



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

Revision date: 23/1/2019
Version: 11
Language: en-GB,IE
Date of print: 27/8/2020

Developer AR 600-51

Material number AR 600-51

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

1.1 Product identifier

Trade name: Developer AR 600-51

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

General use: 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
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
Department responsible for information:
Frau Dr. Zimmermann, Email: produktion@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. 3; H226 Flammable liquid and vapour.
Acute Tox. 4; H312 Harmful in contact with skin.
Acute Tox. 3; H331 Toxic if inhaled.
Skin Corr. 1; H314 Causes severe skin burns and eye damage.

2.2 Label elements

Labelling (CLP)



Signal word:

Danger

Hazard statements:	H226	Flammable liquid and vapour.
	H312	Harmful in contact with skin.
	H314	Causes severe skin burns and eye damage.
	H331	Toxic if inhaled.



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Precautionary Statements:

- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P261 Avoid breathing mist/vapours.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- 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 or 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.
- P310 Immediately call a POISON CENTER/doctor.
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Special labelling

Text for labelling: Contains Morpholine and 2-Aminoethanol.

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:

No data available

SECTION 3: Composition / information on ingredients

3.1 Substances: not applicable

3.2 Mixtures

Chemical characterisation: Mixture of the substances listed below with non-hazardous additions:

Hazardous ingredients:

Ingredient	Designation	Content	Classification
REACH 01-2119475104-44-xxxx EC No. 203-961-6 CAS 112-34-5	2-(2-Butoxyethoxy) ethanol	50 - 75 %	Eye Irrit. 2; H319.
EC No. 203-815-1 CAS 110-91-8	Morpholine	10 - 25 %	Flam. Liq. 3; H226. Acute Tox. 4; H302. Acute Tox. 3; H311. Acute Tox. 3; H331. Skin Corr. 1A; H314.
EC No. 205-483-3 CAS 141-43-5	2-Aminoethanol	1 - 10 %	Acute Tox. 4; H302. Acute Tox. 4; H312. Acute Tox. 4; H332. Skin Corr. 1B; H314. STOT SE 3; H335. Aquatic Chronic 3; H412.

Full text of H- and EUH-statements: see section 16.



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SECTION 4: First aid measures

4.1 Description of first aid measures

- General information: IF exposed or concerned: Get medical advice/attention. First aider: Pay attention to self-protection!
- In case of inhalation: Move victim to fresh air. In case of irregular breathing or respiratory arrest provide artificial respiration. Immediately get medical attention. If victim is at risk of losing consciousness, position and transport on their side.
- Following skin contact: Immediately clean with water and soap followed by thorough rinsing. 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. Seek the attention of an ophthalmologist immediately.
- After swallowing: Rinse mouth immediately and drink plenty of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. In case of vomiting, lay at least head on side. Immediately get medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Causes severe skin burns and eye damage. Harmful in contact with skin. Toxic if inhaled.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Water mist, alcohol resistant foam, extinguishing powder or 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

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. May form dangerous gases and vapours in case of fire. Furthermore, there may develop: nitrogen oxides (NO_x), 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: •3W

Heating will lead to pressure increase: Danger of bursting and explosion. Use fine water spray to cool endangered containers. 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.



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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with the substance. Provide adequate ventilation. Eliminate all ignition sources if safe to do so. If possible, eliminate leakage. Avoid breathing mist/vapours. Take off immediately all contaminated clothing and wash it before reuse. Wear appropriate protective equipment. Keep unprotected people away. Cordon off downwind area at risk and warn inhabitants.

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.

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. Avoid breathing mist/vapours. Do not get in eyes, on skin, or on clothing. 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:

On contact with air, potentially explosive mixtures may develop. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Use explosion-proof electrical/ventilating/lighting equipment. Do not weld. In partially filled containers explosive mixtures may form.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Keep container tightly closed and in a well-ventilated place. Keep only in original container. Protect from heat and direct sunlight. Storage temperature: 10 °C up to 22 °C.

Hints on joint storage:

Do not store together with: strong oxidizing agents and light metals.
Keep away from food, drink and animal feedingstuffs.

7.3 Specific end use(s)

No information available.



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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
112-34-5	2-(2-Butoxyethoxy) ethanol	Europe: IOELV: STEL	101.2 mg/m ³ ; 15 ppm
		Europe: IOELV: TWA	67.5 mg/m ³ ; 10 ppm
		Great Britain: WEL-STEL	101.2 mg/m ³ ; 15 ppm
		Great Britain: WEL-TWA	67.5 mg/m ³ ; 10 ppm
		Ireland: 15 minutes	101.2 mg/m ³ ; 15 ppm IOELV
		Ireland: 8 hours	67.5 mg/m ³ ; 10 ppm IOELV
110-91-8	Morpholine	Europe: IOELV: STEL	72 mg/m ³ ; 20 ppm
		Europe: IOELV: TWA	36 mg/m ³ ; 10 ppm
		Great Britain: WEL-STEL	72 mg/m ³ ; 20 ppm (may be absorbed through the skin)
		Great Britain: WEL-TWA	36 mg/m ³ ; 10 ppm (may be absorbed through the skin)
		Ireland: 15 minutes	72 mg/m ³ ; 20 ppm (may be absorbed through the skin)
		Ireland: 8 hours	36 mg/m ³ ; 10 ppm (may be absorbed through the skin)
141-43-5	2-Aminoethanol	Europe: IOELV: STEL	7.6 mg/m ³ ; 3 ppm (may be absorbed through the skin)
		Europe: IOELV: TWA	2.5 mg/m ³ ; 1 ppm (may be absorbed through the skin)
		Great Britain: WEL-STEL	7.6 mg/m ³ ; 3 ppm (may be absorbed through the skin)
		Great Britain: WEL-TWA	2.5 mg/m ³ ; 1 ppm (may be absorbed through the skin)
		Ireland: 15 minutes	7.6 mg/m ³ ; 3 ppm (may be absorbed through the skin)
		Ireland: 8 hours	2.5 mg/m ³ ; 1 ppm (may be absorbed through the skin)

8.2 Exposure controls

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



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Personal protection equipment

Occupational exposure controls

- Respiratory protection:** Respiratory protection must be worn whenever the WEL levels have been exceeded. Use filter type A (= against vapours of 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: 0.3 mm.
Nitrile rubber - Layer thickness: 0.4 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, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid breathing mist/vapours. Do not get in eyes, on skin, or on clothing. Contaminated work clothing should not be allowed out of the workplace. When using do not eat or drink. Wash hands thoroughly after handling. 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
- Odour:** No data available
- Odour threshold:** No data available
- pH value:** alkaline
- Melting point/freezing point:** No data available
- Initial boiling point and boiling range:** approx. 130 °C (Morpholine)
- Flash point/flash point range:** 32 °C (Morpholine)
- Evaporation rate:** No data available
- Flammability:** flammable liquid and vapour
- Explosion limits:** LEL (Lower Explosion Limit): 0.70 Vol-% (2-(2-Butoxyethoxy)ethanol)
UEL (Upper Explosive Limit): 24.60 Vol-% (2-(2-Butoxyethoxy)ethanol)
- Vapour pressure:** at 20 °C: 10 hPa (Morpholine)
at 60 °C: 62 hPa (Morpholine)
- Vapour density:** No data available
- Density:** No data available
- Water solubility:** completely miscible
- Partition coefficient: n-octanol/water:** No data available
- Auto-ignition temperature:** No data available
- Decomposition temperature:** No data available



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Viscosity, kinematic: No data available
Explosive properties: Vapours can form explosive mixtures with air.
Oxidizing characteristics: No data available

9.2 Other information

Ignition temperature: > 200 °C
Water content: 15 %

SECTION 10: Stability and reactivity

10.1 Reactivity

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

Heating will lead to pressure increase: Danger of bursting and explosion.

10.4 Conditions to avoid

Keep away from heat sources, sparks and open flames.
Protect from direct sunlight.

10.5 Incompatible materials

Strong oxidizing agents and light metals.

10.6 Hazardous decomposition products

No hazardous decomposition products when regulations for storage and handling are observed.

Thermal decomposition: No data available



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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Toxicological effects: The statements are derived from the properties of the single components. No toxicological data is available for the product as such.

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

ATEmix calculated: > 2000 mg/kg

Acute toxicity (dermal): Acute Tox. 4; H312 = Harmful in contact with skin.

ATEmix (calculated): 1000 mg/kg < ATE <= 2000 mg/kg

Acute toxicity (inhalative): Acute Tox. 3; H331 = Toxic if inhaled.

ATEmix calculated (vapours): 2 mg/L < ATE <= 10 mg/L

Skin corrosion/irritation: Skin Corr. 1; H314 = Causes severe skin burns and eye damage.

Serious eye damage/irritation: Lack of data.

Sensitisation to the respiratory tract: Lack of data.

Skin sensitisation: Lack of data.

Germ cell mutagenicity/Genotoxicity: Lack of data.

Carcinogenicity: Lack of data.

Reproductive toxicity: Lack of data.

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): Lack of data.

Specific target organ toxicity (repeated exposure): Lack of data.

Aspiration hazard: Lack of data.

In case of inhalation: Risk of resorption. Pulmonary edema is possible.

Other information: Information about 2-(2-Butoxyethoxy)ethanol:
LD50 Rat, oral: 7291 mg/kg (OECD 401)
LD50 Rabbit, dermal: 2764 mg/kg (OECD 402)

Information about Morpholine:

LD50 Rat, oral: 1900 mg/kg.

LD50 Rabbit, dermal: 500 mg/kg.

Information about 2-Aminoethanol:

LD50 Rat, oral: 1089 mg/kg (OECD 401)

LD50 Rabbit, dermal: 1015 mg/kg

Symptoms

Potential hazards: Mucous membrane irritation, cough, shortage of breath, Headache, nausea, Pulmonary edema is possible. damage of respiratory tract Risk of resorption.

General remarks

Hazardous properties cannot be excluded.



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SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: Information about 2-(2-Butoxyethoxy)ethanol:
Fish toxicity:
LC50 *Lepomis macrochirus* (bluegill): 1300 mg/L/96h (OECD 203)
Daphnia toxicity:
EC50 *Daphnia magna* (Big water flea): > 100 mg/L/48h
Algae toxicity:
EC50 *Desmodesmus subspicatus* (green algae): > 100 mg/L/96h (OECD 201)
Bacterial toxicity:
LC50 *Pseudomonas putida*: 1170 mg/L/16h

12.2 Persistence and degradability

Further details: Biodegradability:
Information about 2-(2-Butoxyethoxy)ethanol:
91,7%/28 d (OECD 301 B).
Readily biodegradable
Information about Morpholine:
93 %/25 d.
Readily biodegradable

12.3 Bioaccumulative potential

Bioconcentration factor (BCF):
no data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other adverse effects

General information: 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: 16 03 05* = organic wastes containing hazardous substances
* = 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.



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SECTION 14: Transport information

14.1 UN number

ADR/RID, IMDG, IATA-DGR:

UN 2920

14.2 UN proper shipping name

ADR/RID, IMDG, IATA-DGR:

UN 2920, CORROSIVE LIQUID, FLAMMABLE, N.O.S. (Morpholine)

14.3 Transport hazard class(es)

ADR/RID: Class 8, Code: CF1

IMDG, IATA-DGR: Class 8, Subrisk 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 83, UN number UN 2920
Hazard label: 8+3
Special provisions: 274
Limited quantities: 1 L
EQ: E2
Contaminated packaging - Instructions: P001 IBC02
Special provisions for packing together: MP15
Portable tanks - Instructions: T11
Portable tanks - Special provisions: TP2 TP27
Tank coding: L4BN
Tunnel restriction code: D/E

Sea transport (IMDG)

EmS: F-E, S-C
Special provisions: 274
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: T11
Tank instructions - Provisions: TP2, TP27
Stowage and handling: Category C. SW1 SW2
Properties and observations: Causes burns to skin, eyes and mucous membranes.
Segregation group: none





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Air transport (IATA)

Hazard label: Corrosive & Flamm. liquid
Excepted Quantity Code: E2
Passenger and Cargo Aircraft: Ltd.Qty.: Pack.Instr. Y840 - Max. Net Qty/Pkg. 0.5 L
Passenger and Cargo Aircraft: Pack.Instr. 851 - Max. Net Qty/Pkg. 1 L
Cargo Aircraft only: Pack.Instr. 855 - Max. Net Qty/Pkg. 30 L
Emergency Response Guide-Code (ERG): 8F

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

No data available

SECTION 15: Regulatory information

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

National regulations - Great Britain

Hazchem-Code: •3W
No data available

National regulations - EC member states

Volatile organic compounds (VOC):
95 % by weight

Labelling of packaging with <= 125mL content



Signal word: **Danger**

Hazard statements: H314 Causes severe skin burns and eye damage.
H331 Toxic if inhaled.

Precautionary Statements:

P261 Avoid breathing mist/vapours.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
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 or 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.
P310 Immediately call a POISON CENTER/doctor.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Further regulations, limitations and legal requirements:

Use restriction according to REACH annex XVII, no.: 3

15.2 Chemical Safety Assessment

For this mixture a chemical safety assessment is not required.



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SECTION 16: Other information

Further information

Wording of the H-phrases under paragraph 2 and 3:

- H226 = Flammable liquid and vapour.
- H302 = Harmful if swallowed.
- H311 = Toxic in contact with skin.
- H312 = Harmful in contact with skin.
- H314 = Causes severe skin burns and eye damage.
- H319 = Causes serious eye irritation.
- H331 = Toxic if inhaled.
- H332 = Harmful if inhaled.
- H335 = May cause respiratory irritation.
- H412 = Harmful to aquatic life with long lasting effects.

Abbreviations and acronyms:

- ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- OEL: Occupational Exposure Limit Value
- AS/NZS: Australian Standards/New Zealand Standards
- ATEmix: Acute Toxicity Estimate of mixture
- CAS: Chemical Abstracts Service
- CFR: Code of Federal Regulations
- CLP: Classification, Labelling and Packaging
- DMEL: Derived minimal effect level
- DNEL: Derived no-effect level
- EC50: Effective Concentration 50%
- EC: European Community
- EN: European Standard
- EU: European Union
- IATA: International Air Transport Association
- IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
- IMDG Code: International Maritime Dangerous Goods Code
- LC50: Median lethal concentration
- LD50: Lethal dose 50%
- LEL: Lower Explosion Limit
- MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships
- OSHA: Occupational Safety and Health Administration
- PBT: Persistent, bioaccumulative and toxic
- PNEC: Predicted no-effect concentration
- REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
- RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail
- STOT SE: Specific target organ toxicity - single exposure
- TLV: Threshold Limit Value
- UN: United Nations
- vPvB: Very persistent and very bioaccumulative
- WEL: Workplace Exposure Limit

Reason of change: Changes in section 1.3: Department responsible for information

Date of first version: 23/11/2010



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Department issuing data sheet

Contact person: see section 1: Department responsible for information

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