



German metal Surface treatment Chemicals Co.
Research and development department.
Water treatment division.



MATERIAL SAFETY DATA SHEET

Duracide 201

DBNPA Solution BIOCIDES

MANUFACTURER:

German metal surface treatment (SUGEST)

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1. Product and Company Identification

NAME Duracide 201

USE Biocide

LABEL Duracide 201

Company German metal surface treatment chemicals co.

2. Description

Duracide 21 is an aqueous formulation containing a 20% w/w concentration of DBNPA (2, 2-dibromo-3-nitrilopropionamide). When properly applied to the RO feed water systems.

3. Chemical Composition

Ingredient	CAS No	Percent
Poly ethylene glycol	25322-68-3	35 – 50 %
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	10-15%
Sodium Bromide	7647-15-6	≤ 2.4

4. Application

Duracide 201 has proven efficacy at low concentrations against bacteria, fungi, yeast, cyanobacteria (blue-green algae) and the true algae. The DBNPA molecule will function immediately upon introduction into the feed water; the rate of this activity is not affected by pH, and antimicrobial control is rapidly achieved if properly dosed.

5. Physical & Chemical Properties



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Test items	Units	Specification
Appearance		Colorless to brown liquid
pH	Value	1.5 - 5
Spec. Gravity at 15 °C	Value	1.1 – 1.25

6. Hazards Identification

Classification of the substance or mixture

Classification according to EU Directives 67/548/EEC or 1999/45/EC Emergency Overview

C	R34	Causes burns.
Xn	R20/22	Harmful by inhalation and if swallowed.
Xi	R41	Risk of serious damage to eyes.
	R43	May cause sensitization by skin contact.

Potential Health Effects

Information on toxicological effects

Acute Toxicity

Ingestion

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD50, rat 510 mg/kg

Aspiration hazard

Based on available information, aspiration hazard could not be determined.

Dermal

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, rabbit > 2,000 mg/kg

Inhalation

Mist may cause irritation of upper respiratory tract (nose and throat).

LC50, 4 h, Aerosol, rat, female 1.25 mg/l

LC50, 4 h, Aerosol, rat, male 1.40 mg/l

Eye damage/eye irritation

May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Skin corrosion/irritation

Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Sensitization

Skin

For similar material(s): Has caused allergic skin reactions when tested in guinea pigs. Did not cause allergic skin reactions when tested in humans.

Respiratory

No relevant information found.

Repeated Dose Toxicity



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Excessive exposure may increase the blood and tissue levels of bromine. Observations in animals include kidney effects following repeated ingestion of active ingredient, but no evidence of systemic toxicity following repeated dermal exposure at maximum attainable doses.

Chronic Toxicity and Carcinogenicity

Active ingredient did not cause cancer in laboratory animals.

Developmental Toxicity

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the active ingredient(s): Did not cause birth defects in laboratory animals.

Reproductive Toxicity

No relevant data found.

Genetic Toxicology

For the active ingredient(s): In vitro genetic toxicity studies were negative. For the major component(s): Animal genetic toxicity studies were negative.

7. First Aid Measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin Contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be immediately available.

Eye Contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

8. Fire Fighting Measures

Extinguishing Media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen bromide. Carbon monoxide. Carbon dioxide.



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Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. Container may rupture from gas generation in a fire situation.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. If product becomes contaminated with water, monitor product for heat generation and/or decomposition. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

9. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep upwind of spill. Refer to Section 10, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Ventilate area of leak or spill. Use appropriate safety equipment.

B- Environmental precaution

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

C- Methods and materials for containment and cleaning up

Contain spilled material if possible. Attempt to neutralize by adding materials such as Sodium bisulphite. Sodium metabisulfite. Neutralize with approximately 17.2 grams sodium bisulfite (NaHSO_3) or 15.7 grams sodium meta bisulphite ($\text{Na}_2\text{S}_2\text{O}_5$) for every 100 grams biocidal product. Absorb with materials such as: Dirt. Sand. Collect in suitable and properly labeled containers.

10. Handling and Storage

Precautions for safe handling

Handling

General Handling: Keep out of reach of children. Do not get in eyes, on skin, on clothing. Avoid breathing mist. Avoid prolonged or repeated contact with skin. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Conditions for safe storage, including any incompatibilities

Storage

Store in original container. Keep container tightly closed. Do not store in: Aluminum. Brass. Copper. Copper alloys. Mild steel. Stainless steel.

Shelf life: Use within 12 Months

11. Exposure Controls/Personal Protection

Personal Protection



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Eye/Face Protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace

12. Stability and Reactivity

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical stability

Stable under recommended storage conditions. See Storage

Possibility of hazardous reactions

Polymerization will not occur.

Conditions to Avoid: Avoid temperatures above 70°C (158°F) Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Oxidizers. Strong bases. Avoid contact with metals such as: Aluminum.

Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon dioxide. Bromine. Cyanogen bromide. Dibromoacetonitrile.

13. Disposal Considerations

Waste treatment methods

This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

14. Transport information

ROAD & RAIL

Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.

Technical Name: 2,2-DIBROMO-3-NITRILOPROPIONAMIDE

Hazard Class: 8 **ID Number:** UN3265 **Packing Group:** PG III

Classification: C3

Hazard identification No: 80



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Environmental Hazard: No

OCEAN

Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.

Technical Name: 2,2-DIBROMO-3-NITRILOPROPIONAMIDE

Hazard Class: 8 ID Number: UN3265 **Packing Group:** PG III

EMS Number: F-A,S-B

Marine pollutant.: No

AIR

Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.

Technical Name: 2,2-DIBROMO-3-NITRILOPROPIONAMIDE

Hazard Class: 8 ID Number: UN3265 **Packing Group:** PG III

Cargo Packing Instruction: 856

15. Other Information

Label Hazard Warning:

Labelling according to EC Directives

Hazard Symbol:

C – Corrosive

Risk Phrases:

R34 – Cause burn

R20 / 22 – harmful by inhalation and if swallowed

R41 - Risk of serious damage to eyes.

R43 - May cause sensitization by skin contact.

Safety Phrases:

S21- When using do not smoke.

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

16. Packing:

Duracide 201 is available in HDPE Containers.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.