

## Specification Sheet

Aluminium Nanopowder

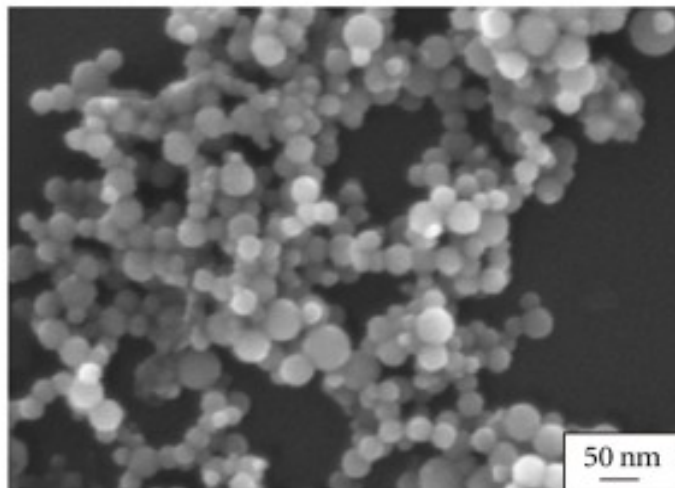
(Al, Purity: 99.9%, APS: 40nm)

Stock No: NS6130-01-107, CAS: 7429-90-5

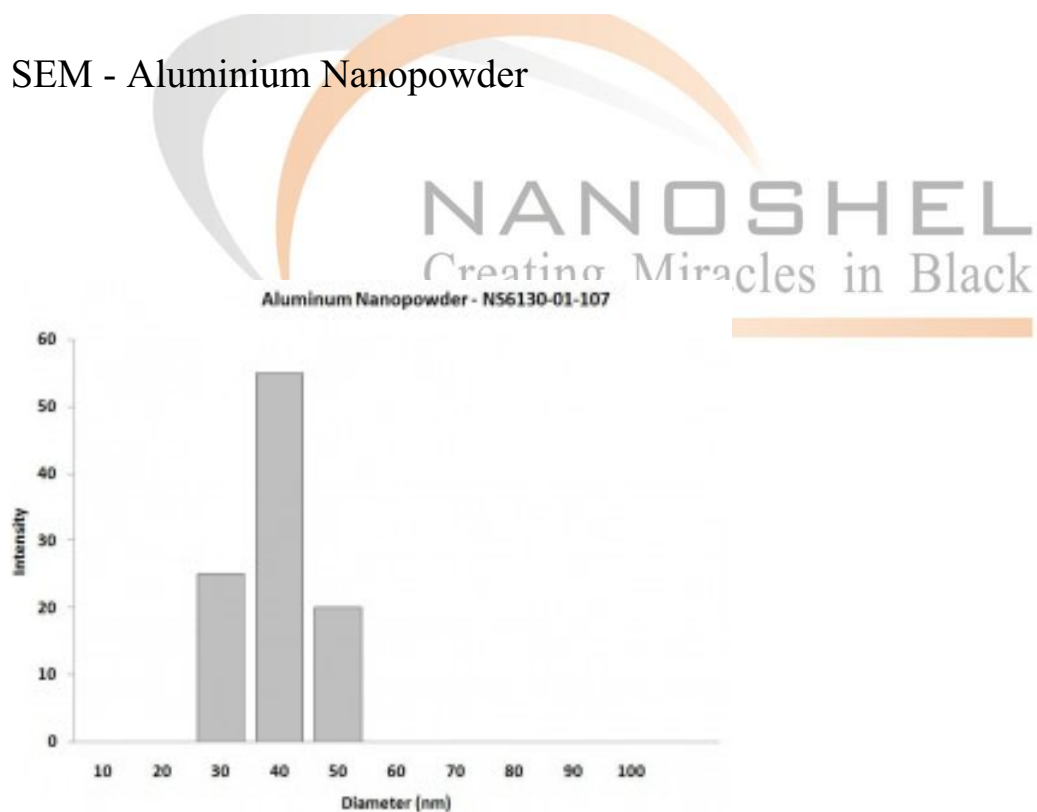
<b>Product</b>	:	<b>Aluminium Nanopowder</b>
Stock No	:	NS6130-01-107
CAS	:	7429-90-5
Purity	:	99.9%
APS	:	40nm
Molecular Formula	:	Al
Molecular Weight	:	26.9815 g/mol
Form	:	Powder
Color	:	Grey/Black
Density	:	2.70 g/cm <sup>3</sup>
Melting Point	:	660.32 °C
Boiling Point	:	2470 °C
Solubility	:	Insoluble in water
<b>Main Inspect Verifier</b>	:	<b>Manager QC</b>

**Note:** Product Specification are subject to amendment and may change over time

## Characterization of Aluminium Nanopowder



### SEM - Aluminium Nanopowder



### Particles Size Analysis - Al Nanopowder

## Certificate of Analysis

Aluminium Nanopowder for Enhanced Thermoelectric Properties

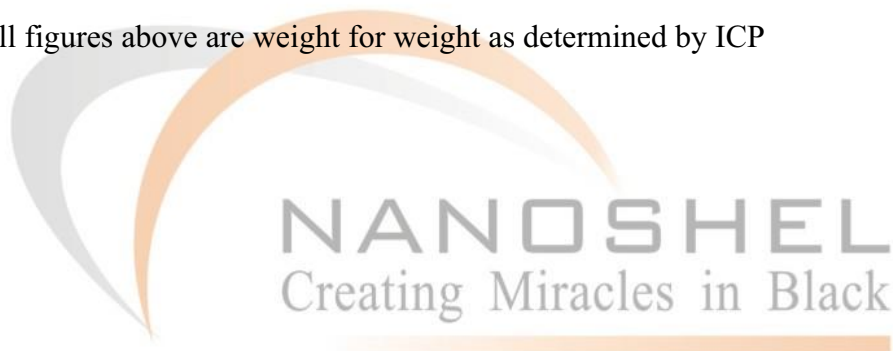
(Al, Purity: 99.9%, APS: 40nm, Metal Basis)

Stock No: NS6130-01-107, CAS: 7429-90-5

<b>Product Name</b>	:	<b>Aluminium Nanopowder</b>
Stock No	:	NS6130-01-107
CAS	:	7429-90-5
Assay	:	99%
All Other Metal	:	1000 ppm

**Note 1:** Values are given in % unless otherwise specified.

**Note 2:** All figures above are weight for weight as determined by ICP





Aluminum nanoparticles has good phase stability, high hardness, materials with high dimensional stability, it is widely used in a variety of plastics, rubber, ceramics, refractory products for reinforcement toughening, in particular, significantly to improve the ceramic density, finish, thermal fatigue resistance, fracture toughness, creep resistance and wear resistance.

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# Aluminium

## NANOPOWDER



### Applications

- ✓ Dispersion-strengthening
- ✓ Nanocomposites
- ✓ Catalyst support
- ✓ Transparent conductive coatings
- ✓ Biomaterials
- ✓ Heat-transfer fluids (suspensions)
- ✓ Drug delivery
- ✓ Sources for IC board or package
- ✓ Transparent optical coatings
- ✓ Wear-resistant additives
- ✓ Material surface coatings

### CATALOGUE NO.

- NS6130-01-105
- NS6130-01-106
- NS6130-01-107

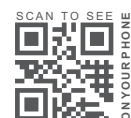
### SPECS

- ✓ Molecular Weight : 26.9815 g/mol
- ✓ Form : Powder
- ✓ Color : Grey/Black
- ✓ Density : 2.70 g/cm<sup>3</sup>
- ✓ Melting Point : 660.32 °C
- ✓ Boiling Point : 2470 °C

High purity metal nanopowders are available in different sizes



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# MATERIAL SAFETY DATA SHEET

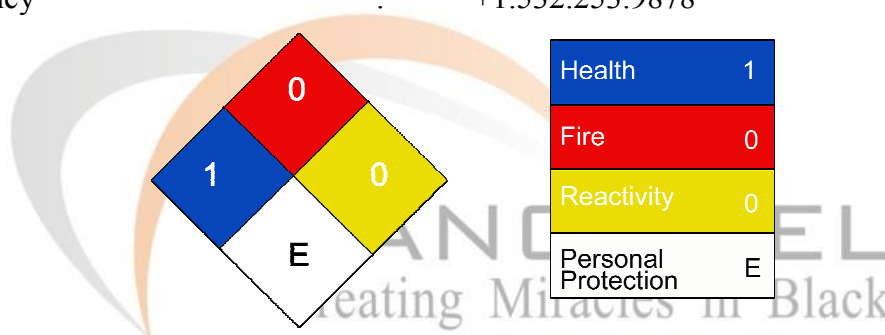
## ALUMINIUM NANOPOWDER

Stock #: NS6130-01-107

### 1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name : Aluminium Nanopowder  
 Use : Research and Development  
 Address : Nanoshel LLC  
 3422 Old Capitol Suit 1305  
 Willmington DE – 19808  
 United States

Emergency : +1.532.253.9878



### 2. COMPOSITION & INFORMATION ON INGREDIENTS

Chemical Characterisation : Al  
 Hazardous Ingredients : Nil

### 3. HAZARD IDENTIFICATION

Toxicity : No Data Available  
 Eye Contact : Dust may cause irritation

### 4. FIRST AID MEASURES

Skin : Wash skin with soap and copious amounts of water

Eyes : Immediate and prolonged irritation treat with copious amounts of water.

Ingestion : Wash out mouth with water provided person Is Conscious.

Inhalation : If inhaled, remove to fresh air. If not

breathing give artificial respiration. If breathing is difficult, give oxygen

## **5. FIREFIGHTING MEASURES**

- Extinguishing Data : Water Spray
- Unsuitable Extinguishing Data : Carbon Dioxide, Dry Chemical Powder, Polymer Foam
- Unusual Firefighting Hazards : Capable of creating a dust explosion
- Special Firefighting Procedures : Use normal procedures which include wearing self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

## **6. ACCIDENTAL RELEASE MEASURES**

- Personal Precautions : Wear respirator, chemical safety goggles, rubber boots and gloves.
- Precautions to the Environment : Sweep up, place in a bag and hold for waste disposal.
- Cleanup Procedures : Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

## **7. HANDLING AND STORAGE**

- Handling Precautions : Chemical Safety Goggles. Compatible with Chemical-resistant Gloves
- Storage : Store in a cool dry place.
- Unusable Packaging Materials : Wash thoroughly after handling. Irritating dust, Keep tightly closed

## **8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

### **Personal Protective Equipment**

- Respiratory : Self-contained breathing apparatus
- Hand : Chemical-resistant Gloves
- Eye : Avoid contact with eyes
- Skin : Wash thoroughly after handling



## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form	:	Powder
Colour	:	Grey/ Black
Odour	:	No Odour

### Safety Related Information

FlashPoint	:	N/A
Boiling Point	:	2470 °C
Melting Point	:	660.32 °C
pH	:	N/A

## 10. STABILITY AND REACTIVITY

Stability	:	Completely Stable
Reactivity	:	Non Reactive/ Non Soluble

## 11. TOXICOLOGICAL INFORMATION

### Possible Health Effects

Skin	:	No effect
Eyes	:	Irritation
Inhalation	:	No Chocking Hazard
Toxicity	:	Non-Toxic

## 12. ECOLOGICAL IMPACT

Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.  
No Negative Ecological Impact, Data not Available

## 13. WASTE DISPOSAL

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator, equipped with an afterburner and scrubber

## 14. TRANSPORT INFORMATION (UN ORNEK OLARAK VERİLMİŞTİR)

HS Code	:	76032000
CAS	:	7429-90-5
Proper Shipping Name	:	Aluminium Nanopowder
Air Transport (ICAO & IATA)	:	Metal Nanopowder
Class	:	Non Hazardeous
Packing group	:	Normal Packing
Transport information	:	Not regulated for IATA (AIR)



## **15. OHTER REGULATORY INFORMATION**

Federal and State Regulations: TSCA 8(b) inventory: Aluminium Nanopowder

Other Regulations: EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada)

DSCL (EEC):

R36- Irritating to eyes

S2- Keep out of the reach of children

S46- If swallowed, seek medical advice immediately & show container or label

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent.

Splash goggles.

## **16. OTHER INFORMATION**

**References:** Not available

**Other Special Considerations:** Not available