SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 1 **Issue Date** 29-Mar-2016
Product Name Zinc manganese battery r20/r14/r6/r03/6f22/3r12/4r25 **Revision date** 29-Mar-2016

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name	Zinc manganese battery R20/R14/R6/R03/6F22/3R12/4R25
Product Code	R20/R14/R6/R03/6F22/3R12/4R25

Other means of identification

Product Type	Zinc manganese battery
	Voltage: V

Recommended use of the chemical and restrictions on use

Recommended Use	Used in toys, flashlight, tape recorders, etc.
Uses advised against	No information available.

Details of the supplier of the safety data sheet

Supplier	Wico Industrial Co., Limited
Address	Rm1919, 19F, Baiyun Plaza, No.111-113 Baiyun Road, Yuexiu District, Guangzhou, China
Postal Code	510100
Phone	+86-20-83292518
FAX	+86-20-83292789
E-mail	sales1@wicobattery.com

Emergency telephone number

+86-13902497002

2. HAZARDS IDENTIFICATION

GHS Classification

Not classified

Label elements

Symbols/Pictograms	None
Signal word	None
Hazard Statements	None
Precautionary Statements	
Prevention	None.
Response	None.
Storage	None.
Disposal	None.

Hazards not otherwise classified (HNOC)

No information available.

Unknown acute toxicity

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature Article

Chemical Name	CAS No	Weight-%

Zinc	7440-66-6	7 - 42
Manganese dioxide	1313-13-9	15 - 31
Steel manufacture, chemicals	65997-19-5	23 - 28
Zinc chloride	7646-85-7	2 - 10
Ammonium chloride	12125-02-9	0 - 10
Carbon black	1333-86-4	3 - 7

4. FIRST AID MEASURES

Description of first aid measures

General advice: In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation: Not an expected route of exposure. Immediate medical attention is not required.

Skin Contact: No special technical protective measures are necessary. Immediate medical attention is not required.

Eye contact: Not an expected route of exposure. Eye contact may cause mechanical injury.

Ingestion: Not an expected route of exposure. If swallow by mistake, get medical attention.

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: No information available.

Specific hazards arising from the chemical

No information available.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Cool containers with flooding quantities of water until well after fire is out. Evacuate personnel to safe areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition. Avoid contact with eyes.

Methods and material for containment and cleaning up

Avoid release to the environment

Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid contact with eyes. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Store in accordance

with local regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH	Denmark	European Union
Manganese dioxide (CAS #: 1313-13-9)	TWA: 0.02 mg/m^3 Mn TWA: 0.1 mg/m^3 Mn	(vacated) Ceiling: 5 mg/m^3 Ceiling: 5 mg/m^3 Mn	IDLH: 500 mg/m^3 Mn TWA: 1 mg/m^3 Mn STEL: 3 mg/m^3 Mn	TWA: 0.2 mg/m^3	-
Steel manufacture, chemicals (CAS #: 65997-19-5)	STEL: 10 mg/m^3 Zr TWA: 0.05 mg/m^3 Pb TWA: 0.00005 mg/m^3 Be inhalable fraction TWA: 1 mg/m^3 Cu dust and mist TWA: 0.2 mg/m^3 Se TWA: 1 mg/m^3 Y TWA: 5 mg/m^3 Zr TWA: 0.02 mg/m^3 Mn TWA: 0.1 mg/m^3 Mn TWA: 0.5 mg/m^3 Hf	-	IDLH: 4 mg/m^3 Be IDLH: 100 mg/m^3 Cu dust and mist IDLH: 500 mg/m^3 Mn IDLH: 1 mg/m^3 Se IDLH: 500 mg/m^3 Y IDLH: 25 mg/m^3 Zr IDLH: 100 mg/m^3 Pb IDLH: 10 mg/m^3 Ni IDLH: 50 mg/m^3 Hf Ceiling: 0.05 mg/m^3 V dust and fume 15 min Ceiling: 0.0005 mg/m^3 Be TWA: 1 mg/m^3 Cu dust and mist TWA: 1 mg/m^3 Mn TWA: 0.2 mg/m^3 except Selenium hexafluoride Se TWA: 1 mg/m^3 Y TWA: 5 mg/m^3 except Zirconium tetrachloride Zr TWA: 0.050 mg/m^3 Pb TWA: 0.015 mg/m^3 except Nickel carbonyl Ni TWA: 0.5 mg/m^3 Hf STEL: 3 mg/m^3 Mn STEL: 10 mg/m^3 Zr	TWA: 0.05 mg/m^3 TWA: 0.001 mg/m^3 TWA: 0.1 mg/m^3 TWA: 1 mg/m^3 TWA: 5 mg/m^3 TWA: 0.2 mg/m^3	-
Zinc chloride (CAS #: 7646-85-7)	STEL: 2 mg/m^3 fume TWA: 1 mg/m^3 fume	TWA: 1 mg/m^3 fume (vacated) TWA: 1 mg/m^3 fume (vacated) STEL: 2 mg/m^3 fume	IDLH: 50 mg/m^3 fume TWA: 1 mg/m^3 fume STEL: 2 mg/m^3 fume	TWA: 0.5 mg/m^3	-
Ammonium chloride (CAS #: 12125-02-9)	STEL: 20 mg/m^3 fume TWA: 10 mg/m^3 fume	(vacated) TWA: 10 mg/m^3 fume (vacated) STEL: 20 mg/m^3 fume	TWA: 10 mg/m^3 fume STEL: 20 mg/m^3 fume	TWA: 10 mg/m^3	-
Carbon black (CAS #: 1333-86-4)	TWA: 3 mg/m^3 inhalable fraction	-	IDLH: 1750 mg/m^3 TWA: 3.5 mg/m^3 TWA: 0.1 mg/m^3 Carbon black in presence of Polycyclic aromatic hydrocarbons PAH	TWA: 3.5 mg/m^3	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Zinc (CAS #: 7440-66-6)		-	-	TWA: 0.1 mg/m^3 TWA: 2 mg/m^3 Ceiling / Peak: 0.4 mg/m^3 Ceiling / Peak: 4 mg/m^3	-
Manganese dioxide (CAS #: 1313-13-9)	TWA: 0.3 mg/m^3	-	TWA: 0.2 mg/m^3 TWA: 0.1 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.02 mg/m^3 Ceiling / Peak: 1.6 mg/m^3 Ceiling / Peak: 0.16 mg/m^3 TWA: 0.5 mg/m^3	-

Steel manufacture, chemicals (CAS #: 65997-19-5)	TWA: 1 mg/m^3 TWA: 0.005 mg/m^3 TWA: 0.001 mg/m^3 TWA: 0.05 mg/m^3 STEL: 0.01 mg/m^3	TWA: 0.002 mg/m^3 TWA: 0.1 mg/m^3	TWA: 0.0001 mg/m^3 TWA: 1 mg/m^3 TWA: 0.1 mg/m^3 TWA: 0.05 mg/m^3 TWA: 0.01 mg/m^3 TWA: 0.2 mg/m^3 TWA: 0.02 mg/m^3 TWA: 0.5 mg/m^3 STEL: 0.0004 mg/m^3 STEL: 0.3 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.02 mg/m^3 TWA: 0.1 mg/m^3 TWA: 2 mg/m^3 Ceiling / Peak: 1.6 mg/m^3 Ceiling / Peak: 0.16 mg/m^3 Ceiling / Peak: 0.4 mg/m^3 Ceiling / Peak: 4 mg/m^3 Skin TWA: 0.5 mg/m^3 TWA: 0.05 mg/m^3	TWA: 0.15 mg/m^3
Zinc chloride (CAS #: 7646-85-7)		TWA: 1 mg/m^3	TWA: 1 mg/m^3	TWA: 0.1 mg/m^3 TWA: 2 mg/m^3 Ceiling / Peak: 2 mg/m^3 Ceiling / Peak: 0.4 mg/m^3 Ceiling / Peak: 4 mg/m^3	-
Ammonium chloride (CAS #: 12125-02-9)	TWA: 10 mg/m^3	TWA: 10 mg/m^3	-	-	-
Carbon black (CAS #: 1333-86-4)		TWA: 3.5 mg/m^3	TWA: 3.5 mg/m^3 STEL: 7 mg/m^3	Skin	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Manganese dioxide (CAS #: 1313-13-9)	TWA: 0.3 mg/m^3	TWA: 0.2 mg/m^3	TWA: 0.2 mg/m^3	TWA: 0.5 mg/m^3	-
Zinc chloride (CAS #: 7646-85-7)	STEL: 2 mg/m^3 TWA: 1 mg/m^3	STEL: 2 mg/m^3 TWA: 1 mg/m^3	STEL: 2 mg/m^3 TWA: 1 mg/m^3	TWA: 1 mg/m^3	-
Ammonium chloride (CAS #: 12125-02-9)	STEL: 20 mg/m^3 TWA: 10 mg/m^3	STEL: 20 mg/m^3 TWA: 10 mg/m^3	STEL: 20 mg/m^3 TWA: 10 mg/m^3	TWA: 3 mg/m^3	-

Chemical Name	Norway	United Kingdom	Australia	Austria	Belgium
Manganese dioxide (CAS #: 1313-13-9)	TWA: 1 mg/m^3 TWA: 0.1 mg/m^3 STEL: 1 ppm STEL: 0.1 mg/m^3	TWA: 0.5 mg/m^3	1 mg/m^3	STEL 2 mg/m^3 TWA: 0.5 mg/m^3	-
Steel manufacture, chemicals (CAS #: 65997-19-5)	TWA: 0.05 mg/m^3 TWA: 0.001 mg/m^3 TWA: 5 mg/m^3 TWA: 1 mg/m^3 TWA: 0.1 mg/m^3 STEL: 0.05 mg/m^3 STEL: 0.001 mg/m^3 STEL: 5 mg/m^3 STEL: 1 ppm STEL: 0.1 mg/m^3 STEL: 0.15 mg/m^3	-	0.15 mg/m^3 0.002 mg/m^3 1 mg/m^3 0.1 mg/m^3 5 mg/m^3 10 mg/m^3 STEL	Skin STEL 4 mg/m^3 STEL 0.4 mg/m^3 STEL 0.3 mg/m^3 STEL 2 mg/m^3 TWA: 1 mg/m^3 TWA: 0.1 mg/m^3 TWA: 5 mg/m^3 TWA: 0.5 mg/m^3	-
Zinc chloride (CAS #: 7646-85-7)	TWA: 1 mg/m^3 STEL: 3 mg/m^3	STEL: 2 mg/m^3 TWA: 1 mg/m^3	1 mg/m^3 2 mg/m^3 STEL	-	-
Ammonium chloride (CAS #: 12125-02-9)	TWA: 10 mg/m^3 STEL: 10 mg/m^3	STEL: 20 mg/m^3 TWA: 10 mg/m^3	10 mg/m^3 20 mg/m^3 STEL	-	-
Carbon black (CAS #: 1333-86-4)	TWA: 3.5 mg/m^3 STEL: 3.5 mg/m^3	-	3 mg/m^3	-	-

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition.

Individual protection measures, such as personal protective equipment

Respiratory protection: If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hand Protection: Wear protective gloves.

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin and body protection	Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid
Color	No information available
Odor	No information available
Odor Threshold	Not determined
pH	Not determined
Melting point/freezing point	Not determined
Boiling point / boiling range	Not determined
Flash point	Not applicable
Evaporation rate	Not determined
Flammability (solid, gas)	Not flammable
Flammability Limit in Air	Not applicable
Vapor Pressure	Not determined
Vapor density	Not applicable
Density	Not determined
Relative density	Not determined
Bulk density	Not determined
Specific gravity	Not determined
Water solubility	Insoluble in water
Partition coefficient (LogPow)	Manganese dioxide (CAS #: 1313-13-9): <0 Ammonium chloride (CAS #: 12125-02-9): -3.2
Autoignition temperature	Not applicable
Decomposition temperature	Not determined
Kinematic viscosity	Not determined
Dynamic viscosity	Not determined
Explosive properties	Not an explosive
Oxidizing properties	Not determined

Other information

No information available

10. STABILITY AND REACTIVITY

Reactivity

Stable under recommended storage and handling conditions (see SECTION 7, handling and storage).

Chemical stability

Stable under normal conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Extremes of temperature and direct sunlight.

Incompatible materials

No information available.

Hazardous Decomposition Products

None under normal use conditions

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	Not an expected route of exposure.
Eye contact	No eye irritation under normal conditions.
Skin Contact	Non-irritating to the skin under normal conditions.
Ingestion	Ingestion may be harmful.

Information on toxicological effects

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Manganese dioxide (CAS #: 1313-13-9)	>3480 mg/kg (Rat) male	-	-
Ammonium chloride (CAS #: 12125-02-9)	1650 mg/kg (Rat) 1410 mg/kg bw (Rat)	> 2000 mg/kg bw (Rat)	-
Zinc chloride (CAS #: 7646-85-7)	350 mg/kg (Rat)	-	-
Carbon black (CAS #: 1333-86-4)	> 8000 mg/kg (rat)	> 3000 mg/kg (Rabbit)	-

Skin corrosion/irritation
Non-irritating to the skin under normal conditions.

Serious eye damage/eye irritation
No eye irritation under normal conditions.

Sensitization
No information available.

Germ cell mutagenicity
No information available.

Carcinogenicity

Chemical Name	ACGIH	IARC	NTP	OSHA
Carbon black (CAS #: 1333-86-4)	A3	Group 2B	-	-

Reproductive toxicity
No information available.

STOT - single exposure
No information available.

STOT - repeated exposure
No information available.

Aspiration hazard
No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Zinc (CAS #: 7440-66-6)	-	LC50 - Daphnia magna (Water flea) - 0.068 mg/l - 48 h	LC50 - Daphnia magna (Water flea) - 0.068 mg/l - 48 h
Manganese dioxide (CAS #: 1313-13-9)	> 100 other: v/v saturated solution 72h Desmodesmus subspicatus	> 100 other: % v/v saturated solution 96h Oncorhynchus mykiss	> 100 other: % v/v saturated solution 48h Daphnia magna
Ammonium chloride (CAS #: 12125-02-9)	1300 mg/L/:5d Chlorella vulgaris 90.4 mg/L:5d Navicula sp.	209 mg/L:96h Cyprinus carpio 174 mg/L:96h Cyprinus carpio 275 mg/L :24h Cyprinus carpio	101 mg/L:48h Daphnia magna

Zinc chloride (CAS #: 7646-85-7)	0,01 mg/l/72h	0,027 mg/l/96h	0,05 mg/l/48h

Persistence and degradability

No information available.

Bioaccumulative potential

Chemical Name	Partition coefficient (LogPow)
Manganese dioxide (CAS #: 1313-13-9)	<0
Ammonium chloride (CAS #: 12125-02-9)	-3.2

Chemical Name	Bioconcentration factor (BCF)
Zinc (CAS #: 7440-66-6)	466
Zinc chloride (CAS #: 7646-85-7)	16000

Mobility in soil

No information available.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes: Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging: Disposal should be in accordance with applicable regional, national and local laws and regulations.

Chemical Name	California Hazardous Waste Status
Zinc 7440-66-6	Ignitable powder Toxic
Steel manufacture, chemicals 65997-19-5	Toxic
Zinc chloride 7646-85-7	Toxic Corrosive

14. TRANSPORT INFORMATION

UN/ID No. Not regulated
UN Proper shipping name Not regulated
Hazard Class Not regulated
Packing Group Not regulated
Special precautions No information available
Marine pollutant Non-marine pollutant

15. REGULATORY INFORMATION

International Inventories

Component	AICS	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	TSCA
Zinc 7440-66-6 (7 - 42)	X	X	X	Expect	X	X	X	X
Manganese dioxide 1313-13-9 (15 - 31)	X	X	X	X	X	X	X	X
Steel manufacture, chemicals 65997-19-5 (23 -	X	X	X	-	-	X	-	X

28)								
Zinc chloride 7646-85-7 (2 - 10)	X	X	X	X	X	X	X	X
Ammonium chloride 12125-02-9 (0 - 10)	X	X	X	X	X	X	X	X
Carbon black 1333-86-4 (3 - 7)	X	X	X	X	X	X	X	X

"-" Not Listed
"X" Listed

US Federal Regulations

SARA 313

Chemical Name	SARA 313 - Threshold Values %
Zinc - 7440-66-6	1.0
Manganese dioxide - 1313-13-9	1.0
Zinc chloride - 7646-85-7	1.0
Ammonium chloride - 12125-02-9	1.0

SARA 311/312 Hazard Categories

Not applicable

CWA (Clean Water Act)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Zinc 7440-66-6	-	X	X	-
Steel manufacture, chemicals 65997-19-5	-	X	-	-
Zinc chloride 7646-85-7	1000 lb	X	-	X
Ammonium chloride 12125-02-9	5000 lb	-	-	X

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Zinc 7440-66-6	1000 lb	-	RQ 454 kg final RQ RQ 1000 lb final RQ
Zinc chloride 7646-85-7	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ
Ammonium chloride 12125-02-9	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

Chemical Name	California Proposition 65
Steel manufacture, chemicals - 65997-19-5	Carcinogen Developmental
Carbon black - 1333-86-4	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Zinc 7440-66-6	X	X	X
Manganese dioxide 1313-13-9	X	-	X
Steel manufacture, chemicals 65997-19-5	X	-	-
Ammonium chloride 12125-02-9	X	X	X
Zinc chloride 7646-85-7	X	X	X
Carbon black	X	X	-

1333-86-4			

16. OTHER INFORMATION

Revision Note

Issue Date	29-Mar-2016
Revision date	29-Mar-2016
Revision Note	Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)
STEL - STEL (Short Term Exposure Limit)
Ceiling - Maximum limit value
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Disclaimer

The information provided in this Material 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 --------