and -monoxid.

* **SECTION 11: Toxicological information**

· **11.1 Information on toxicological effects**
· Acute toxicity:

· LD/LC50 values relevant for classification:		
1338-23-4 2-Butanone, peroxide		
Oral	LD50	1017 mg/kg (rat)
Dermal	LD50	4000 mg/kg (rat)
Inhalative	LC50/4 h	17 mg/l (rat)
7722-84-1 hydrogen peroxide solution		
Oral	LD50	841 mg/kg (rat)
Dermal	LD50	6500 mg/kg (cuniculosus)
Inhalative	LC50/4 h	2000 mg/l (rat)
	LC50/48h	2.4 mg/l (daphnia magna)

· Primary irritant effect:
· on the skin: Caustic effect on skin and mucous membranes.
· on the eye: Strong caustic effect.
· Sensitization: No sensitizing effects known.
· Additional toxicological information:

The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
Harmful
Corrosive
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

* **SECTION 12: Ecological information**

· **12.1 Toxicity**

· Aquatic toxicity:	
1338-23-4 2-Butanone, peroxide	
EC50	48 mg/l (BES)
LC50/96h	44.2 mg/l (poecilia reticulata)
7722-84-1 hydrogen peroxide solution	
EC50/72h	3.7 mg/l (green alge)
EC50/96h	160 mg/l (green alge)
LC50/96h	16.4 mg/l (pimephales promelas)
NOEC	1 mg/kg (daphnia magna)

· **12.2 Persistence and degradability** No further relevant information available.
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil** No further relevant information available.
· Additional ecological information:
· General notes: Do not allow product to reach ground water, water course or sewage system.
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
· **12.5 Results of PBT and vPvB assessment**
· PBT: Not applicable.
· vPvB: Not applicable.

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· **12.6 Other adverse effects** No further relevant information available.

* **SECTION 13: Disposal considerations**

· **13.1 Waste treatment methods**
· Recommendation Must be specially treated adhering to official regulations.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· European waste catalogue	
16 00 00	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 09 00	oxidising substances
16 09 03*	peroxides, for example hydrogen peroxide

· Uncleaned packaging:
· Recommendation: Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

* **SECTION 14: Transport information**

· **14.1 UN-Number**
· ADR, IMDG, IATA UN3105

· **14.2 UN proper shipping name**
· ADR 3105 ORGANIC PEROXIDE TYPE D, LIQUID (Methylethylketoneperoxide)
· IMDG, IATA ORGANIC PEROXIDE TYPE D, LIQUID (Methylethylketoneperoxide)

· **14.3 Transport hazard class(es)**

· ADR

· Class 5.2 (P1) Organic peroxides.
· Label 5.2

· IMDG, IATA

· Class 5.2 Organic peroxides.
· Label 5.2

· **14.4 Packing group**
· ADR, IMDG, IATA Void

· **14.5 Environmental hazards:**
· Marine pollutant: No

· **14.6 Special precautions for user** Warning: Organic peroxides.
· Danger code (Kemler): -
· EMS Number: F-J,S-R

· **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

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· Transport/Additional information:

· ADR
· Limited quantities (LQ) 125 ml
· Excepted quantities (EQ) Code: E0
Not permitted as Excepted Quantity
· Transport category 2
· Tunnel restriction code D

· IMDG
· Limited quantities (LQ) 125 ml
· Excepted quantities (EQ) Code: E0
Not permitted as Excepted Quantity

· UN "Model Regulation": UN3105, ORGANIC PEROXIDE TYPE D, LIQUID (Methylethylketoneperoxide), 5.2

*
SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

· National regulations:

· Information about limitation of use: Employment restrictions concerning juveniles must be observed.
Employment restrictions concerning pregnant and lactating women must be observed.

· Waterhazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.
· VOC EU 28.0 g/l
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

*
SECTION 16: Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases
H225 Highly flammable liquid and vapour.
H241 Heating may cause a fire or explosion.
H271 May cause fire or explosion; strong oxidiser.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H336 May cause drowsiness or dizziness.

R11 Highly flammable.
R2 Risk of explosion by shock, friction, fire or other sources of ignition.
R20/22 Harmful by inhalation and if swallowed.
R22 Harmful if swallowed.
R34 Causes burns.
R35 Causes severe burns.
R36 Irritating to eyes.
R5 Heating may cause an explosion.
R66 Repeated exposure may cause skin dryness or cracking.
R67 Vapours may cause drowsiness and dizziness.
R7 May cause fire.
R8 Contact with combustible material may cause fire.

· Recommended restriction of use refer to Technical Data Sheet (TDS)

· Department issuing MSDS: Laboratory
· Contact: Dieter Zimmermann

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· Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organization
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Flam. Liq. 2: Flammable liquids, Hazard Category 2
Self-react. B: Self-Reactive Substances and Mixtures, Type B
Ox. Liq. 1: Oxidising Liquids, Hazard Category 1
Org. Perox. CD: Organic Peroxides, Types C, D
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

· * Data compared to the previous version altered.

Adaptation in accordance with REACH directive 1907/2006/EC