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

1.1. Product identifier

Gold electrolyte - Midas

UFI: R9NY-XAUD-Q00J-6G02

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

Use of the substance/mixture

Electrolyte for galvanic applications.

Uses advised against

No further relevant information available.

1.3. Details of the supplier of the safety data sheet

Company name:	MARAWE GmbH & Co. KG	
Street:	Donaustaufer Str. 378 - Gebäude 64	
Place:	D-93055 Regensburg	
Telephone:	+49 941 29020439	Telefax: +49 941 29020593
e-mail:	info@marawe.de	
Contact person:	Product safety department	
e-mail:	produktsicherheit@marawe.de	
Internet:	www.marawe.de	

1.4. Emergency telephone number:

National Health Service: (UK) 111

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GB CLP Regulation

Acute Tox. 4; H332
Eye Irrit. 2; H319
Skin Sens. 1; H317
Aquatic Chronic 3; H412

Full text of hazard statements: see SECTION 16.

2.2. Label elements

GB CLP Regulation

Hazard components for labelling

potassium dicyanoaurate(I)
cobalt(II) propionate

Signal word: Warning

Pictograms:

Hazard statements

H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statements

P101	If medical advice is needed, have product container or label at hand.

P102	Keep out of reach of children.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of Water and soap.
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.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P312	Call a POISON CENTER/doctor if you feel unwell.
P337+P313	If eye irritation persists: Get medical advice/attention.
P501	Dispose of contents/container to an appropriate recycling or disposal facility according to local/national regulations.

Special labelling of certain mixtures

EUH032	Contact with acids liberates very toxic gas.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (GB CLP Regulation)			
5949-29-1	Citric acid, monohydrate			1.9 - < 5 %
	201-069-1		01-2119457026-42	
	Eye Irrit. 2; H319			
584-08-7	potassium carbonate			1.9 - < 5 %
	209-529-3		01-2119532646-36	
	Skin Irrit. 2, Eye Irrit. 2, STOT SE 3; H315 H319 H335			
13967-50-5	potassium dicyanoaurate(I)			1 - < 1.9 %
	237-748-4		01-2120130777-52	
	Met. Corr. 1, Acute Tox. 2, Acute Tox. 2, Skin Irrit. 2, Eye Dam. 1, Skin Sens. 1, STOT RE 2, Aquatic Acute 1, Aquatic Chronic 1; H290 H330 H300 H315 H318 H317 H373 H400 H410 EUH032			
1560-69-6	cobalt(II) propionate			< 0,1 %
	216-333-1			
	Repr. 1B, Acute Tox. 4, Acute Tox. 4, Eye Irrit. 2, Skin Sens. 1A, Aquatic Acute 1, Aquatic Chronic 2; H360Fd H332 H302 H319 H317 H400 H411			

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

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
	Specific Conc. Limits, M-factors and ATE		
5949-29-1	201-069-1	Citric acid, monohydrate	1.9 - < 5 %
	dermal: LD50 = > 2000 mg/kg; oral: LD50 = 5400 mg/kg		
584-08-7	209-529-3	potassium carbonate	1.9 - < 5 %
	inhalation: LC50 = > 4,96 mg/l (dusts or mists); dermal: LD50 = >2001 mg/kg; oral: LD50 = >2001 mg/kg		
13967-50-5	237-748-4	potassium dicyanoaurate(I)	1 - < 1.9 %
	inhalation: LC50 = 0,051 mg/l (dusts or mists); dermal: LD50 = > 5000 mg/kg; oral: LD50 = 29,2 mg/kg		
1560-69-6	216-333-1	cobalt(II) propionate	< 0,1 %
	inhalation: ATE = 11 mg/l (vapours); inhalation: ATE = 1,5 mg/l (dusts or mists); oral: ATE = 500 mg/kg		

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

First aider: Pay attention to self-protection! Remove clothing contaminated with product. Be careful with contaminated clothes and shoes of the victim - they could still contain the product. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation

Provide fresh air. If breathing is irregular or stopped, administer artificial respiration. No mouth-to-mouth or mouth-to-nose resuscitation. Use Ambu bag or ventilator. Call a physician immediately. Immediately call an ambulance (keyword: cyanide / hydrocyanic acid poisoning).

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention.

After contact with eyes

Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Call a physician immediately.

After ingestion

Rinse mouth immediately and drink plenty of water. Immediately call an ambulance (keyword: cyanide / hydrocyanic acid poisoning). Medical treatment necessary.

4.2. Most important symptoms and effects, both acute and delayed

Asthmatic complaints, shortage of breath.
Cyanosis (blue coloured blood), cyanide poisoning.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically. The substance contains cyanide. 4-Dimethylaminophenole or thiosulfate can be used as antidot.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

The product itself does not burn. Co-ordinate fire-fighting measures to the fire surroundings.

Unsuitable extinguishing media

High power water jet.

5.2. Special hazards arising from the substance or mixture

Formation of very toxic gases possible when heated or in case of fire. Hydrocyanic acid (hydrocyanic acid).
When exposed to acids, hydrocyanic acid is released, which is flammable and can form explosive gas mixtures

with air.

5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus.

Additional information

In case of fire and/or explosion do not breathe fumes. Suppress gases/vapours/mists with water spray jet. 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

General advice

Provide adequate ventilation. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Use personal protection equipment.

6.2. Environmental precautions

Retain contaminated washing water and dispose it. Do not allow to enter into surface water or drains. Inform the respective authorities if the product enters open water or sewage system.

6.3. Methods and material for containment and cleaning up

For cleaning up

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents). Take up mechanically, placing in appropriate containers for disposal. Treat the recovered material as prescribed in the section on waste disposal.

6.4. Reference to other sections

Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray. The electrolyte can release HCN if it has contact with acids. Therefore it may not be put in contact with acids. For appropriate disposal it may not be given to acidic waste.

Advice on protection against fire and explosion

No special fire protection measures are necessary.

Advice on general occupational hygiene

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed. Provide adequate ventilation.

Hints on joint storage

Do not store together with: Acid.
Keep away from metals.

7.3. Specific end use(s)

Electrolyte for galvanic applications.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits (EH40)

CAS No	Substance	ppm	mg/m³	fibres/ml	Category	Origin
-	Cyanides, except HCN, NaCN, KCN, cyanogen & cyanogen chloride (as CN)	-	5		TWA (8 h)	WEL

DNEL/DMEL values

CAS No	Substance		
DNEL type	Exposure route	Effect	Value
584-08-7	potassium carbonate		
Worker DNEL, long-term	dermal	local	16 mg/cm²
Consumer DNEL, long-term	dermal	local	8 mg/cm²
Worker DNEL, long-term	inhalation	local	10 mg/m³
Consumer DNEL, long-term	inhalation	local	10 mg/m³
13967-50-5	potassium dicyanoaurate(I)		
Worker DNEL, long-term	inhalation	systemic	0,071 mg/m³
Worker DNEL, long-term	dermal	systemic	0,1 mg/kg bw/day

PNEC values

CAS No	Substance
Environmental compartment	Value
5949-29-1	Citric acid, monohydrate
Freshwater	0,44 mg/l
Marine water	0,044 mg/l
Freshwater sediment	3,46 mg/kg
Marine sediment	34,6 mg/kg
Micro-organisms in sewage treatment plants (STP)	> 1000 mg/l
Soil	33,1 mg/kg
13967-50-5	potassium dicyanoaurate(I)
Freshwater	0,0002 mg/l
Marine water	0,00002 mg/l
Freshwater sediment	0,33 mg/kg
Marine sediment	0,033 mg/kg
Micro-organisms in sewage treatment plants (STP)	6 mg/l
Soil	0,067 mg/kg

8.2. Exposure controls


Individual protection measures, such as personal protective equipment

Eye/face protection

Tight sealing protective goggles (DIN EN 166).

Hand protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the

specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Skin protection

Wear suitable protective clothing.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	light pink
Odour:	odourless

Changes in the physical state

Melting point/freezing point:	not determined
Boiling point or initial boiling point and boiling range:	not determined
Flash point:	not determined

Flammability

Solid/liquid:	not applicable
Gas:	not applicable
Lower explosion limits:	not determined
Upper explosion limits:	not determined

Self-ignition temperature

Solid:	not applicable
Gas:	not applicable
Decomposition temperature:	not determined
pH-Value (at 25 °C):	3,5-4
Water solubility:	completely miscible

Solubility in other solvents

not determined

Partition coefficient n-octanol/water:	not determined
Vapour pressure:	not determined
Density:	not determined
Relative vapour density:	not determined

9.2. Other information

Information with regard to physical hazard classes

Oxidizing properties

Not oxidising.

Other safety characteristics

Solid content:	not determined
Evaporation rate:	not determined

Further Information

SECTION 10: Stability and reactivity

10.1. Reactivity

Decomposition with: Acid.

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3. Possibility of hazardous reactions

The electrolyte can release HCN if it has contact with acids. Therefore it may not be put in contact with acids.
For appropriate disposal it may not be given to acidic waste.

10.4. Conditions to avoid

Extreme temperatures and direct sunlight.

10.5. Incompatible materials

Do not mix with acids.

10.6. Hazardous decomposition products

Hydrocyanic acid (hydrocyanic acid).

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in GB CLP Regulation

Acute toxicity

Harmful if inhaled.

ATEmix calculated

ATE (inhalation dust/mist) 4,435 mg/l

CAS No	Chemical name					
	Exposure route	Dose		Species	Source	Method
5949-29-1	Citric acid, monohydrate					
	oral	LD50 mg/kg	5400	Mouse	Manufacturer	OECD 401
	dermal	LD50 mg/kg	> 2000	Rat	Manufacturer	OECD 402
584-08-7	potassium carbonate					
	oral	LD50 mg/kg	>2001	Rat	Manufacturer	
	dermal	LD50 mg/kg	>2001	Rabbit	Manufacturer	
	inhalation (4 h) dust/mist	LC50 mg/l	> 4,96	Rat	Manufacturer	
13967-50-5	potassium dicyanoaurate(I)					
	oral	LD50 mg/kg	29,2	Rat	Pre-supplier/manufacturer	OECD 401
	dermal	LD50 mg/kg	> 5000	Rat	Pre-supplier/manufacturer	OECD 402
	inhalation (4 h) dust/mist	LC50 mg/l	0,051		Pre-supplier/manufacturer	ATE
1560-69-6	cobalt(II) propionate					
	oral	ATE mg/kg	500			
	inhalation vapour	ATE	11 mg/l			
	inhalation dust/mist	ATE	1,5 mg/l			

Irritation and corrosivity

Causes serious eye irritation.
Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Sensitising effects

May cause an allergic skin reaction. (potassium dicyanoaurate(I); cobalt(II) propionate)

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.

Additional information on tests

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

SECTION 12: Ecological information

12.1. Toxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

CAS No	Chemical name						
	Aquatic toxicity	Dose		[h] | [d]	Species	Source	Method
5949-29-1	Citric acid, monohydrate						
	Acute fish toxicity	LC50	440 mg/l	96 h	Leuciscus idus (golden orfe)	Manufacturer	OECD 203
	Acute crustacea toxicity	EC50	1535 mg/l	48 h	Daphnia magna (Big water flea)	Manufacturer	
584-08-7	potassium carbonate						
	Acute fish toxicity	LC50	68 mg/l	96 h	Oncorhynchus mykiss (Rainbow trout)	Manufacturer	FIFRA Guideline 72-1
	Acute crustacea toxicity	EC50	200 mg/l	48 h	Daphnia pulex (water flea)	Manufacturer	FIFRA Guideline 72-1
	Fish toxicity	NOEC	33 mg/l	4 d	Oncorhynchus mykiss (Rainbow trout)	Manufacturer	FIFRA Guideline 72-1
	Crustacea toxicity	NOEC	120 mg/l	2 d	Daphnia pulex (water flea)	Manufacturer	FIFRA Guideline 72-1
13967-50-5	potassium dicyanoaurate(I)						
	Acute fish toxicity	LC50	5,7 mg/l	96 h	Oncorhynchus mykiss (Rainbow trout)	Pre-supplier/manufacturer	OECD 203
	Acute algae toxicity	ErC50	30 mg/l		Pseudokirchneriella subcapitata	Pre-supplier/manufacturer	OECD 201
	Acute crustacea toxicity	EC50	0,2 mg/l	48 h	Daphnia magna (Big water flea)	Pre-supplier/manufacturer	OECD 202
	Acute bacteria toxicity	(EC50	406 mg/l)	3 h	Activated sludge	Pre-supplier/manufacturer	OECD 209

12.2. Persistence and degradability

The product has not been tested.

CAS No	Chemical name			
	Method	Value	d	Source
	Evaluation			
5949-29-1	Citric acid, monohydrate			
	OECD 301B	97 %	28	
	Readily biodegradable (according to OECD criteria).			

12.3. Bioaccumulative potential

The product has not been tested.

12.4. Mobility in soil

The product has not been tested.

12.5. Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH.
The product has not been tested.

12.6. Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7. Other adverse effects

No information available.

Further information

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation.

List of Wastes Code - residues/unused products

110106 WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY; wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising); acids not otherwise specified; hazardous waste

List of Wastes Code - contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

Contaminated packaging

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number or ID number: No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name: No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es): No dangerous good in sense of this transport regulation.
14.4. Packing group: No dangerous good in sense of this transport regulation.

Inland waterways transport (ADN)

14.1. UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

Marine transport (IMDG)

14.1. UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

No information available.

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 regulatory information

Restrictions on use (REACH, annex XVII):

Entry 3

National regulatory information

Employment restrictions:	Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).
Water hazard class (D):	2 - obviously hazardous to water
Skin resorption/Sensitization:	Causes allergic hypersensitivity reactions.

15.2. Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

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 Harmonized 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
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%

Classification for mixtures and used evaluation method according to GB CLP Regulation

Classification	Classification procedure
Acute Tox. 4; H332	Calculation method
Eye Irrit. 2; H319	Calculation method
Skin Sens. 1; H317	Calculation method
Aquatic Chronic 3; H412	Calculation method

Relevant H and EUH statements (number and full text)

H290	May be corrosive to metals.
H300	Fatal if swallowed.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
EUH032	Contact with acids liberates very toxic gas.

Further Information

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible for adhering to existing laws and regulations.

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