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

1.1 Product identifier

Trade name: Remover AR 600-70
REACH registration No.: 01-2119471330-49-XXXX

CAS-Number: 67-64-1
EC-number: 200-662-2
EU index number: 606-001-00-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

General use: Solvent, intermediate for electronic industry
For industrial purposes only

1.3 Details of the supplier of the safety data sheet

Company name: Allresist
Gesellschaft für chemische Produkte zur Mikrostrukturierung mbH
Street/POB-No.: Am Biotop 14
Postal Code, city: 15344 Strausberg
Germany
WWW: www.allresist.de
E-mail: info@allresist.de
Telephone: +49 (0)33 41-35 93-0
Telefax: +49 (0)33 41-35 93-29
Dept. responsible for information:
Frau Feldt, Email: doerte.feldt@allresist.de

1.4 Emergency telephone number

Telephone: +49 (0)33 41-35 93-0
Only available during office hours.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to EC regulation 1272/2008 (CLP)

Flam. Liq. 2; H225 Highly flammable liquid and vapour.
Eye Irrit. 2; H319 Causes serious eye irritation.
STOT SE 3; H336 May cause drowsiness or dizziness.
(EUH066) Repeated exposure may cause skin dryness or cracking.

2.2 Label elements

Labelling (CLP)

Signal word: **Danger**

Hazard statements:
H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
EUH066 Repeated exposure may cause skin dryness or cracking.

Precautionary statements:	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P261	Avoid breathing vapours/spray.
	P280	Wear protective gloves/protective clothing/eye protection.
	P312	Call a POISON CENTER/doctor if you feel unwell.
	P370+P378	In case of fire: Use water spray, dry powder, foam or carbon dioxide for extinction.
	P403+P233	Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards

Potentially explosive mixtures may form if adequate ventilation is not provided.
Inhaling can lead to irritations of the respiratory tract and mucous membrane.
Higher doses may lead to a narcotic effect.
Special danger of slipping by leaking/spilling product.

Results of PBT and vPvB assessment:

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

SECTION 3: Composition / information on ingredients

3.1 Substances

Chemical characterisation: C3 H6 O = H3C-CO-CH3
Acetone, Dimethyl ketone, 2-Propanone, Methyl ketone

CAS-Number: 67-64-1
EC-number: 200-662-2
EU index number: 606-001-00-8
RTECS-Number: AL3150000

SECTION 4: First aid measures

4.1 Description of first aid measures

General information: If medical advice is needed, have product container or label at hand. First aider: Pay attention to self-protection!

In case of inhalation: Move victim to fresh air, put at rest and loosen restrictive clothing.
If breathing becomes irregular or ceases, apply rescue breathing or artificial respiration immediately, where required supply oxygen. Immediately get medical attention.

Following skin contact: After contact with skin, wash immediately with soap and plenty of water. Take off immediately all contaminated clothing and wash it before reuse. In case of skin reactions, consult a physician.

After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Subsequently consult an ophthalmologist.

After swallowing: Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting. Immediately get medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Causes serious eye irritation. May cause drowsiness or dizziness. Inhaling can lead to irritations of the respiratory tract and mucous membrane.
Higher doses may lead to a narcotic effect.

4.3 Indication of any immediate medical attention and special treatment needed

Combat acidosis. Monitor alkali reserves. Monitor breathing.
If breathing becomes irregular or ceases, apply rescue breathing or artificial respiration immediately, where required supply oxygen.
Attention: several hours latency period. In severe cases, pneumonia or a pulmonary edema may develop.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Water spray jet, extinguishing powder, foam, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

Full water jet

5.2 Special hazards arising from the substance or mixture

Highly flammable liquid and vapour. With air, vapours form potentially explosive mixtures, which are heavier than air. Vapours may proceed on the ground over great distances and cause fire and backflashes.
In case of fire may be liberated: carbon monoxide and carbon dioxide.

5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear self-contained positive pressure breathing apparatus and full firefighting protective clothing.

Additional information:

Hazchem-Code: •2YE

Heating will lead to pressure increase: Danger of bursting and explosion. Use fine water spray to cool endangered containers.
Keep containers cool with water spray.
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Do not allow fire water to penetrate into surface or ground water.
Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.
Fire class: B

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so. Keep unprotected people away. Do not breathe vapour/aerosol. Avoid contact with the substance. If possible, eliminate leakage. Provide adequate ventilation. Wear appropriate protective equipment. Cordon off downwind area at risk and warn inhabitants. Take off immediately all contaminated clothing and wash it before reuse.

6.2 Environmental precautions

Do not allow to enter into ground-water, surface water or drains. Danger of explosion! In case of release, notify competent authorities.

6.3 Methods and material for containment and cleaning up

Isolate leaked material using non-flammable absorption agent (e.g. sand, earth, vermiculit, diatomaceous earth) and collect it for disposal in appropriate containers in accordance with the local regulations (see section 13).
Beware of reignition. Thoroughly clean surrounding area.
In case of greater quantities: Collect mechanically (use only explosion-proof equipment when pumping out).
Never return spills in original containers for re-use.

Flowing water: Dilution occurs quickly. In case of large spills/leaks inform appropriate local, state, and federal spill reporting authorities.
Standing water: Seal off. Remove all sources of ignition.

Additional information: Use explosion-proof equipment and non-sparking tools/utensils.

Special danger of slipping by leaking/spilling product.

6.4 Reference to other sections

Refer additionally to section 8 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed. Do not breathe vapour/aerosol. Avoid contact with skin and eyes. Wear appropriate protective equipment. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Take off immediately all contaminated clothing and wash it before reuse. Guarantee sufficient ventilation during and after use, in order to prevent vapour accumulation.
Work place should be equipped with a shower and an eye rinsing apparatus.

Precautions against fire and explosion:
Exposure to temperatures exceeding 50 °C will increase pressure: resulting in danger of bursting or explosion.
Keep away from sources of ignition - No smoking.
Take precautionary measures against static discharges. Beware of reignition.
Potentially explosive mixture may form within partially empty containers.
Emergency cooling must be provided for in case of a fire in the vicinity.
Do not weld.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:
Keep only in original container. Keep container dry. Keep container tightly closed in a cool, well-ventilated place. Protect from heat and direct sunlight. Access of air and oxygen (Peroxide formation!)
Storage temperature 10 - 22 °C.

Steel, stainless steel, and aluminium are stable container materials. Copper may be attacked.
Unsuitable container/equipment material: May attack plastics.

Hints on joint storage: Do not store together with combustible or self-igniting materials or any highly flammable solids.
Do not store together with strong oxidizing agents, bases or strong acids.
Avoid contact with alkali and alcaline earth metals.
Keep away from food, drink and animal feedingstuffs.

Further details: Potentially explosive mixture may form within partially empty containers.
For outdoor storage: Use only equipment approved for use in 1 zone.
For indoor storage: Use only equipment approved for use in 2 zone.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values:

Type	Limit value
Europe: IOELV: TWA	1210 mg/m³; 500 ppm
Great Britain: WEL-STEL	3620 mg/m³; 1500 ppm
Great Britain: WEL-TWA	1210 mg/m³; 500 ppm
Ireland: 8 hours	1210 mg/m³; 500 ppm IOELV

DNEL/DMEL:
DNEL Long-term, workers, dermal: 186 mg/kg bw/d.
DNEL Short-term, workers, inhalative: 2,420 mg/m³
DNEL Long-term, workers, inhalative: 1,210 mg/m³
DNEL Long-term, consumers, oral: 62 mg/kg bw/d.
DNEL Long-term, consumers, dermal: 62 mg/kg bw/d.
DNEL Long-term, consumers, inhalative: 200 mg/m³

PNEC:
PNEC water (freshwater): 10.6 mg/L.
PNEC water (marine water): 1.06 mg/L.
PNEC water (intermittent release): 21 mg/L.

PNEC sediment (freshwater): 30.4 mg/kg dwt.
PNEC sediment (marine water): 3.04 mg/kg dwt.

PNEC soil: 33.3 mg/kg dwt.

PNEC sewage treatment plant: 100 mg/L.

8.2 Exposure controls

Provide for good ventilation or exhaust system or work with completely self-contained equipment. Explosion protection required.

Personal protection equipment

Occupational exposure controls

Respiratory protection:
Respiratory protection must be worn whenever the WEL levels have been exceeded.
Use filter type AX (= against vapours of low boiling organic substances) according to EN 14387.
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product.

Hand protection:
Protective gloves according to EN 374.
Glove material: Butyl caoutchouc (butyl rubber) - Layer thickness >= 0.7 mm.
Breakthrough time: > 480 min.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection:
Tightly sealed goggles according to EN 166.

Body protection:
Flame retardant, antistatic and chemical resistant protective clothing.

General protection and hygiene measures:
Keep away from heat sources, sparks and open flames. Avoid contact with skin and eyes. When using do not eat, drink or smoke. Wash hands before breaks and after work. Take off immediately all contaminated clothing and wash it before reuse. Work place should be equipped with a shower and an eye rinsing apparatus.

Environmental exposure controls

Do not allow to enter into ground-water, surface water or drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Physical state at 20 °C and 101.3 kPa: liquid Colour: colourless, clear
Odour:	sweet, aromatic
Odour threshold:	No data available
pH value:	neutral
Melting point/freezing point:	-95 °C
Initial boiling point and boiling range:	55 - 57 °C (1.013 hPa)
Flash point/flash point range:	-19 °C (c.c.)
Evaporation rate:	No data available
Flammability:	Highly flammable liquid and vapour.
Explosion limits:	LEL (Lower Explosion Limit): 2.10 Vol-% UEL (Upper Explosive Limit): 13.00 Vol-%
Vapour pressure:	at 20 °C: 233 hPa at 50 °C: 580 hPa
Vapour density:	2.1
Density:	at 20 °C: 0.790 - 0.792 g/mL
Solubility:	at 20 °C: in organic solvents 100 %
Water solubility:	completely miscible
Partition coefficient: n-octanol/water:	-0.24 log P(o/w) Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.
Auto-ignition temperature:	not self-igniting
Decomposition temperature:	236 °C
Viscosity, dynamic:	at 20 °C: 0.33 mPa*s
Explosive properties:	Product is not explosive. Potentially explosive vapour/air mixtures may form. Explosion category 1; Explosion group II A
Oxidizing characteristics:	No data available

9.2 Other information

Ignition temperature:	540 °C
Refraction index:	at 20 °C: 1.358 - 1.359
Molecular weight	58.09 g/mol
Additional information:	Dissociation constant: pKa = 24.2 at 25°C Evaporation rate: 2.0 (ether = 1) Evaporation rate: 5.6 (n-BuAc = 1) Saturation concentration at 20 °C: 550 g/m³

SECTION 10: Stability and reactivity

10.1 Reactivity

Highly flammable liquid and vapour.
Vapours can form explosive mixtures with air.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Acetone reacts in presence of bases.

10.4 Conditions to avoid

Keep away from heat sources, sparks and open flames.
Protect against direct sunlight.
Access of air and oxygen (Peroxide formation!)

10.5 Incompatible materials

Strong oxidizing agents, strong acids, bases, alkali metals, alkaline earth metals, various plastics.

10.6 Hazardous decomposition products

Peroxides, carbon monoxide and carbon dioxide.

Thermal decomposition: 236 °C

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD50 Rat, oral:	5800 mg/kg bw (OECD 401)
LD50 Rabbit, dermal:	20000 mg/kg bw
LC50 Rat, inhalative:	76 mg/L/4h

Toxicological effects:

Acute toxicity (oral): Based on available data, the classification criteria are not met.

Acute toxicity (dermal): Based on available data, the classification criteria are not met.

Acute toxicity (inhalative): Based on available data, the classification criteria are not met.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.
Specific symptoms in animal studies (Rabbit): slightly irritant (Draize Test)

Serious eye damage/irritation: Eye Irrit. 2; H319 = Causes serious eye irritation.
Specific symptoms in animal studies (Rabbit): irritant (OECD 405)

Sensitisation to the respiratory tract: Based on available data, the classification criteria are not met.

Skin sensitisation: Based on available data, the classification criteria are not met.
Sensitisation: Specific symptoms in animal studies (guinea pig): not sensitising (OECD 406)

Germ cell mutagenicity/Genotoxicity: Based on available data, the classification criteria are not met.
Bacterial mutagenicity: (OECD 471): not a mutagen
Chromosomal aberrations, in-vitro (OECD 473): negative
Gene-mutations mammalian cells, in-vitro (OECD 476): negative
Micronucleus test in-vivo Mouse/hamster (non-Guideline): negative

Carcinogenicity: Based on available data, the classification criteria are not met.
Not carcinogen at long term exposure (Mouse, dermal).

Reproductive toxicity: Based on available data, the classification criteria are not met.
Effects on fertility: No impairment of reproductive performance in animal experiments.
developmental toxicity: None developmental toxicity (inhalation at Rat, Mouse, OECD 414).

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): STOT SE 3; H336 = May cause drowsiness or dizziness. May cause drowsiness or dizziness.

Specific target organ toxicity (repeated exposure): Based on available data, the classification criteria are not met.
NOAEL Rat, oral: 900 mg/kg/90d bw/d
NOAEC Rat, inhalative: 22500 mg/m³/8w

Aspiration hazard: Based on available data, the classification criteria are not met.

Symptoms

Burning eyes and skin. fatigue, nausea, Headache, dizziness, unconsciousness.
In case of inhalation:
For the development of any overt signs of toxicity in humans, accidental exposures to extremely large amounts of acetone by inhalation of vapour or ingestion of liquid are necessary (e. g. several thousand ppm of acetone vapour).
In case of ingestion: Gastric and intestinal problems.
After contact with skin:
Irritant. Repeated exposure may cause skin dryness or cracking, due to defatting properties.

After eye contact: Upon direct contact with eyes may cause burning, tearing, redness.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

Acute effects:
Fish toxicity:
- freshwater species: 96h LC50 (Oncorhynchus mykiss): 5,540 mg/L
- marine species: 96h LC50 (Alburnus alburnus (alburnum)): 11,000 mg/L

Invertebrate toxicity:
- freshwater species: 48h EC50 (Daphnia pulex (water flea)): 8,800 mg/L
- marine species: 24h EC50 (Artemisia salina): 2,100 mg/l

Algae toxicity:
- freshwater species: 8h NOEC (Microcystis aeruginosa): 530 mg/L/8 d.
- marine species: 96h NOEC (Prorocentrum minimum): 430 mg/L

Bacterial toxicity:
EC 12: (30 min; activated sludge; OECD 209): 1,000 mg/L

Long-term effects:
Long-term toxicity to aquatic invertebrates:
28-days NOEC (Daphnia pulex (water flea); reproduction: 2,212 mg/L
No information on long-term effects of fish and algae available.
Long-term effects on aquatic organisms are not relevant due to the rapid elemination in water.

12.2 Persistence and degradability

Further details:

Abiotic degradation:
DT50, 19 - 114 d (Air, Indirect photodegradation by reaction with OH radicals.)
Abiotic degradation: none (Water, hydrolysis)

Biodegradation: 91 %/28 d (OECD 301B).
ThOD 84 %/5 d. (BOD5, APHA 219).
COD: 2.21 g O2/g
Product is readily biodegradable.

Effects in sewage plants: In activated sludge: 100 %/ 4 d (anaerobic conditions; Warburg Respirometer)

12.3 Bioaccumulative potential

Bioconcentration factor (BCF):
3 (calculated, BCFWIN v2.17)

12.4 Mobility in soil

Adsorption coefficient soil (Kd) : 1.5 L/kg, at 20 °C.
The soil sorption coefficient indicates that acetone is mobile in soil and may be transported by soil water.
Volatility:
Henry constant: 2.929 - 3.070 Pa*m³/mol (25 °C water).
Henry constant: 3.311 Pa*m³/mol (25 °C marine water).
Experimentally determined Henry's Law constants indicate a moderate volatility from water.

12.5 Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

12.6 Other adverse effects

General information:

Terrestrial toxicity:
48h LD50 (Eisenia fetida): 0.1 - 1 mg/cm³
48h LD50 (Ambystoma mexicanum): 20,000 mg/L
48h LD50 (Xenopus laevis): 24,000 mg/L

In a study conducted according to OECD Guideline 207 (Earthworm, Acute Toxicity Tests: filter paper contact test), acetone showed a moderate toxicity to Eisenia fetida. In further short term toxicity studies, Ambystoma mexicanum and Xenopus laevis larvae exposed to acetone under static conditions in covered glass basins showed 48h LC50 values of 20,000 mg/L and 24,000 mg/L, respectively.

Do not allow to enter into ground-water, surface water or drains.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste key number: 07 01 04* = organic solvents, halogen-free
* = Evidence for disposal must be provided.

Recommendation: Dispose of waste according to applicable legislation.
Do not dispose of with household waste.
Do not empty into drains.

Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation.
Handle contaminated packages in the same way as the substance itself.
Handle empty containers with care. Incineration may cause explosion.
Non-contaminated packages may be recycled.

SECTION 14: Transport information

14.1 UN number

ADR/RID, IMDG, IATA-DGR:
UN 1090

14.2 UN proper shipping name

ADR/RID, IMDG, IATA-DGR:
UN 1090, ACETONE

14.3 Transport hazard class(es)

ADR/RID: Class 3, Code: F1
IMDG: Class 3, Subrisk -
IATA-DGR: Class 3

14.4 Packing group

ADR/RID, IMDG, IATA-DGR:
II

14.5 Environmental hazards

Marine pollutant: no

14.6 Special precautions for user

Land transport (ADR/RID)

Warning board:	ADR/RID: Kemmler-number 33, UN number UN 1090
Hazard label:	3
Limited quantities:	1 L
EQ:	E2
Contaminated packaging - Instructions:	P001 IBC02 R001
Special provisions for packing together:	MP19
Portable tanks - Instructions:	T4
Portable tanks - Special provisions:	TP1
Tank coding:	LGBF
Tunnel restriction code:	D/E

Sea transport (IMDG)

EmS:	F-E, S-D
Special provisions:	-
Limited quantities:	1 L
Excepted quantities:	E2
Contaminated packaging - Instructions:	P001
Contaminated packaging - Provisions:	-
IBC - Instructions:	IBC02
IBC - Provisions:	-
Tank instructions - IMO:	-
Tank instructions - UN:	T4
Tank instructions - Provisions:	TP1
Stowage and handling:	Category E.
Properties and observations:	Colourless, clear liquid, with a characteristic mint-like odour. Flashpoint: -20°C to -18°C c.c. Explosive limits: 2.5% to 13%. Miscible with water.
Segregation group:	none

Air transport (IATA)

Hazard label:	Flamm. liquid
Excepted Quantity Code:	E2
Passenger and Cargo Aircraft: Ltd.Qty.:	Pack.Instr. Y341 - Max. Net Qty/Pkg. 1 L
Passenger and Cargo Aircraft:	Pack.Instr. 353 - Max. Net Qty/Pkg. 5 L
Cargo Aircraft only:	Pack.Instr. 364 - Max. Net Qty/Pkg. 60 L
Emergency Response Guide-Code (ERG):	3H

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Pollution category: Z
Vessel type: -
Product name: Acetone

SECTION 15: Regulatory information

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

National regulations - Great Britain

Hazchem-Code: •2YE
No data available

National regulations - EC member states

Volatile organic compounds (VOC):
100 % by weight = 790 g/L

Labelling of packaging with <= 125mL content

Signal word: **Danger**

Hazard statements: EUH066 Repeated exposure may cause skin dryness or cracking.

Precautionary statements: not applicable

Further regulations, limitations and legal requirements:

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances [Seveso-III-Directive] P5c Use restriction according to REACH annex XVII, no.: 3, 40

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information

Further information

Literature: REACH Registration Dossier Acetone. P&D-REACH Consortium, 2010.
ICSC 0087

Reason of change: General revision

Date of first version: 19/8/2010

Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.