

Version #: 01  
Issue date: 12-09-2021

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

**1.1. Product identifier**

Trade name or designation of the mixture: Catalyst-4  
 Registration number: -  
 Synonyms: None.  
 Product code: 5-06-0307-0

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

Identified uses  
 Uses advised against

**1.3. Details of the supplier of the safety data sheet**

Company name: MITSUBISHI GAS CHEMICAL COMPANY, INC.  
 Address: 5-2, Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-8324, Japan  
 Department in Charge: Planning & Development Division, Basic Chemicals Business Sector  
 Telephone Number: [REDACTED]  
 Facsimile Number: [REDACTED]  
 Email Address: [REDACTED]@mgc.co.jp  
 Global Incident Response Hotline: +81-3-6890-8677(Verisk 3E)  
 Access code: 335392

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

**Classification according to Regulation (EC) No 1272/2008 as amended**

**Physical hazards**

Self-heating substances and mixtures	Category 1	H251 - Self-heating; may catch fire.
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**Health hazards**

Respiratory sensitization	Category 1	H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitization	Category 1	H317 - May cause an allergic skin reaction.
Carcinogenicity	Category 1B	H350 - May cause cancer.
Reproductive toxicity	Category 2	H361 - Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - repeated exposure	Category 1	H372 - Causes damage to organs through prolonged or repeated exposure.

**2.2. Label elements**

**Label according to Regulation (EC) No. 1272/2008 as amended**

Contains: cobalt, nickel

**Hazard pictograms**



Signal word: Danger

**Hazard statements**

H251	Self-heating; may catch fire.
H317	May cause an allergic skin reaction.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

## Precautionary statements

### Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P235	Keep cool.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P284	Wear respiratory protection.

### Response

P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P362 + P364	Take off contaminated clothing and wash it before reuse.

### Storage

P405	Store locked up.
P407	Maintain air gap between stacks or pallets.
P410	Protect from sunlight.
P420	Store separately.

### Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
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**Supplemental label information** None.

### 2.3. Other hazards

This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII. The mixture does not contain any substances included in the list established in accordance with REACH Article 59(1) for having endocrine disrupting properties at a concentration equal to or greater than 0.1% by weight.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

#### General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Aluminum	-	7429-90-5 231-072-3	-	013-002-00-1	
		<b>Classification:</b> Flam. Sol. 1;H228, Water-React. 2;H261			T
CHROMIUM	-	7440-47-3 231-157-5	-	-	#
		<b>Classification:</b> -			
cobalt	-	7440-48-4 231-158-0	-	027-001-00-9	
		<b>Classification:</b> Resp. Sens. 1;H334, Skin Sens. 1;H317, Muta. 2;H341, Carc. 1B;H350, Repr. 1B;H360F, Aquatic Chronic 4;H413			
nickel	-	7440-02-0 231-111-4	-	028-002-00-7	
		<b>Classification:</b> Pyr. Sol. 1;H250, Skin Sens. 1;H317, Carc. 2;H351, STOT RE 1;H372, Aquatic Chronic 3;H412			7,S

#### List of abbreviations and symbols that may be used above

ATE: Acute toxicity estimate.

M: M-factor

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. #: This substance has been assigned Union workplace exposure limit(s).

#### Composition comments

The full text for all H-statements is displayed in section 16.

## SECTION 4: First aid measures

<b>General information</b>	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.
<b>4.1. Description of first aid measures</b>	
<b>Inhalation</b>	If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a poison center or doctor/physician.
<b>Skin contact</b>	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.
<b>Eye contact</b>	Rinse with water. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	Rinse mouth. Get medical attention if symptoms occur.
<b>4.2. Most important symptoms and effects, both acute and delayed</b>	Coughing. Difficulty in breathing. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.
<b>4.3. Indication of any immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

## SECTION 5: Firefighting measures

<b>General fire hazards</b>	Self-heating; may catch fire.
<b>5.1. Extinguishing media</b>	
<b>Suitable extinguishing media</b>	Powder. Dry sand.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>5.2. Special hazards arising from the substance or mixture</b>	During fire, gases hazardous to health may be formed.
<b>5.3. Advice for firefighters</b>	
<b>Special protective equipment for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Special fire fighting procedures</b>	Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.

## SECTION 6: Accidental release measures

<b>6.1. Personal precautions, protective equipment and emergency procedures</b>	
<b>For non-emergency personnel</b>	Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
<b>For emergency responders</b>	Keep unnecessary personnel away. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>6.2. Environmental precautions</b>	Avoid discharge into drains, water courses or onto the ground.
<b>6.3. Methods and material for containment and cleaning up</b>	Stop the flow of material, if this is without risk. Following product recovery, flush area with water. Put material in suitable, covered, labeled containers.
<b>6.4. Reference to other sections</b>	For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

## SECTION 7: Handling and storage

<b>7.1. Precautions for safe handling</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep cool. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.
<b>7.2. Conditions for safe storage, including any incompatibilities</b>	Store locked up. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Store away from other materials. Maintain air gap between stacks/pallets.
<b>7.3. Specific end use(s)</b>	Observe industrial sector guidance on best practices.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

##### Netherlands. OELs (binding)

Components	Type	Value	Form
CHROMIUM (CAS 7440-47-3)	TWA	0,5 mg/m <sup>3</sup>	
cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	Dust and fume.

##### EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU

Components	Type	Value
CHROMIUM (CAS 7440-47-3)	TWA	2 mg/m <sup>3</sup>

#### Biological limit values

No biological exposure limits noted for the ingredient(s).

#### Recommended monitoring procedures

Follow standard monitoring procedures.

#### Derived no effect levels (DNELs)

Not available.

#### Predicted no effect concentrations (PNECs)

Not available.

### 8.2. Exposure controls

#### Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. General ventilation normally adequate.

#### Individual protection measures, such as personal protective equipment

##### General information

Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

##### Eye/face protection

Wear eye/face protection. If contact is likely, safety glasses with side shields are recommended.

##### Skin protection

###### - Hand protection

Wear appropriate chemical resistant gloves.

###### - Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

##### Respiratory protection

Wear positive pressure self-contained breathing apparatus (SCBA).

##### Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

#### Hygiene measures

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

#### Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	Solid.
Form	Granular.
Color	Dark grey
Odor	Odorless.
Melting point/freezing point	Not available.
Boiling point or initial boiling point and boiling range	Not available.
Flammability	Contact with water liberates extremely flammable gases.
Flash point	Not available.
Auto-ignition temperature	> 752 °F (> 400 °C)
Decomposition temperature	Not available.

pH	7- 11 (20°C)
Kinematic viscosity	Not available.
<b>Solubility</b>	
Solubility (water)	Insoluble.
Partition coefficient (n-octanol/water) (log value)	Not available.
Vapor pressure	Not available.
<b>Density and/or relative density</b>	
Density	< 8,2 g/cm <sup>3</sup>
Vapor density	Not available.
Particle characteristics	Not available.

## 9.2. Other information

9.2.1. Information with regard to physical hazard classes No relevant additional information available.

9.2.2. Other safety characteristics No relevant additional information available.

## SECTION 10: Stability and reactivity

10.1. Reactivity	Keep away from combustible material.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Heat. Contact with incompatible materials.
10.5. Incompatible materials	Oxygen. Strong oxidizing agents. Combustible material.
10.6. Hazardous decomposition products	No hazardous decomposition products are known.

## SECTION 11: Toxicological information

**General information** Occupational exposure to the substance or mixture may cause adverse effects.

### Information on likely routes of exposure

<b>Inhalation</b>	May cause allergy or asthma symptoms or breathing difficulties if inhaled. Prolonged inhalation may be harmful.
<b>Skin contact</b>	May cause an allergic skin reaction.
<b>Eye contact</b>	Direct contact with eyes may cause temporary irritation.
<b>Ingestion</b>	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

**Symptoms** Coughing. Difficulty in breathing. May cause an allergic skin reaction. Dermatitis. Rash.

### 11.1. Information on toxicological effects

<b>Acute toxicity</b>	Due to partial or complete lack of data the classification is not possible.
<b>Skin corrosion/irritation</b>	Due to partial or complete lack of data the classification is not possible.
<b>Serious eye damage/eye irritation</b>	Due to partial or complete lack of data the classification is not possible.
<b>Respiratory sensitization</b>	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
<b>Skin sensitization</b>	May cause an allergic skin reaction.
<b>Germ cell mutagenicity</b>	Due to partial or complete lack of data the classification is not possible.
<b>Carcinogenicity</b>	May cause cancer.

#### IARC Monographs. Overall Evaluation of Carcinogenicity

CHROMIUM (CAS 7440-47-3)	3 Not classifiable as to carcinogenicity to humans.
nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.

<b>Reproductive toxicity</b>	Suspected of damaging fertility or the unborn child.
<b>Specific target organ toxicity - single exposure</b>	Due to partial or complete lack of data the classification is not possible.
<b>Specific target organ toxicity - repeated exposure</b>	Causes damage to organs through prolonged or repeated exposure.
<b>Aspiration hazard</b>	Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information No information available.

#### 11.2. Information on other hazards

**Endocrine disrupting properties** This mixture does not contain any substances having endocrine disrupting properties with respect to human health as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.

**Other information** Not available.

### SECTION 12: Ecological information

**12.1. Toxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
CHROMIUM (CAS 7440-47-3)		
<b>Aquatic</b>		
<i>Acute</i>		
Crustacea	EC50	Water flea (Daphnia magna) >= 0,01 - <= 0,7 mg/l, 48 hours
Fish	LC50	American eel (Anguilla rostrata) 13,9 mg/l, 96 hours
nickel (CAS 7440-02-0)		
<b>Aquatic</b>		
<i>Acute</i>		
Crustacea	EC50	Water flea (Daphnia magna) 1 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss) 0,09 mg/l, 4 days

**12.2. Persistence and degradability** No data is available on the degradability of any ingredients in the mixture.

**12.3. Bioaccumulative potential** No data available.

**Partition coefficient n-octanol/water (log Kow)** Not available.

**Bioconcentration factor (BCF)** Not available.

**12.4. Mobility in soil** No data available.

**12.5. Results of PBT and vPvB assessment** This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

**12.6. Endocrine disrupting properties** This mixture does not contain any substances having endocrine disrupting properties with respect to the environment as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.

**12.7. Other adverse effects** No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

**Residual waste** Dispose of in accordance with local regulations.

**Contaminated packaging** Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

**EU waste code** The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Disposal methods/information** Consult authorities before disposal. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Special precautions** Dispose in accordance with all applicable regulations.

### SECTION 14: Transport information

#### ADR

**14.1. UN number** UN1378

**14.2. UN proper shipping name** METAL CATALYST, WETTED with a visible excess of liquid

**14.3. Transport hazard class(es)**

**Class** 4.2

**Subsidiary risk** -

**Label(s)** 4.2

Hazard No. (ADR) 40  
Tunnel restriction code D/E  
14.4. Packing group II  
14.5. Environmental hazards No.  
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

#### RID

14.1. UN number UN1378  
14.2. UN proper shipping name METAL CATALYST, WETTED with a visible excess of liquid  
14.3. Transport hazard class(es)  
Class 4.2  
Subsidiary risk -  
Label(s) 4.2  
14.4. Packing group II  
14.5. Environmental hazards No.  
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

#### ADN

14.1. UN number UN1378  
14.2. UN proper shipping name METAL CATALYST, WETTED with a visible excess of liquid  
14.3. Transport hazard class(es)  
Class 4.2  
Subsidiary risk -  
Label(s) 4.2  
14.4. Packing group II  
14.5. Environmental hazards No.  
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

#### IATA

14.1. UN number UN1378  
14.2. UN proper shipping name Metal catalyst, wetted with a visible excess of liquid  
14.3. Transport hazard class(es)  
Class 4.2  
Subsidiary risk -  
14.4. Packing group II  
14.5. Environmental hazards No.  
ERG Code 4L  
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.  
Other information  
Passenger and cargo aircraft Forbidden  
Cargo aircraft only Allowed with restrictions.

#### IMDG

14.1. UN number UN1378  
14.2. UN proper shipping name METAL CATALYST, WETTED with a visible excess of liquid  
14.3. Transport hazard class(es)  
Class 4.2  
Subsidiary risk -  
14.4. Packing group II  
14.5. Environmental hazards  
Marine pollutant No  
EmS F-H, S-M  
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.  
14.7. Maritime transport in bulk according to IMO instruments Not applicable.



## SECTION 15: Regulatory information

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

#### EU regulations

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**

Not listed.

**Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended**

CHROMIUM (CAS 7440-47-3)

nickel (CAS 7440-02-0)

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

#### Authorizations

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

#### Restrictions on use

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

nickel (CAS 7440-02-0)

cobalt (CAS 7440-48-4)

**Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended**

cobalt (CAS 7440-48-4)

#### Other EU regulations

**Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended**

Not listed.

#### Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

#### National regulations

According to Directive 92/85/EEC as amended, pregnant women should not work with the product, if there is the least risk of exposure.

Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended. Follow national regulation on the protection of workers from the risks of exposure to carcinogens and mutagens at work, in accordance with Directive 2004/37/EC, as amended.

#### Non-exhaustive list of substances toxic for reproduction

cobalt (CAS 7440-48-4)

May impair fertility. 1B

#### SZW list of carcinogenic substances

cobalt (CAS 7440-48-4)

#### SZW list of mutagenic substances

Not listed.

### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.



## SECTION 16: Other information

### List of abbreviations

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.  
CAS: Chemical Abstract Service.  
CEN: European Committee for Standardization.  
IATA: International Air Transport Association.  
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.  
IMDG: International Maritime Dangerous Goods.  
MARPOL: International Convention for the Prevention of Pollution from Ships.  
PBT: Persistent, bioaccumulative and toxic.  
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.  
STEL: Short term exposure limit.  
TWA: Time Weighted Average.  
vPvB: Very persistent and very bioaccumulative.

### References

Not available.

### Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

### Full text of any H-statements not written out in full under Sections 2 to 15

H228 Flammable solid.  
H250 Catches fire spontaneously if exposed to air.  
H261 In contact with water releases flammable gas.  
H317 May cause an allergic skin reaction.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H341 Suspected of causing genetic defects.  
H350 May cause cancer.  
H351 Suspected of causing cancer.  
H360F May damage fertility.  
H372 Causes damage to organs through prolonged or repeated exposure.  
H412 Harmful to aquatic life with long lasting effects.  
H413 May cause long lasting harmful effects to aquatic life.

### Revision information

None.

### Training information

Follow training instructions when handling this material.

### Disclaimer

MITSUBISHI GAS CHEMICAL COMPANY, INC. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.