

Product information ci 20 (*corrosion inhibitor*)

Application

ci 20 is an inhibitor for closed and semi-open cooling and heating systems. Depending on the process conditions (raw water quality; max process temperature), it can be used in low-salt water with low residual hardness, soft water or completely demineralised water.

The corrosion inhibition is done by formation of a protective layer. Therefore, the oxygen does not affect the efficacy. In particular, temporary standstill corrosion is also prevented.

Properties

ci 20 inhibits all steel materials. The pH value of the circulating water should be adjusted between 7,0 and 10,5. The polymer in ci 20 stabilizes the residual hardness and dispersed existing deposits such as lime and iron oxides and also insoluble solids. The application concentration of ci 20 depends on the maximum process temperature, the flow velocity, as well as the salt content and is individually determined by your gwk engineer.

Appearance:	Clear, yellowish to brown liquid
Active substances:	Phosphonate, polymers, non-ferrous metal inhibitor, molybdate
Density (20°C):	1.05 kg/dm ³
pH-value:	approx. 9

The statements made here are not product specification, they are for information only.

Dosing

The dosing quantity of ci 20 ist depends on the existing system water volume and the existing process conditions. Usual application concentrations for ci 20 in systems with regular water replacement:

- 4.000 – 5.000 g/m³ for hard water with LSI value max. 2,5 and maximum process temperature 95°C,
- 4.000 – 5.000 g/m³ for soft water (0°dH) and maximum process temperature 140°C,

- 5.000 g/m³ for completely demineralised water and maximum process temperature 225°C.
- 6000 – 7000 g/m³ in systems with low water refreshment rate

The product content is determined on-site by means of the Mo-Testkit (gwk art. no. 8110575). The target concentration of molybdenum Mo⁶⁺ is
50-60 mg/l for a dosing rate of 4000-5000 g/m³,
70-80 mg/l for a dosing rate of 6000-7000 g/m³.

Handling

Suitable personal protective measures are listed in the safety data sheet.

Important note

Each of our products is supplied with a safety data sheet. The safety data sheets contain important information on occupational safety and health protection, on the basis of which our customers can create appropriate work instructions to protect their employees and customers against harmful effects when handling the materials. Before using the gwk products in your plant, it should be ensured that the safety data sheets have been read and understood by your supervisory staff and your competent employee.

Shelf life / storage

1 year in unopened container.
3 months in opened container.
The data refer to the following storage conditions: cool (5°C-20°C), frost-free, dark, dry place.

Delivery container

10kg canister, 25kg canister, 200kg drum

All statements, information and data contained herein are considered by us to be accurate and reliable, but make no guarantee nor any express or implied warranty of the properties and also are not a guarantee of the commercial or technical suitability for a particular use. We therefore accept no responsibility for them. They are only intended to serve as a basis for your observations, investigation and verification. Findings and suggestions on our part regarding the possible use of our product is without any guarantee that such use does not infringe the industrial property rights of others; they should not be regarded as suggestions for patent infringement.

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

ci 20

Product code:

gwkci20

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:	gwk	
	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
Respiratory or skin sensitization: Sens. Skin 1

Hazard statements:

Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.

2.2. Label elements**Regulation (EC) No. 1272/2008****Hazard components for labelling**

None.

Signal word: Attention**Pictograms:**

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Hazard statements

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Precautionary statements

P261	Avoid breathing dust / fume / gas / mist / vapors / spray.
P280	Wear protective gloves / protective clothing / eye protection / face protection.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P333 + P313	In case of skin irritation or rash: Get medical advice / attention.
P362 + P364	Remove contaminated clothing and wash before reuse.

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

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]			
95-14-7	benzotriazole			< 5 %
	202-394-1	.		
	Acute Tox. 4, Eye Irrit. 2, Aquatic Chronic 3; H302 H319 H412			
1310-73-2	sodium hydroxide			< 2 %
	215-185-5		01-2119436643-00	
	Skin Corr. 1A; H314			
23783-26-8	hydroxyphosphonoacetic acid			< 5 %
	405-710-8	.	.	
	Acute Tox. 4, STOT RE 2, Skin Corr. 1B, Skin Sens. 1; H302 H373 ** H314 H317			
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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**

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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 (NO_x). 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.

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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)

CAS No	Substance	ppm	mg/m ³	fibres/ml	Category	Origin
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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: brown
 Odour: characteristic

pH-Value (at 20 °C):

Test method
 8 - 10 DIN 19268

Changes in the physical state

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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

Oxidizing agents. Alkali metals. Acid. Reducing agent. Alkalis (alkalis).

10.4. Conditions to avoid

No information available.

10.5. Incompatible materials

Oxidizing agents. Alkali metals. Acid. Reducing agent. Alkalis (alkalis).

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.

CAS No	Chemical name			
	Exposure route	Dose	Species	Source
95-14-7	benzotriazole			
	oral	ATE 500 mg/kg	.	.

23783-26-8	hydroxyphosphonoacetic acid			
	.oral	ATE 500 mg/kg	.	.

Irritation and corrosivity

Causes skin irritation.

Causes serious eye irritation.

Sensitising effects

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

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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.

CAS No	Chemical name				
	Aquatic toxicity	Dose	[h] [d]	Species	Source
1310-73-2	sodium hydroxide				
	Acute fish toxicity	LC50	45,4 mg/l	96 h	Onchorhynchus mykiss
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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

CAS No	Chemical name	Log Pow
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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):

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14.4. Packing group:

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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):

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14.4. Packing group:

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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):

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14.4. Packing group:

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Hazard label: .

Special Provisions: .

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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 Gesundheitsschädlich bei Verschlucken.
 H314 Verursacht schwere Verätzungen der Haut und schwere Augenschäden.
 H315 Verursacht Hautreizungen.
 H317 Kann allergische Hautreaktionen verursachen.
 H319 Verursacht schwere Augenreizung.
 H373 Kann die Organe schädigen bei längerer oder wiederholter Exposition.
 H412 Schädlich für Wasserorganismen, mit langfristiger Wirkung.

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.

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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.)