


# Vanadium Carbide Nanoparticles (VC)

US Research Nanomaterials, Inc.

Material Safety Data Sheet

acc. to OSHA and ANSI

<b>1 Chemical product and company identification</b>
<b>Trade name:</b> Vanadium Carbide Nanopowder (VC) <b>Stock #:</b> US2078 <b>Manufacturer/Supplier:</b> US Research Nanomaterials, Inc. 3302 Twig Leaf Lane Houston, Texas 77084, USA <a href="http://www.us-nano.com">www.us-nano.com</a>
<b>2 Composition/Information on ingredients</b>
<b>Cas#:</b> 12070-10-9 <b>Chemical characterization:</b> Vanadium Carbide Nanopowder (VC), 600-800nm, 99.9%.
<b>3 Hazards identification</b>
<b>Hazard description</b>  Xi Irritant F Highly flammable <b>Information pertaining to particular dangers for man and environment</b> R 11 Highly flammable. R 36/37/38 Irritating to eyes, respiratory system and skin.
<b>4 First aid measures</b>
<b>After inhalation</b> Supply fresh air. If required, provide artificial respiration. Keep patient warm Seek immediate medical advice. <b>After skin contact</b> Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice. <b>After swallowing</b> Seek immediate medical advice.
<b>5 Fire fighting measures</b>
<b>Suitable extinguishing agents</b> Extinguishing powder. Do not use water. <b>For safety reasons unsuitable extinguishing agents</b> Water

<p>Carbon dioxide</p> <p><b>Protective equipment</b></p> <p>Wear self-contained respirator.</p> <p>Wear fully protective impervious suit.</p>
<p><b>6 Accidental release measures</b></p>
<p><b>Person-related safety precautions</b></p> <p>Wear protective equipment.</p> <p>Keep unprotected persons away.</p> <p>Ensure adequate ventilation.</p> <p>Keep away from ignition sources.</p> <p><b>Measures for environmental protection</b></p> <p>Do not allow material to be released to the environment without proper governmental permits.</p> <p><b>Measures for cleaning/collecting</b></p> <p>Ensure adequate ventilation.</p> <p>Keep away from ignition sources.</p> <p><b>Additional information</b></p> <p>See Section 7 for information on safe handling.</p> <p>See Section 8 for information on personal protection equipment.</p> <p>See Section 13 for disposal information.</p>
<p><b>7 Handling and storage</b></p>
<p><b>Handling</b></p> <p><b>Information for safe handling</b></p> <p>Keep container tightly sealed.</p> <p>Store in cool, dry place in tightly closed containers.</p> <p>Ensure good ventilation at the workplace.</p> <p><b>Information about protection against explosions and fires</b></p> <p>Keep ignition sources away.</p> <p>Protect against electrostatic charges.</p> <p><b>Storage</b></p> <p><b>Requirements to be met by storerooms and receptacles</b></p> <p>Store in a cool location.</p> <p><b>Information about storage in one common storage facility</b></p> <p>Store away from oxidizing agents.</p> <p>Store away from halogens.</p> <p>Store away from water/moisture.</p> <p>Do not store together with acids.</p> <p><b>Further information about storage conditions</b></p> <p>Keep container tightly sealed.</p> <p>Store in cool, dry conditions in well sealed containers.</p>
<p><b>8 Exposure controls and personal protection</b></p>
<p><b>Additional information about design of technical systems</b></p> <p>Properly operating chemical fume hood designed for hazardous</p>

chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace**

Not Required

**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.

Avoid contact with the eyes and skin.

**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**

Form: Powder

Color: Black

Odor: Odorless

**Value/Range Unit Method**

**Change in condition**

Melting point/Melting range: 2810°C

Boiling point/Boiling range: 3900°C

Sublimation temperature/start: Not determined

Flash point: Not applicable

Flammability (solid, gaseous) Highly flammable.

Ignition temperature: Not determined

Decomposition temperature: Not determined

Explosion limits:

Lower: Not determined

Upper: Not determined

Vapor pressure:	Not determined
Density:	at 20°C 5.77g/cm <sup>3</sup>
Solubility in / Miscibility with Water:	Insoluble
<b>10 Stability and reactivity</b>	
<b>Thermal decomposition / conditions to be avoided</b>	
Decomposition will not occur if used and stored according to specifications.	
<b>Materials to be avoided</b>	
Oxidizing agents	
<b>Dangerous reactions</b>	
No dangerous reactions known	
<b>Dangerous products of decomposition</b>	
Carbon monoxide and carbon dioxide	
Metal oxide fume	
<b>11 Toxicological information</b>	
<b>Acute toxicity</b>	
<b>Primary irritant effect:</b>	
<b>On the skin:</b> Irritant to skin and mucous membranes.	
<b>On the eye:</b> Irritating effect.	
<b>Sensitization:</b> No sensitizing effects known.	
<b>Subacute to chronic toxicity:</b> Vanadium compounds act chiefly as an irritant to the eyes and respiratory tract.	
Exposure may cause conjunctivitis, rhinitis and reversible irritation of the respiratory tract.	
More severe cases may cause bronchitis, bronchospasms and asthma like disease.	
May cause polycythemia, red blood cell destruction and anemia, albuminuria and hematuria, gastrointestinal disorders, nervous complaints and severe cough.	
<b>Additional toxicological information</b>	
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.	
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.	
<b>12 Ecological information</b>	
<b>General notes</b>	
Do not allow material to be released to the environment without proper governmental permits.	
<b>13 Disposal considerations</b>	
<b>Product</b>	
<b>Recommendation</b>	
Consult state, local or national regulations for proper disposal.	
<b>Uncleaned packagings</b>	

**Recommendation**

Disposal must be made according to official regulations.

**14 Transport information****DOT regulations**

Hazard class: 4.1  
Identification number: UN3178  
Packing group: III  
Proper shipping name (technical name) :  
Flammable solid, inorganic, N.O.S. (Vanadium carbide powder)  
Label 4.1

**Land transport ADR/RID (cross-border)**

ADR/RID class: 4.1 (F3) Flammable solids, self-reactive substances and solid desensitised explosives  
Danger code (Kemler) : 40  
UN-Number: 3178  
Packaging group: III  
Description of goods: 3178 Flammable solid, inorganic, N.O.S. (Vanadium carbide powder)

**Maritime transport IMDG**

IMDG Class: 4.1  
UN Number: 3178  
Packaging group: III  
Proper shipping name: Flammable solid, inorganic, N.O.S. (Vanadium carbide powder)

**Air transport ICAO-TI and IATA-DGR**

ICAO/IATA Class: 4.1  
UN/ID Number: 3178  
Packaging group: III  
Proper shipping name: Flammable solid, inorganic, N.O.S. (Vanadium carbide powder)

**15 Regulations****Product related hazard informations****Hazard symbols**

Xi Irritant  
F Highly flammable

**Risk phrases**

11 Highly flammable.  
36/37/38 Irritating to eyes, respiratory system and skin.

**Safety phrases**

7 Keep container tightly closed.  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
33 Take precautionary measures against static discharges.  
37 Wear suitable gloves.

43 In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.

60 This material and its container must be disposed of as hazardous waste.

**National regulations**

**Information about limitation of use**

Employment restrictions concerning young persons must be observed.

For use only by technically qualified individuals.

**Information about limitation of use**

For use only by technically qualified individuals.

**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.