

## Safety data sheet

### according to 1907/2006/EC, Article 31

Printing date 20.11.2018

Version number 2

Revision: 20.11.2018

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

- **Date of compilation:** 29.10.2009
- **1.1 Product identifier**
- **Trade name:** RATIONAL Boiler Descaler
- **Article number(s):** 6006.0111
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the preparation:** Descalant
- **Uses advised against** SU21 Consumer uses: Private households / general public / consumers
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer / Supplier:**  
RATIONAL AG  
Siegfried-Meister-Straße 1  
86899 Landsberg am Lech  
Germany  
Tel.: +49 8191 327-2365  
Fax: +49 8191 327-72 2365
- **E-mail address of the competent person responsible for the Safety Data Sheet:**  
reinigung@rational-online.com
- **Informing department:** Product management
- **1.4 Emergency telephone number:**  
Giftnotruf München "Klinikum rechts der Isar"  
Tel. +49 89 19 24 0

### SECTION 2: Hazards identification

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



GHS05 corrosion

Met. Corr.1 H290 May be corrosive to metals.  
Skin Corr. 1B H314 Causes severe skin burns and eye damage.  
Eye Dam. 1 H318 Causes serious eye damage.



GHS07

STOT SE 3 H335 May cause respiratory irritation.

- **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**



GHS05 GHS07

- **Signal word** Danger
- **Hazard-determining components of labelling:**  
Hydrochloric acid

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- **Hazard statements**

H290 May be corrosive to metals.  
 H314 Causes severe skin burns and eye damage.  
 H335 May cause respiratory irritation.

- **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.  
 P260 Do not breathe mist/vapours/spray.  
 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/shower.  
 P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 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.  
 P405 Store locked up.

- **Additional information:**

EUH208 Contains But-2-yne-1,4-diol. May produce an allergic reaction.

- **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 characterisation: Mixtures**

- **Description:** Aqueous solution

- **Dangerous components:**

CAS: 7647-01-0 EINECS: 231-595-7 Index number: 017-002-01-X	Hydrochloric acid ⚠ Met. Corr.1, H290; Skin Corr. 1B, H314; ⚠ Acute Tox. 4, H302; STOT SE 3, H335	10-<25%
CAS: 110-65-6 EINECS: 203-788-6 Index number: 603-076-00-9	But-2-yne-1,4-diol ⚠ Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; ⚠ STOT RE 2, H373; ⚠ Skin Corr. 1B, H314; ⚠ Skin Sens. 1, H317	≤ 2.5%

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

- **Ingredients according to Regulation (EC) No 648/2004:**

anionic surfactants	<5%
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### SECTION 4: First aid measures

- **4.1 Description of first aid measures**

- **General information:** Immediately remove any clothing contaminated by the product.

- **After inhalation:**

Supply fresh air; consult doctor in case of symptoms.  
 In case of unconsciousness bring patient into stable side position for transport.

- **After skin contact:**

Instantly wash with water and soap and rinse thoroughly.  
 If skin irritation continues, consult a doctor.

- **After eye contact:**

Rinse opened eye for several minutes under running water.  
 Remove contact lenses, if present and easy to do.

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- Use eye protection.
- Call a doctor immediately.
- **After swallowing:**
  - Drink copious amounts of water and provide fresh air. Instantly call for doctor.
  - Do not induce vomiting - Danger of perforation!
- **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** Use fire fighting measures that suit the environment.
- **For safety reasons unsuitable extinguishing agents** none
- **5.2 Special hazards arising from the substance or mixture**
  - Can be released in case of fire:
  - Hydrogen chloride (HCl)
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained breathing apparatus.
- **Additional information**
  - Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

### SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
  - Wear protective equipment. Keep unprotected persons away.
  - Ensure adequate ventilation.
  - Avoid contact with skin and eyes.
  - Use breathing protection against the effects of fumes/dust/aerosol.
- **6.2 Environmental precautions:**
  - Do not allow to enter drainage system, surface or ground water.
  - Dilute with much water.
- **6.3 Methods and material for containment and cleaning up:**
  - Ensure adequate ventilation.
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Use neutralising agent.
  - Send for recovery or disposal in suitable containers.
  - Dispose of the material collected according to regulations.
- **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 information on disposal.

### SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
  - Ensure good ventilation/exhaustion at the workplace.
  - Avoid contact with skin and eyes.
  - Avoid breathing vapours.
  - Keep containers tightly sealed.
  - Make sure that all applicable workplace limits are observed.
- **Information about protection against explosions and fires:** No special measures required.

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- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and containers:**
  - Store in the original container.
  - Observe all local and national regulations for storage of water polluting products.
- **Information about storage in one common storage facility:** Store away from foodstuffs.
- **Further information about storage conditions:**
  - Store in cool, dry conditions in well sealed containers.
  - Store in a locked cabinet and out of the reach of children.
  - Store and transport upright.
- **7.3 Specific end use(s)** No further relevant information available.

### SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **8.1 Control parameters**

#### · **Components with critical values that require monitoring at the workplace:**

##### **7647-01-0 Hydrochloric acid**

WEL (Great Britain)	Short-term value: 8 mg/m <sup>3</sup> , 5 ppm Long-term value: 2 mg/m <sup>3</sup> , 1 ppm (gas and aerosol mists)
IOELV (European Union)	Short-term value: 15 mg/m <sup>3</sup> , 10 ppm Long-term value: 8 mg/m <sup>3</sup> , 5 ppm

##### **110-65-6 But-2-yne-1,4-diol**

WEL (Great Britain)	Long-term value: 0.5 mg/m <sup>3</sup>
IOELV (European Union)	Long-term value: 0.5 mg/m <sup>3</sup>

- **Additional information:** The lists that were valid during the compilation were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
  - Keep away from foodstuffs, beverages and food.
  - Instantly remove any contaminated garments.
  - Wash hands during breaks and at the end of the work.
  - Use skin protection cream for preventive skin protection.
  - Do not inhale gases / fumes / aerosols.
  - Avoid contact with the eyes and skin.
  - Do not eat, drink or smoke while working.
- **Breathing equipment:**
  - Use breathing protection in case of insufficient ventilation.
  - If all workplace limits are observed and good ventilation is ensured, no special precautions necessary.
- **Recommended filter device for short term use:** Combination filter ABEK-P2
- **Protection of hands:**
  - Protective gloves
  - To avoid skin problems reduce the wearing of gloves to the required minimum.
  - Check the permeability prior to each renewed use of the glove.
  - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
- **Material of gloves**
  - e.g. KCL Dermatrill® 740

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Recommended thickness of the material:  $\geq 0.11$  mm

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**

Penetration time:  $\geq 1$  hours

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:** Tightly sealed safety glasses

- **Body protection:**

Protective work clothing

Body protection must be chosen depending on activity and possible exposure.

### SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form: liquid

Colour: light brown

- **Smell:** characteristic

- **Odour threshold:** not determined

- **pH-value at 20 °C:** < 1

- **Change in condition**

Melting point/freezing point: not determined

Initial boiling point and boiling range: > 100 °C

- **Flash point:** not applicable

- **Inflammability (solid, gaseous)** Not applicable.

- **Decomposition temperature:** Not determined.

- **Self-inflammability:** Product is not selfigniting.

- **Explosive properties:** Product is not explosive.

- **Critical values for explosion:**

Lower: Not determined.

Upper: Not determined.

- **Oxidising properties** not classified as oxidising

- **Vapor pressure at 20 °C:** 20 hPa

- **Density at 20 °C:** 1.092 g/cm<sup>3</sup>

- **Relative density** Not determined.

- **Vapour density (AIR = 1):** Not determined.

- **Evaporation rate** Not determined.

- **Solubility in / Miscibility with**

Water: fully miscible

- **Partition coefficient: n-octanol/water:** Not determined.

- **Viscosity:**

dynamic: not determined

kinematic: not determined

Organic solvents: 0 %

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### · 9.2 Other information

Further informations please refer to technical data sheet.

## SECTION 10: Stability and reactivity

### · 10.1 Reactivity

No further relevant information available.  
No further relevant information available.

### · 10.2 Chemical stability

#### · Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

### · 10.3 Possibility of hazardous reactions

Corrosive action on metals

### · 10.4 Conditions to avoid

No further relevant information available.

### · 10.5 Incompatible materials:

No further relevant information available.

### · 10.6 Hazardous decomposition products:

Hydrogen chloride (HCl)

## SECTION 11: Toxicological information

### · 11.1 Information on toxicological effects

· **Acute toxicity** Based on available data, the classification criteria are not met.

#### · LD/LC50 values that are relevant for classification:

##### 7647-01-0 Hydrochloric acid

Oral	LD50	900 mg/kg (rabbit)
Inhalative	LC50/1 h	3.124 - 4.74 mg/l (rat) (RTECS)

##### 110-65-6 But-2-yne-1,4-diol

Oral	LD50	104 mg/kg (rat)
Dermal	LD50	659 mg/kg (rat) (OECD Guideline 402)
Inhalative	LC50/4 h	0.69 mg/l (rat) (OECD Guideline 403)

#### · Primary irritant effect:

#### · Skin corrosion/irritation

Causes severe skin burns and eye damage.

#### · Serious eye damage/irritation

Causes serious eye damage.

#### · inhalation:

May cause respiratory irritation.

#### · Respiratory or skin sensitisation

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

#### · Subacute to chronic toxicity:

##### 110-65-6 But-2-yne-1,4-diol

Oral	NOAEL (28 d)	1 mg/kg/d (rat) (OECD Guideline 407)
	LOAEL (28 d)	10 mg/kg/d (rat) (OECD Guideline 407)
	NOAEL	1 mg/kg/d (rat) (OECD Guideline 415)

#### · Additional toxicological information:

The product shows the following dangers according to the calculation method of Regulation (EC) No. 1272/2008 (CLP/GHS):

Skin Corr. 1B

Eye Dam. 1

STOT SE 3

#### · CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

According to present knowledge no CMR-effects known.

#### · Germ cell mutagenicity

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

#### · Carcinogenicity

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

#### · Reproductive toxicity

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

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- **STOT-single exposure**  
May cause respiratory irritation.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

### SECTION 12: Ecological information

#### · 12.1 Toxicity

##### · Aquatic toxicity:

##### **7647-01-0 Hydrochloric acid**

LC50/96 h	282 mg/l (fish)
EC50/72 h	56 mg/l (daphnia)
LC50/48 h	862 mg/l (leuciscus idus)

##### **110-65-6 But-2-yne-1,4-diol**

EC50/17 h	3940 mg/l (pseudomonas putida) (DIN 38412, part 8)
EC10/72 h	346 mg/l (algae (Scenedesmus quadricauda)) (OECD Guideline 201)
LC50/96 h	53.6 mg/l (fathead minnow (pimephales promelas)) (OECD Guideline 203)
EC50/48 h	26.8 mg/l (water flea (daphnia magna)) (EPA-660/3 75-009)
NOEC/72 h	125 mg/l (algae (Scenedesmus quadricauda))

- **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:**

Must not reach sewage water or drainage ditch undiluted or unneutralised.  
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

Water hazard class 1 (Self-assessment): slightly hazardous for water

##### · **12.5 Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

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

### SECTION 13: Disposal considerations

#### · 13.1 Waste treatment methods

##### · **Recommendation**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Disposal must be made according to official regulations.

##### · **European waste catalogue:**

Waste disposal key numbers from EWC have to be assigned depending on origin and processing.

##### · **Uncleaned packagings:**

- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleaning agent:** Water, if necessary with cleaning agent.

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### SECTION 14: Transport information

<ul style="list-style-type: none"> <li>· 14.1 UN-Number</li> <li>· ADR, IMDG, IATA</li> </ul>	UN1789
<ul style="list-style-type: none"> <li>· 14.2 UN proper shipping name</li> <li>· ADR</li> <li>· IMDG, IATA</li> </ul>	UN 1789 HYDROCHLORIC ACID, MIXTURE HYDROCHLORIC ACID MIXTURE
<ul style="list-style-type: none"> <li>· 14.3 Transport hazard class(es)</li> <li>· ADR</li> </ul>	<div style="text-align: center;">  </div>
<ul style="list-style-type: none"> <li>· Class</li> <li>· Label</li> </ul>	8 (C1) Corrosive substances. 8
<ul style="list-style-type: none"> <li>· IMDG, IATA</li> </ul>	<div style="text-align: center;">  </div>
<ul style="list-style-type: none"> <li>· Class</li> <li>· Label</li> </ul>	8 Corrosive substances. 8
<ul style="list-style-type: none"> <li>· 14.4 Packing group</li> <li>· ADR, IMDG, IATA</li> </ul>	II
<ul style="list-style-type: none"> <li>· 14.5 Environmental hazards:</li> <li>· Marine pollutant:</li> </ul>	NO
<ul style="list-style-type: none"> <li>· 14.6 Special precautions for user</li> <li>· Kemler Number:</li> <li>· EMS Number:</li> <li>· Segregation groups</li> <li>· Stowage Category</li> </ul>	Warning: Corrosive substances. 80 F-A,S-B Acids E
<ul style="list-style-type: none"> <li>· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</li> </ul>	Not applicable.
<ul style="list-style-type: none"> <li>· Transport/Additional information:</li> </ul>	<ul style="list-style-type: none"> <li>· ADR</li> <li>· Limited quantities (LQ):</li> <li>· Excepted quantities (EQ)</li> </ul>
<ul style="list-style-type: none"> <li>· Transport category:</li> <li>· Tunnel restriction code:</li> </ul>	1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml 2 E
<ul style="list-style-type: none"> <li>· IMDG</li> <li>· Limited quantities (LQ)</li> <li>· Excepted quantities (EQ)</li> </ul>	1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
<ul style="list-style-type: none"> <li>· UN "Model Regulation":</li> </ul>	UN1789, HYDROCHLORIC ACID, MIXTURE, 8, II

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### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3
- **National regulations**
- **Information about limitation of use:**  
Employment restrictions concerning young persons must be observed.
- **Decree to be applied in case of technical fault:** Directive 2012/18/EU does not apply.
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water
- **Other regulations, limitations and prohibitive regulations**  
Observe restrictions on the marketing and use according to Annex XVII of Regulation (EC) No 1907/2006.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Reasons for changes:**  
The Material Safety Data Sheet has been revised. Changes in the respective chapters are characterized in the left side edge by \*.
- **Relevant phrases**  
The(se) H-phrases are those of the ingredient(s) and do(es) not necessarily represent the classification of the product.  
H290 May be corrosive to metals.  
H301 Toxic if swallowed.  
H302 Harmful if swallowed.  
H311 Toxic in contact with skin.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H331 Toxic if inhaled.  
H335 May cause respiratory irritation.  
H373 May cause damage to organs through prolonged or repeated exposure.
- **Department issuing SDS:**  
C.S.B. GmbH Phone: +49 - 2151 - 652086-0  
Düsseldorfer Str. 113 Fax: +49 - 2151 - 652086-9  
47809 Krefeld / Germany
- **Abbreviations and acronyms:**  
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 Harmonised 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)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
Met. Corr. 1: Corrosive to metals – Category 1  
Acute Tox. 3: Acute toxicity – Category 3  
Acute Tox. 4: Acute toxicity – Category 4  
Skin Corr. 1B: Skin corrosion/irritation – Category 1B  
Eye Dam. 1: Serious eye damage/eye irritation – Category 1  
Skin Sens. 1: Skin sensitisation – Category 1

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STOT SE 3: Specific target organ toxicity (single exposure) – Category 3  
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

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· \* **Data compared to the previous version altered.**

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