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

1.1. Product identifier

Product name : Nickel Oxide
EC No : 215-215-7/234-323-5
CAS No. : 1313-99-1/11099-02-8
REACH registration No. : 01-2119467172-41-XXXX
Synonyms : nickel oxide sinter 75, NOS75, Nickel oxide (NiO), FMW, green nickel oxide, black nickel oxide, mononickel oxide, nickel monoxide, nickelous oxide, nickel (II) oxide, nickel (2+) oxide, Bunsenite.

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

1.2.1. Relevant identified uses

Industrial use of powdered and shaped nickel oxide containing catalysts (A)
Industrial use of nickel oxide-containing catalysts for the production of catalysts containing other nickel compounds
Production of nickel base powders from nickel oxide
Production of nickel-containing electronics and thermally functioning ceramics
Production of nickel-containing enamel frits
Production of nickel-containing pigments
Production of nickel-containing glass
Stainless, special steels and special alloys manufacturing

1.2.2. Uses advised against

- None

Full text of use descriptors: see section 16.
Exposure Scenarios: Annex 1

1.3. Details of the supplier of the safety data sheet

Simba Materials Limited t/a CTM Potters Supplies

Unit 7-8
Broomhouse Lane Industrial Estate
Broomhouse Lane
Edlington
Doncaster
DN12 1EQ
T +44 (0)1709 770801
F +44 (0)1709 770803

Unit 10A
Millpark Industrial Estate
White Cross Road
Woodbury Salterton
nr Exeter
Devon
EX5 1EL
T +44 (0)1395 233077
F +44 (0)1395 233905

doncaster@ctmpotterssupplies.co.uk - www.ctmpotterssupplies.co.uk - admin@ctmpotterssupplies.co.uk

1.4. Emergency telephone number T

+44 (0)1709 770801 (Office hours only)

doncaster@ctmpotterssupplies.co.uk

SECTION 2: Hazards identification.

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin Sensitisation Category 1
Carcinogenicity Category 1A; Specific Target Organ Toxicity, Repeated exposure – Category 1
Aquatic Chronic Category 4
Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Carcinogenicity Category 1; R49
T; R48/23
R43
R53
Full text of R-phrases: see section 16

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictograms (CLP):


Product identifier: Nickel Oxide
Symbols: GHS07 – Exclamation mark
GHS08 – Health Hazard
Signal word (CLP): DANGER
Hazard statements (CLP) :
H317: May cause an allergic skin reaction
H350: May cause cancer
H372: Causes damage to organs through prolonged or repeated exposure
H413: May cause long lasting harmful effects to aquatic life

Precautionary statements (CLP): NOTE: number of P-statements has been reduced, as per CLP regulation, the full list can be found in Section 15)
P202: Do not handle until all safety precautions have been read and understood.
P261: Avoid breathing dust/fume/ gas/mist/vapours/spray. [As modified by IV ATP]
P273: Avoid release to the environment.
P281 – Use personal protective equipment as required.
P302 + P352: IF ON SKIN: Wash with plenty of water/… [As modified by IV ATP]
P501 – Dispose of contents and container in accordance with all local, regional, national and international regulations.

Full text of R-Statements and Precautionary statements see section 15

SECTION 3: Composition/information on ingredients.

3.1. Substances

Hazardous Ingredients	Typical Composition (%)	C.A.S. Number	EINECS/EC Label No.
Nickel Oxide NiO)	98	1313-99-1	215-215-7
Cobatous Oxide (CoO)	0-1.5	1307-96-6	215-154-6
Nickel Hydroxide	0-0.5	12054-48-7	235-008-05

SECTION 4: First aid measures.

Ingestion: No specific first aid required.

Inhalation: No specific first aid required.

Skin: Remove contaminated clothing, and wash affected areas thoroughly with soap and water. If skin irritation or rash occurs: Get medical advice/attention. Show label if possible.

Eyes: Irrigate eyeball thoroughly with water for at least 10 minutes. If discomfort persists seek medical attention.

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

Skin contact: Rash
Eye contact: Redness

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

No special requirements

SECTION 5: Firefighting measures.

5.1. Extinguishing media

Suitable extinguishing media: Any type to be selected according to materials stored in the immediate neighbourhood.
Unsuitable extinguishing media: None.

5.2. Special hazards arising from the substance or mixture

Non-flammable. Extinguish surrounding fires with appropriate methods.

5.3. Advice for firefighters

Protection during firefighting: Use of approved supplied air or self-contained breathing apparatus operated in positive pressure mode are satisfactory. Totally impervious protective suits, gloves, and boots must be worn.

SECTION 6: Accidental release measures.

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Keep public away from danger area. See section 8.2. Avoid dust production. Avoid all contact with this substance.

6.1.1. For non-emergency personnel
No additional information available

6.1.2. For emergency responders
No additional information available

6.2. Environmental precautions
Prevent entry to sewers and soil. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up: Collect mechanically and transfer into appropriate container for disposal. Avoid dust production.

6.4. Reference to other sections
See section 8 and 13 for more information.

SECTION 7: Handling and storage.

7.1. Precautions for safe handling

Precautions for safe handling: Do not breathe dust. Avoid all contact with this substance Wash hands plentifully and other exposed areas with water after handling. Remove contaminated clothing and shoes. Wash clothing before re-using.
Packagings: Even those that have been emptied, will retain product residue. Always obey safety warnings and handle empty packagings as if they were full. Avoid all contact with this substance.
Hygiene measures: When using do not eat, drink or smoke. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Remove contaminated clothing and shoes.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store in dry, cool, well-ventilated area. Keep away from food, drink and animal feeding stuffs.
Incompatible products: None known

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection.

8.1. Exposure Limits.

Nickel Oxide (NiO) - CAS 1313-99-1		
	Exposure Limit (mg/m³)	Year
ACGIH TLV-TWA[1]	0.2* ‡ as Ni	2008
OK WEL[2]	0.5 as Ni	2006
Japan	1 as Ni	2012
Korea	0.1 as Ni	2006
China	1 as Ni	2007

* Inhalable fraction

‡ Insoluble inorganic fraction

8.2. Environmental Limits.

PNEC's

Compartment	Unit	PNEC
Freshwater	µg Ni/L (bioavailable)	3.55
Marine	µg Ni/L	8.6
Terrestrial	Mg Ni/kg	29.9

DNEL's

Compartment	Unit	PNEC
Dermal		
Acute systemic	mg/Ni/kg/day	–
Acute local	mg/Ni/cm²/day	–
Long-term systemic	mg/Ni/kg/day	–
Long-term local	mg/Ni/cm²/day	0.024
Inhalation		
Acute systemic	mg/Ni/m³	520
Acute local	mg/Ni/m³	3.9[1]
Long-term systemic	mg/Ni/m³	0.05[2 3]
Long-term local	mg/Ni/m³	0.05[2 3]

[1] Based on MMAD of 2.9µm, increases with increasing MMAD (estiamated as ≥6.4 mg Ni/m³ for Exposures to particles with a MMAD of ≥30µm.

[2] When handling powders of particle aerodynamic equivalent diameter (AED) below 10µm, exposures (8h TWA) to these powders should be kept under 0.01 mg.Ni/m³

[3] When exposure are solely to metallic and nickel oxides (without exposure to any other nickel compounds) and the mean particle size of the aerosol is greater than 10µm AED (≤ 10% of aerosol mass in respirable fraction), inhalable exposure levels uo to 0.2 mg Ni/m³ could be reasonably assumed to be safe.

8.3. Occupational Exposure controls

Appropriate engineering controls: Use as far as possible in a closed system. Provide a regular control of the atmosphere. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Local exhaust and general ventilation must be adequate to meet exposure standards. Please refer to the annex (exposure scenarios).

Hand protection: Use gloves resistant to chemical products corresponding to EN 374:3. Take advice to gloves' supplier.

Eye protection: Wear safety glasses with side shields according EN 166.

Skin and body protection: Wear closed protective clothing.

Respiratory protection: Use respiratory protection mask according to EN 140 or EN 405 with filter type P3 according to EN 143:2000 or FFP3 according to EN 149:2001.

Environmental exposure controls: Prevent entry to sewers and soil.

SECTION 9: Physical and chemical; properties.

Physical state at 20^{0}C and 101.3 kPa	Solid
Colour	white.
Odour	odourless.
Odour threshold	Not applicable
pH	No data available
Relative evaporation rate (butylacetate=1)	No data available
Melting point	>1,900 °C
Freezing point	No data available
Boiling point	Not applicable
Flash point	Not flammable
Self ignition temperature	>400^{0}C
Decomposition temperature	No data available
Flammability (solid, gas)	Not flammable
Vapour pressure	Not applicable
Relative density	6.75 g/cm^3 at 20^{0}C
Density	No data available
Solubility in water	3.52X10^{-5} g/l at 20^{0}C (green nickel oxide) 2.26X10^{-3} g/l at 20^{0}C (black nickel oxide)
Bulk Density	800 – 1,300 kg/m^3
Viscosity, kinematic	Not applicable
Viscosity, dynamic	No data available
Explosive properties	No data available
Oxidising properties	Non-oxidisng
Explosive limits	Not applicable
Granulometry	<0.1% of particles aith a diameter <100µm

9.2. Other information

None

SECTION 10: Stability and reactivity.

10.1. Reactivity
Stable under normal conditions of handling and storage.

10.2. Chemical stability
Stable under normal conditions of handling and storage.

10.3. Possibility of hazardous reactions
Stable under normal conditions of handling and storage.

10.4. Conditions to avoid
Protect from moisture

10.5. Incompatible materials
None

10.6. Hazardous decomposition products
No information available

SECTION 11: Toxicological information.

11.1. Information on toxicological effects
As a mixture the toxicological properties of the product are unknown. The toxicology of the reported ingredients are summarised below.

Nickel Oxide

Acute Toxicity

a) Oral: Non toxic – LD_{50} ORAL RAT >11,000mg/kg (green); 9,990 (black)

b) Inhalation: Non toxic – LD_{50} INHAL RAT >5.08mg/kg (green); >5.15 (black)

C) Dermal: No information available

Corrosivity/Irritation

a) Respiratory Tract: No classification

b) Skin: Not corrosive/irritating

c) Eyes: Mildly irritating

Sensitization

a) Respiratory Tract: Nickel metal induced asthma is very rare.3 case reports are available; the data is not sufficient to conclude that nickel metal is classified as a respiratory sensitizer.

b) Skin: Nickel oxide is currently classified as a dermal sensitizer (R43) according to the 1st ATP to the CLP Regulation. Recent studies evaluating the bioaccessibiliy of a series of Ni compounds in synthetic sweat indicated very low nickel ion release from Ni oxide, suggesting very low or no sensitization potency. Early Guinea pig maximization and Beuhler test results show low potential for nickel oxide to act as a dermal sensitizer.

c) Pre-existing conditions: Individuals known to be allergic to nickel should avoid contact with nickel whenever possible to reduce the likelihood of nickel allergic dermatitis reactions (skin rashes). Repeated contact may result in persistent chronic palmar/hand dermatitis in a smaller number of individuals, despite efforts to reduce or avoid nickel exposure.

Chronic toxicity
a) Oral: No information available
b) Inhalation: Exposure related toxicities were noted following 13 weeks and two years of exposure to NiO in both rats and mice in the US NTP chronic rat inhalation study. Adverse effects in rodents were primarily limited to the lung (e.g. increased tissue weight, inflammation, macrophage hyperplasia). The LOAEC from the chronic study in rats was 0.6 mg NiO/m^3 or 0.5 mg Ni/m^3
c) Dermal: No information available

Mutagenicity/Reproductive toxicity
Not classified for reproductive/developmental toxicity. Not classified for mutagenecity.

Carcinogenicity
a) Ingestion: No information available. Not classified
b) Inhalation: Category 1A; Human epidemiological And animal data suggest that at least some forms of nickel oxide can be carcinogenic to the respiratory tract of humans after inhalation.

Cobaltous Oxide
LD_{50} ORAL RAT 202mg/kg
Inhalation: Causes irritation to the respiratory tract, symptoms may include coughing, shortness of breath and nausea. Respiratory hypersensitivity, asthma may appear. Inhalation of cobalt dust and fumes is associated with an increased incidence of lung disease.

Ingestion: Causes abdominal pain, nausea, vomiting, flushing of the face and ears, mild hypotension, rash and ringing in the ears.

Skin contact: May cause dermatitis, Causes irritation to skin. Symptoms include redness, itching and pain.

Eye contact: Causes irritation, redness and pain.

Pre-existing Conditions: Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance. Persons with allergies or sensitivity to cobalt may also be more susceptible to the effects of the substance.

Nickel Hydroxide
No information currently available.

SECTION 12: Ecocological information.

12.1. Toxicity
Aquatic Chronic 4. May cause long lasting harmful effects to aquatic life.

12.2. Persistence and degradability
The PBT and vPBT criteria of Annex XIII to the Regulation do not apply to inorganic substances, such as nickel metal. The methods for determining the biological degradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential
Nickel does not tend to bioaccumulate or biomagnify in aquatic or terrestrial systems.

12.4. Mobility in soil
The substance is essentially insoluble in water.

12.5. Results of PBT and vPvB assessment
Not classified as PBT or vPBT.

12.6. Other adverse effects
None anticipated

SECTION 13: Disposal considerations.

13.1. Waste treatment methods

Recover or recycle if possible. Dispose of contents in accordance with local, national or international legislation

13.2. Additional Information
No information available

SECTION 14: Transport information.

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number
Not applicable

14.2. UN proper shipping name
Not classified as dangerous according to Transport Regulations

14.3. Transport hazard class(es)
Not applicable

14.4. Packing group
Not applicable

14.5. Environmental hazards
Other information: No supplementary information available.

14.6. Special precautions for user

14.6.1. Overland transport
Not applicable

14.6.2. Transport by sea
No additional information available

14.6.3. Air transport
No additional information available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

SECTION 15: Regulatory information.

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

15.1.1. Classification according to Dangerous Substance Directive 67/548EEC
T – Toxic: Category 1 carcinogen.

R48/23: Toxic: danger of serious damage to health by prolonged exposure through inhalation
R49: May cause cancer by inhalation
R43: May cause sensitisation by skin contact
R53: May cause long-term adverse effects in the aquatic environment

S53: Avoid exposure - obtain special instructions before use
S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
S61: Avoid release to the environment. Refer to special instructions/safety data sheet

All components are listed on EINECS. (European Inventory of Existing Chemical Substances)

15.1.2. Classification according to Part 3 of Annex VI of EU Regulations No. 1272/2008

Skin Sensitization: Category 1
Carcinogenicity: Category 1A
Specific Target Organ Toxicity, Repeated exposure: Category 1
Aquatic Chronic: Category 4

Symbols: GHS07 – Exclamation mark
GHS08 – Health Hazard

Signal Word: DANGER

Hazard Statements
H317: May cause an allergic skin reaction
H350: May cause cancer
H372: Causes damage to organs through prolonged or repeated exposure
H413: May cause long lasting harmful effects to aquatic life

Precautionary Statements
Prevention:
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P261: Avoid breathing dust/fume/ gas/mist/vapours/spray.
P264: Wash hands and face 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
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use personal protective equipment as required

Response:
P302+P352: IF ON SKIN: Wash with plenty of water
P308+P311: IF exposed or concerned Get medical advice/attaention
P333+P313: If skin irritation or a rash occurs: Get medical advice/attention.

P314: Get Medical advice/attention if you feel unwell.
P321: See Safety Data Sheet for specific treatment
P363: Wash contaminated clothing before reuse.

Storage:
P405: Store locked up

Disposal:
P501: Dispose of contents/container in accordance with local/regional/national/international regulations

SECTION 16: Other information.

16.1. Indications of change

a) Original Document
b) Formatting Changes

The following Acronyms may be found in this document
ACGIH: American Conference of Governmental Industrial Hygienists
DNEL: Derived No Effect Level
LTEL: Long Term Exposure Limit
LR: Lead Registrant
MMAD: Mass Median Aerodynamic Diameter
NIOSH: National Institute of Occupational Safety and Health
OEL: Occupatioal Exposure Limits
OR: Only Representative
OSHA: Occupational Safety and Health Administration
PBT: PBT: Persistent, Bioaccumulative and Toxic
PNEC: Predicted No Effect Concentration
STEL: Short Term Exposure Limit
STOT: Specific Target Organ Toxicity
TLV - TWA: Threshold Limit Value – Time Weighted Average
vPvB: Very persistent and very Bioaccumulative
WEL: Workplave Exposure Limit (UK HSE EH40)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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