Application
ci 15 is a corrosion inhibitor for closed and semi-open cooling systems. ci 15 can be used in closed loops containing metals such as steel, cast iron and non-ferrous metals. When installing aluminium-containing cables, their resistance (e.g., pH value) under certain operating conditions must be taken into consideration. Please consult with your gwk engineer. ci 15 should be used in combination with softened water (0° dH) or deionized water (<25 µS/cm). The application range is between 5 - 150°C.

The use of conditioning substances that contain molybdates can result in discolouration of the system water. The cause for this is the formation of coloured complexes whenever water contains various substances. Furthermore, highly effective polycarbonate acids are used in the products. They prevent the formation of deposits and are also capable of acting on old scale and products of corrosion. This can also affect the colour of the system water. Neither one of these mechanisms generally has an effect on the performance of the corrosion and scale inhibitors.

Properties
ci 15 is a liquid, molybdates-containing product. It also contains inhibitors to prevent corrosion of copper and non-ferrous metals.

Appearance: clear, yellowish liquid
Density: 1.1 kg/dm³
pH value: 10-11
MoO₄ content: 5 %

The information given here is not a product specification; it is for information purposes only.

Dosing
The dosage depends on the type of the system and the operating conditions. Dosing containers, pipelines, and dosing pumps should be made of alkali-resistant material such as PE, PP, stainless steel or PVC. The usual application concentrations for ci 15 are between 3400 – 4000 g/m³.

ci 15 can be used in soft water, deionized water (demineralised water) and glycol-containing solutions. The product is proven via the molybdenum content Mo. The Mo⁶⁺ content should be at least 100 mg/L. Test kit gwk Article No. 8110575.

Handling
Suitable personal protective measures are provided in the safety data sheet.

Important information
A Material Safety Data Sheet is included with each of our products. The material safety data sheets contain important information on occupational health on safety, on the basis of which our customers can generate appropriate work instructions to protect their employees and customers in order to prevent harmful effects when handling the substances. Before using the gwk products in your system, make sure that the material safety data sheets have been read and understood by your supervisory staff and the appropriate employees.

Shelf life
3 months in opened container.
At least 1 year in unopened container.
Storage conditions: dry, cool, frost-free, dark

How the product is supplied
10 kg canister, 25 kg canister, 200 kg barrel

All descriptions, information, and data contained herein is believed to be accurate and reliable. However, it does not constitute a warranty, express or implied warranty of any properties, nor does it represent a commitment to commercial or technical suitability for any particular application. Therefore, we cannot accept any liability whatsoever. These descriptions, information, and data should serve as a basis for your considerations, research, and examinations. Statements and suggestions on our part regarding the possible use of our product are without guarantee that such an application does not infringe on industrial property rights of third parties, and they should not be regarded as a suggestion for patent infringement.
SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
ci 15

Product code: gwkci15

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

Use of the substance/mixture
Water treatment chemicals

Uses advised against
No information available.

1.3. Details of the supplier of the safety data sheet

Company name: Gesellschaft Wärme und Kältetechnik mbH
Street: Scherl 10
Place: D-58540 Meinerzhagen
Telephone: +49 2354 7060 - 0
Telefax: +49 2354 7060 - 156

E-mail (Contact person): info@gwk.com
Internet: www.gwk.com
Responsible Department: Wassertechnik

1.4. Emergency telephone number: +49 (0) 30 30686700

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No. 1272/2008
Hazard categories:
Skin corrosion / irritation: Skin irritation. 2
Serious eye damage / eye irritation: Eye irritation. 2

Hazard statements:
Causes skin irritation.
Causes serious eye irritation.

2.2. Label elements

Regulation (EC) No. 1272/2008
Hazard components for labelling
None.

Signal word: Attention
Pictograms:
Hazard statements

H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements

P280 Wear protective gloves / protective clothing / eye protection / face protection.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if possible. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice / attention.

Additional advice on labelling
The product is classified and labelled according to EC directives or corresponding national laws.

2.3. Other hazards
No information available.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical characterization
Formulation of preparations (mixtures)

Hazardous components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Quantity</th>
<th>EC No</th>
<th>Index No</th>
<th>REACH No</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-14-7</td>
<td>benzotriazole</td>
<td>&lt; 5 %</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>202-394-1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1310-73-2</td>
<td>sodium hydroxide</td>
<td>&lt; 2 %</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>215-185-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01-2119436643-00</td>
</tr>
</tbody>
</table>

Acute Tox. 4, Eye Irrit. 2, Aquatic Chronic 3; H302 H319 H412
Skin Corr. 1A; H314

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

Further Information
No information available.

SECTION 4: First aid measures

4.1. Description of first aid measures
General information
Remove contaminated, saturated clothing immediately.

After inhalation
Move victim to fresh air. Instruct person to keep calm and warm.

After contact with skin
After contact with skin, wash immediately with plenty of water and soap.

After contact with eyes
If product gets into the eye, keep eyelid open and rinse immediately with large quantities of water, for at least 5 minutes. Subsequently consult an ophthalmologist.

After ingestion
Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person or a person with cramps.

4.2. Most important symptoms and effects, both acute and delayed
No information available.

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. Foam. ABC powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
High power water jet.

5.2. Special hazards arising from the substance or mixture
In the event of a fire: Nitrogen oxides (NOx). Hydrogen chloride (HCl). Carbon monoxide

5.3. Advice for firefighters
In case of fire: Wear self-contained breathing apparatus.

Additional information
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Wear personal protection equipment.

6.2. Environmental precautions
Prevent spread over a wide area (e.g. by containment or oil barriers).

6.3. Methods and material for containment and cleaning up
Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).

6.4. Reference to other sections
Take up mechanically, placing in appropriate containers for disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Advice on safe handling
No special measures are necessary.

Advice on protection against fire and explosion
No special fire protection measures are necessary.

Further information on handling
No special handling instructions are necessary.
7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels
Keep/Store only in original container.

Advice on storage compatibility
Keep away from food, drink and animal feedingstuffs.

Further information on storage conditions
Conditions to avoid: frost.

7.3. Specific end use(s)
No information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits (EH40)

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Substance</th>
<th>ppm</th>
<th>mg/m³</th>
<th>fibres/ml</th>
<th>Category</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Additional advice on limit values
No information available.

8.2. Exposure controls

Appropriate engineering controls
No information available.

Protective and hygiene measures
Do not eat, drink, smoke or sneeze at the workplace.

Eye/face protection
Tightly sealed safety glasses.

Hand protection
Passenger-LQ

Skin protection
No information available.

Respiratory protection
No information available.

Environmental exposure controls
No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: liquid
Colour: light yellow
Odour: characteristic

pH-Value (at 20 °C): 10 - 11  DIN 19268

Changes in the physical state
Melting point: -1 °C DIN 51556
Initial boiling point and boiling range: ca. 100 °C ASTM D 1120
Density (at 25 °C): ca. 1.1 g/cm³ DIN 12809

9.2. Other information
No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity
No information available.

10.2. Chemical stability
No information available.

10.3. Possibility of hazardous reactions

10.4. Conditions to avoid

10.5. Incompatible materials

10.6. Hazardous decomposition products
No information available.

Further information
No information available.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicokinetics, metabolism and distribution
No information available.

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

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Exposure route</th>
<th>Dose</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-14-7</td>
<td>benzotriazole</td>
<td>oral</td>
<td>ATE</td>
<td>500 mg/kg</td>
<td>.</td>
</tr>
</tbody>
</table>

Irritation and corrosivity
Causes skin irritation.
Causes serious eye irritation.

Sensitising effects
Based on available data, the classification criteria are not met.
Carcinogenic/mutagenic/toxic effects for reproduction
Based on available data, the classification criteria are not met.

STOT-single exposure
Based on available data, the classification criteria are not met.

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.

Specific effects in experiment on an animal
No information available.

Additional information on tests
Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]

Practical experience
Observations relevant to classification
No information available.

Other observations
No information available.

Further information
No information available.

---

SECTION 12: Ecological information

12.1. Toxicity
The product has not been tested.

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Aquatic toxicity</th>
<th>Dose</th>
<th>[h]</th>
<th>[d]</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>sodium hydroxide</td>
<td>Acute fish toxicity</td>
<td>LC50</td>
<td>45,4 mg/l</td>
<td>96 h</td>
<td>Onchorhynchus mykiss</td>
<td></td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
Technically correct releases of minimal concentrations to adapted biological sewage treatment facility, will not disturb the biodegradability of activated sludge.

12.3. Bioaccumulative potential
Does not accumulate in organisms.

Partition coefficient n-octanol/water

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12.4. Mobility in soil
No information available.

12.5. Results of PBT and vPvB assessment
No information available.

12.6. Other adverse effects
No information available.

**Further information**
No information available.

**SECTION 13: Disposal considerations**

13.1. Waste treatment methods

**Advice on disposal**
Waste key product: Dispose of waste according to "Kreislaufwirtschafts- und Abfallgesetz (KrW-/AbfG)".

**Contaminated packaging**
Contaminated packages must be completely emptied and can be re-used following proper cleaning. Packing which cannot be properly cleaned must be disposed of.

**SECTION 14: Transport information**

**Land transport (ADR/RID)**

14.1. UN number:
No dangerous good in the sense of these transport regulations.

14.2. UN proper shipping name:
No dangerous good in the sense of these transport regulations.

14.3. Transport hazard class(es):
.

14.4. Packing group:
Hazard label:
Classification code:
Special Provisions:
Limited quantity:
Excepted quantity:
Transport category:
Hazard No:
Tunnel restriction code:
.

**Inland waterways transport (ADN)**

14.1. UN number:
No dangerous good in the sense of these transport regulations.

14.2. UN proper shipping name:
No dangerous good in the sense of these transport regulations.

14.3. Transport hazard class(es):
.

14.4. Packing group:
Hazard label:
Classification code:
Special Provisions:
Limited quantity:
Excepted quantity:
.

**Marine transport (IMDG)**

14.1. UN number:
No dangerous good in the sense of these transport regulations.

14.2. UN proper shipping name:
No dangerous good in the sense of these transport regulations.

14.3. Transport hazard class(es):
.

14.4. Packing group:
Hazard label:
Special Provisions:
Limited quantity:  
Excepted quantity:  
EmS:  

Air transport (ICAO-TI/IATA-DGR)  
14.1. UN number: No dangerous good in the sense of these transport regulations.  
14.2. UN proper shipping name: No dangerous good in the sense of these transport regulations.  
14.3. Transport hazard class(es):  
14.4. Packing group:  
Hazard label:  
Special Provisions:  
Limited quantity Passenger:  
Passenger LQ:  
Excepted quantity:  
IATA-packing instructions - Passenger:  
IATA-max. quantity - Passenger:  
IATA-packing instructions - Cargo:  
IATA-max. quantity - Cargo:  
Danger releasing substance:  

14.6. Special precautions for user  

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

Other applicable information  

SECTION 15: Regulatory information  
15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture  

EU regulatory information  
Additional information  
No information available.  

National regulatory information  
Water contaminating class (D): 1 – slightly water contaminating  
Biocide registry number:  

SECTION 16: Other information  
Relevant H and EUH statements (number and full text)  
H302  Harmful if swallowed.  
H314  Causes severe skin burns and eye damage.  
H315  Causes skin irritation.  
H319  Causes serious eye irritation.  
H412  Harmful to aquatic life with long lasting effects.  

Further Information  
The information is based on present level of our knowledge. It does not, however, give assurances of product properties and establishes no contract legal rights.
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor’s safety data sheet.)