

Chromium Nanoparticles (Cr)

US Research Nanomaterials, Inc.

Material Safety Data Sheet

acc. to OSHA and ANSI

1 Identification of substance:

Product details:

Product name: Chromium powder

Stock number: US1086

Manufacturer/Supplier:

US Research Nanomaterials, Inc.

3302 Twig Leaf Lane

Houston, Texas 77084

www.us-nano.com

2 Composition/Data on components:

Chemical characterization:

Description: (CAS#)

Chromium (CAS# 7440-47-3): 100%

Identification number(s):

EINECS Number: 231-157-5

3 Hazards identification

Hazard description:

Xn Harmful

F Highly flammable

Information pertaining to particular dangers for man and environment

R 11 Highly flammable.

R 40 Limited evidence of a carcinogenic effect.

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

Health (acute effects) = 2

Flammability = 2

Reactivity = 1

4 First aid measures

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek immediate medical advice.

5 Fire fighting measures

Suitable extinguishing agents

Special powder for metal fires. Do not use water.

For safety reasons unsuitable extinguishing agents Water

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Toxic metal oxide fume

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Keep away from ignition sources.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

Handling

Information for safe handling:

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires:

Keep ignition sources away.

Protect against electrostatic charges.

Storage

Requirements to be met by storerooms and receptacles:

Store in a cool location.

Information about storage in one common storage facility:

Store away from oxidizing agents.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

8 Exposure controls and personal protection

Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Chromium metal	mg/m ³	
ACGIH TLV	0.5;	Not classifiable as a human carcinogen
Belgium TWA	0.5	
Denmark TWA	0.5	
Finland TWA	0.01	
France VME	0.5	
Japan OEL	0.5	
Korea TLV	0.5	
Netherlands MAC-TGG	0.5	
Norway TWA	0.5	
Poland TWA	0.5	
Sweden NGV	0.5	

United Kingdom TWA 0.5

USA PEL 1

Components with limit values that require monitoring at the workplace:

- Additional information:** No data
- Personal protective equipment**
- General protective and hygienic measures**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
- Breathing equipment:**
Use suitable respirator when high concentrations are present.
- Protection of hands:**
Impervious gloves
Check protective gloves prior to each use for their proper condition.
- Material of gloves**
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.
- Eye protection:** Safety glasses
- Body protection:** Protective work clothing.

9 Physical and chemical properties:

General Information

- Form:** Powder
- Color:** grey/black
- Odor:** Odorless

	<u>Value/Range</u>	<u>Unit</u>	<u>Method</u>
<input type="checkbox"/> Change in condition			
<input type="checkbox"/> Melting point/Melting range:	1875	° C	
<input type="checkbox"/> Boiling point/Boiling range:	2482	° C	
<input type="checkbox"/> Sublimation temperature / start:	Not determined		
<input type="checkbox"/> Flash point:	Not applicable		
<input type="checkbox"/> Flammability (solid, gaseous)	Highly flammable.		
<input type="checkbox"/> Ignition temperature:	Not determined		
<input type="checkbox"/> Decomposition temperature:	Not determined		
<input type="checkbox"/> Explosion limits:			

- Lower:** Not determined
- Upper:** Not determined
- Vapor pressure:** Not determined
- Density:** at 20 ° C 7.19 g/cm³
- Solubility in / Miscibility with**
- Water:** Insoluble

10 Stability and reactivity

- Thermal decomposition / conditions to be avoided:**
Decomposition will not occur if used and stored according to specifications.
- Materials to be avoided:** Oxidizing agents
- Dangerous reactions** No dangerous reactions known
- Dangerous products of decomposition:** Toxic metal oxide fume

11 Toxicological information

- Acute toxicity:**
- Primary irritant effect:**
- on the skin:** Irritant to skin and mucous membranes.
- on the eye:** Irritating effect.
- Sensitization:** No sensitizing effects known.
- Other information (about experimental toxicology):**
Tumorigenic effects have been observed on tests with laboratory animals.
- Subacute to chronic toxicity:**
- Subacute to chronic toxicity:**
The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:
Gastrointestinal - tumors.
Blood - lymphoma, including Hodgkin's disease.
Musculoskeletal - tumors.
Tumorigenic - tumors at site of application.
Tumorigenic - equivocal tumorigenic agent by RTECS criteria.
- Subacute to chronic toxicity:**
Chromium powder, chromium (II) and chromium (III) compounds may cause nausea, diarrhea, vomiting, skin and eye irritation and pneumoconiosis. Although less likely than Cr(VI) compounds, the NTP considers all chromium to be potentially carcinogenic.
- Additional toxicological information:**
To the best of our knowledge the acute and chronic toxicity of this

substance is not fully known.

IARC-3: Not classifiable as to carcinogenicity to humans.

ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.

12 Ecological information:

General notes:

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

Product:

Recommendation

Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation:

Disposal must be made according to official regulations.

14 Transport information

DOT regulations:

Hazard class: 4.1

Identification number: UN3089

Packing group: III

Hazardous substance: 5000 lbs, 2270 kg

Proper shipping name (technical name):

(Chromium METAL POWDER, FLAMMABLE, N.O.S.
powder)

Label 4.1

Land transport ADR/RID (cross-border)

ADR/RID class: 4.1 (F3) Flammable solids

Danger code (Kemler): 40

UN-Number: 3089

Packaging group: III

Description of goods: 3089 METAL POWDER, FLAMMABLE, N.O.S. (Chromium powder)

- Maritime transport IMDG:**
- IMDG Class:** 4.1
- UN Number:** 3089
- Label** 4.1
- Packaging group:** III
- Proper shipping name:** METAL POWDER, FLAMMABLE, N.O.S. (Chromium powder)
- Air transport ICAO-TI and IATA-DGR:**
- ICAO/IATA Class:** 4.1
- UN/ID Number:** 3089
- Label** 4.1
- Packaging group:** III
- Proper shipping name:** METAL POWDER, FLAMMABLE, N.O.S. (Chromium powder)

15 Regulations

- Product related hazard informations:**
- Hazard symbols:**
Xn Harmful F Highly flammable
- Risk phrases:**
11 Highly flammable.
40 Limited evidence of a carcinogenic effect.
- Safety phrases:**
7 Keep container tightly closed.
33 Take precautionary measures against static discharges.
36/37 Wear suitable protective clothing and gloves.
60 This material and its container must be disposed of as hazardous waste.
- National regulations**
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).
- Information about limitation of use:**
For use only by technically qualified individuals.
This product contains chromium and is subject to the reporting requirements of section 313 of the Emergency Planning and Community

Right to Know Act of 1986 and 40CFR372.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.