

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

Revision Date 20-Feb-2024 Revision Number 3

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Description: <u>Aluminum Copper spheres, alloy 2017</u>

Cat No. : 4203

Molecular Formula Al:Cu:Mn:Mg; 94.8:4:0.7:0.5 wt%

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

Recommended Use Laboratory chemicals.
Uses advised against No Information available

1.3. Details of the supplier of the safety data sheet

Company

Avocado Research Chemicals Ltd. (Part of Thermo Fisher Scientific)

Shore Road, Heysham Lancashire, LA3 2XY, United Kingdom

Office Tel: +44 (0) 1524 850506 Office Fax: +44 (0) 1524 850608

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99 **CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Physical hazards

Based on available data, the classification criteria are not met

Health hazards

Based on available data, the classification criteria are not met

Environmental hazards

Based on available data, the classification criteria are not met

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Full text of Hazard Statements: see section 16

2.2. Label elements

None required

EUH210 - Safety data sheet available on request

2.3. Other hazards

This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Component	CAS No	EC No	Weight %	CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567
Aluminum	7429-90-5	EEC No. 231-072-3	94.8	-
Copper	7440-50-8	EEC No. 231-159-6	4.0	-
Manganese	7439-96-5	EEC No. 231-105-1	0.7	-
Magnesium	7439-95-4	EEC No. 231-104-6	0.5	Flam. Sol. 1 (H228) Water-react. 2 (H261) Self-heat. 2 (H252)

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get

medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention

immediately if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water. Get medical attention if

symptoms occur.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Self-Protection of the First Aider No special precautions required.

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

None reasonably foreseeable.

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

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Notes to Physician Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

approved class D extinguishers. Do not use water or foam.

Extinguishing media which must not be used for safety reasons

Water may be ineffective.

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous Combustion Products

Metal oxides.

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. No special precautions required.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system. Should not be released into the environment. Do not allow material to contaminate ground water system.

6.3. Methods and material for containment and cleaning up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Pick up and transfer to properly labelled containers.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

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Keep in a dry place. Keep away from acids.

Technical Rules for Hazardous Substances (TRGS) 510 Storage Class (LGK) (Germany) Class 13

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7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits

List source(s): **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE** - 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC

Component	The United Kingdom	European Union	Ireland
Aluminum	STEL: 30 mg/m ³ 15 min		TWA: 1 mg/m ³ 8 hr.
	STEL: 12 mg/m ³ 15 min		respirable fraction
	TWA: 10 mg/m ³ 8 hr		STEL: 3 mg/m ³ 15 min
	TWA: 4 mg/m ³ 8 hr		_
Copper	STEL: 0.6 mg/m ³ 15 min		TWA: 0.2 mg/m ³ 8 hr. Cu
	STEL: 2 mg/m³ 15 min		fume
	TWA: 1 mg/m ³ 8 hr		TWA: 1 mg/m ³ 8 hr. Cu
	TWA: 0.2 mg/m ³ 8 hr		dusts and mists
	_		STEL: 2 mg/m ³ 15 min
			STEL: 0.6 mg/m ³ 15 min
Manganese	STEL: 0.6 mg/m ³ 15 min	TWA: 0.2 mg/m ³ (8h) TWA:	TWA: 0.2 mg/m ³ 8 hr. Mn
	STEL: 0.15 mg/m ³ 15 min	0.05 mg/m ³ (8h)	fume; inhalable fraction
	TWA: 0.2 mg/m ³ 8 hr		TWA: 0.2 mg/m ³ 8 hr.
	TWA: 0.05 mg/m ³ 8 hr		inhalable fraction
	_		TWA: 0.05 mg/m ³ 8 hr.
			respirable fraction
			TWA: 0.02 mg/m ³ 8 hr. Mn
			fume; respirable fraction
			STEL: 0.15 mg/m ³ 15 min
			STEL: 0.6 mg/m ³ 15 min
			STEL: 3 mg/m ³ 15 min

Biological limit values

List source(s):

Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
Copper		DNEL = 273mg/kg		DNEL = 137mg/kg
7440-50-8 (4.0)		bw/day		bw/day

Predicted No Effect Concentration (PNEC)

See values below.

Component	Fresh water		Microorganisms in	Soil (Agriculture)
		sediment	sewage treatment	
Aluminum			PNEC = 20mg/L	

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7429-90-5 (94.8)				
Copper	PNEC = $7.8\mu g/L$	PNEC = 87mg/kg	$PNEC = 230\mu g/L$	PNEC = 65mg/kg
7440-50-8 (4.0)		sediment dw		soil dw

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
Copper	PNEC = $5.2\mu g/L$	PNEC = 676mg/kg			
7440-50-8 (4.0)		sediment dw			

8.2. Exposure controls

Engineering Measures

None under normal use conditions.

Personal protective equipment

Eye Protection Wear safety glasses with side shields (or goggles) (European standard - EN 166)

Hand Protection No special protective equipment required

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Disposable gloves	See manufacturers	-	EN 374	(minimum requirement)
	recommendations			

Skin and body protection Long sleeved clothing.

Respiratory Protection No protective equipment is needed under normal use conditions.

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits

are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Particle filter

Small scale/Laboratory use Maintain adequate ventilation

Environmental exposure controls Prevent product from entering drains. Do not allow material to contaminate ground water

system. Local authorities should be advised if significant spillages cannot be contained.

Solid

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State Solid Spheres

AppearanceSilverOdorOdorless

Odor Threshold
Melting Point/Range
Softening Point
Boiling Point/Range
No data available
No data available
No information available

Flammability (liquid) Not applicable

Flammability (solid,gas)

Explosion Limits

No information available

No data available

Flash Point No information available Method - No information available

Autoignition Temperature No data available Decomposition Temperature No data available

Decomposition TemperatureNo data availablepHNo information available

Viscosity Not applicable Solid

Water Solubility Insoluble in water

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Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

Vapor Pressure23 hPa @ 20 °CDensity / Specific GravityNo data availableBulk DensityNo data available

Vapor Density Not applicable Solid

Particle characteristics No data available

9.2. Other information

Molecular Formula Al:Cu:Mn:Mg; 94.8:4:0.7:0.5 wt%

Evaporation Rate Not applicable - Solid

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization No information available.
Hazardous Reactions None under normal processing.

10.4. Conditions to avoid

Incompatible products. Excess heat.

10.5. Incompatible materials

Oxidizing agent.

10.6. Hazardous decomposition products

Metal oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Product Information

(a) acute toxicity;

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

DermalNo data availableInhalationNo data available

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Aluminum	-	-	LC50 > 0.888 mg/L (Rat) 4 h
Copper	-	-	LC50 > 5.11 mg/L (Rat) 4 h
Manganese	LD50 = 9 g/kg (Rat)	-	LC50 > 5.14 mg/L (Rat) 4 h
Magnesium	LD50 = 230 mg/kg (Rat)	-	-

(b) skin corrosion/irritation; No data available

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(c) serious eye damage/irritation; No data available

(d) respiratory or skin sensitization;

Respiratory No data available Skin No data available

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; No data available

Target Organs No information available.

(j) aspiration hazard; Not applicable

Solid

Symptoms / effects,both acute and No information available. delayed

11.2. Information on other hazards

Endocrine Disrupting Properties Assess endocrine disrupting properties for human health. This product does not contain any

known or suspected endocrine disruptors.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity
Ecotoxicity effects

Contains a substance which is:. Very toxic to aquatic organisms. The product contains following substances which are hazardous for the environment. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

Component	Freshwater Fish	Water Flea	Freshwater Algae
Copper	LC50: = 1.25 mg/L, 96h static	EC50: = 0.03 mg/L, 48h Static	EC50: 0.031 - 0.054 mg/L, 96h
	(Lepomis macrochirus)	(Daphnia magna)	static (Pseudokirchneriella
	LC50: = 0.3 mg/L, 96h		subcapitata)
	semi-static (Cyprinus carpio)		EC50: 0.0426 - 0.0535 mg/L,
	LC50: = 0.8 mg/L, 96h static		72h static (Pseudokirchneriella
	(Cyprinus carpio)		subcapitata)
	LC50: = 0.112 mg/L, 96h		
	flow-through (Poecilia reticulata)		
	LC50: = 0.052 mg/L, 96h		
	flow-through (Oncorhynchus		
	mykiss)		
	LC50: 0.0068 - 0.0156 mg/L,		
	96h (Pimephales promelas)		
	LC50: < 0.3 mg/L, 96h static		
	(Pimephales promelas)		
	LC50: = 0.2 mg/L, 96h		
	flow-through (Pimephales		

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promelas)

Manganese

LC50: > 3.6 mg/L, 96h
semi-static (Oncorhynchus
mykiss)

12.2. Persistence and degradability Product contains heavy metals. Discharge into the environment must be avoided. Special

pre-treatment is necessary

Persistence Insoluble in water, May persist.

Degradability Not relevant for inorganic substances.

Degradation in sewage Contains substances known to be hazardous to the environment or not degradable in waste

treatment plant water treatment plants.

12.3. Bioaccumulative potential May have some potential to bioaccumulate; Product has a high potential to bioconcentrate

12.4. Mobility in soil Spillage unlikely to penetrate soil Is not likely mobile in the environment due its low water

solubility.

12.5. Results of PBT and vPvB

assessment

No data available for assessment.

12.6. Endocrine disrupting

properties

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

12.7. Other adverse effects

Persistent Organic Pollutant Ozone Depletion Potential This product does not contain any known or suspected substance This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused

Products

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Consult local, regional, and national hazardous waste regulations to

ensure complete and accurate classification.

Contaminated Packaging Empty remaining contents. Dispose of in accordance with local regulations. Do not re-use

empty containers.

European Waste Catalogue (EWC) According to the European Waste Catalog, Waste Codes are not product specific, but

application specific.

Other Information Do not flush to sewer.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO Not regulated

14.1. UN number

14.2. UN proper shipping name

14.3. Transport hazard class(es)

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14.4. Packing group

ADR Not regulated

14.1. UN number

14.2. UN proper shipping name

14.3. Transport hazard class(es)

14.4. Packing group

IATA Not regulated

14.1. UN number

14.2. UN proper shipping name

14.3. Transport hazard class(es)

14.4. Packing group

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required.

14.7. Maritime transport in bulk

Not applicable, packaged goods

according to IMO instruments

SECTION 15: REGULATORY INFORMATION

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

International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
Aluminum	7429-90-5	231-072-3	-	-	X	X	KE-00881	X	-
Copper	7440-50-8	231-159-6	-	-	Х	Х	KE-08896	Х	-
Manganese	7439-96-5	231-105-1	-	-	X	X	KE-22999	X	-
Magnesium	7439-95-4	231-104-6	-	-	Х	Х	KE-22673	Х	-

Component	CAS No	TSCA	notification -		NDSL	AICS	NZIoC	PICCS
			Active-Inactive					
Aluminum	7429-90-5	X	ACTIVE	X	ı	X	Χ	Х
Copper	7440-50-8	X	ACTIVE	Х	-	X	Х	Х
Manganese	7439-96-5	X	ACTIVE	Х	-	Х	X	Х
Magnesium	7439-95-4	X	ACTIVE	Х	ı	X	Х	Х

Legend: X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization		REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Aluminum	7429-90-5	-	Use restricted. See item 75. (see link for restriction details)	-
Copper	7440-50-8	-	Use restricted. See item 75. (see link for restriction details)	-

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Manganese	7439-96-5	-	-	-
Magnesium	7439-95-4	-	=	-

REACH links

https://echa.europa.eu/substances-restricted-under-reach

Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
Aluminum	7429-90-5	Not applicable	Not applicable
Copper	7440-50-8	Not applicable	Not applicable
Manganese	7439-96-5	Not applicable	Not applicable
Magnesium	7439-95-4	Not applicable	Not applicable

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)? Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

National Regulations

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

WGK Classification

Water endangering class = non-hazardous to waters (self classification)

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class	
Aluminum	nwg		
Copper	WGK2	Class III: 1 mg/m³ (Massenkonzentration) Class III: 1 mg/m³ (Massenkonzentration)	
Manganese	nwg - nicht wassergefährdend (non-hazardous to		
	waters)		
Magnesium	nwg		

Component	France - INRS (Tables of occupational diseases)
Aluminum	Tableaux des maladies professionnelles (TMP) - RG 32
	Tableaux des maladies professionnelles (TMP) - RG 16,RG 16bis

	Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
I	Copper	Prohibited and Restricted		
	7440-50-8 (4.0)	Substances		

15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

SECTION 16: OTHER INFORMATION

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Full text of H-Statements referred to under sections 2 and 3

H228 - Flammable solid

H252 - Self-heating in large quantities; may catch fire H261 - In contact with water releases flammable gases

H315 - Causes skin irritation

H319 - Causes serious eve irritation H335 - May cause respiratory irritation

Legend

Substances List

CAS - Chemical Abstracts Service

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances **IECSC** - Chinese Inventory of Existing Chemical Substances

ENCS - Japanese Existing and New Chemical Substances AICS - Australian Inventory of Chemical Substances **KECL** - Korean Existing and Evaluated Chemical Substances NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

ACGIH - American Conference of Governmental Industrial Hygienists

DNEL - Derived No Effect Level RPE - Respiratory Protective Equipment LC50 - Lethal Concentration 50% NOEC - No Observed Effect Concentration PBT - Persistent, Bioaccumulative, Toxic

Predicted No Effect Concentration (PNEC) LD50 - Lethal Dose 50% EC50 - Effective Concentration 50% POW - Partition coefficient Octanol:Water vPvB - very Persistent, very Bioaccumulative

IARC - International Agency for Research on Cancer

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

OECD - Organisation for Economic Co-operation and Development

BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

MARPOL - International Convention for the Prevention of Pollution from

Ships

ATE - Acute Toxicity Estimate VOC - (Volatile Organic Compound)

TWA - Time Weighted Average

Key literature references and sources for data

https://echa.europa.eu/information-on-chemicals

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Physical hazards On basis of test data **Health Hazards** Calculation method **Environmental hazards** Calculation method

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Prepared By Health, Safety and Environmental Department

Revision Date

Revision Summary New emergency telephone response service provider.

This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet