


<a href="#">Ruthenium Oxide Nanoparticle Dispersion</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide Nanoparticles / Nanopowder</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide Pellets</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide Pieces</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide Powder</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide Rotatable Sputtering Target</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide Sputtering Target</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide Tablets</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium Oxide, Anhydrous</a>	<a href="#">Pricing &gt;</a>
<a href="#">Ruthenium(IV) Oxide</a>	<a href="#">Pricing &gt;</a>

<b>Linear Formula</b>	RuO <sub>2</sub>
<b>Pubchem CID</b>	82848
<b>MDL Number</b>	MFCD00011210
<b>EC No.</b>	234-840-6
<b>IUPAC Name</b>	Dioxoruthenium
<b>Beilstein/Reaxys No.</b>	N/A
<b>SMILES</b>	O=[Ru]=O
<b>Inchl Identifier</b>	InChI=1S/2O.Ru
<b>Inchl Key</b>	WOCIAKWEIIZHES-UHFFFAOYSA-N

<b>Signal Word</b>	Warning
<b>Hazard Statements</b>	H319
<b>Hazard Codes</b>	Xi
<b>Precautionary Statements</b>	P305 + P351 + P338
<b>Flash Point</b>	Not applicable
<b>Risk Codes</b>	36
<b>Safety Statements</b>	26-36
<b>RTECS Number</b>	VM2654000

Transport Information	NONH
WGK Germany	2
GHS Pictograms	<a href="#"><u>GHS07</u></a> <a href="#"><u>Exclamation</u></a> <a href="#"><u>Point</u></a> 

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## SAFETY DATA SHEET

Date Accessed: 04/17/2024

Date Revised: 01/15/2022

### SECTION 1. IDENTIFICATION

**Product Identifiers:** All applicable American Elements product codes for CAS #12036-10-1

**Relevant identified uses of the substance:**  
Scientific research and development

Supplier details:  
American Elements  
10884 Weyburn Ave.  
Los Angeles, CA 90024  
Tel: +1 310-208-0551  
Fax: +1 310-208-0351

Emergency telephone number:  
Domestic, North America +1 800-424-9300  
International +1 703-527-3887

### SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture  
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)  
Eye irritation(Category 2A), H319

GHS Label elements, including precautionary statements  
Pictogram



Signal word  
Warning  
Hazard statement(s)  
H319  
Causes serious eye irritation.  
Precautionary statement(s)  
P264  
Wash skin thoroughly after handling.  
P280  
Wear protective gloves/ eye protection/ face protection.  
P305 + P351 + P338  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337 + P313  
If eye irritation persists: Get medical advice/ attention.  
Hazards not otherwise classified (HNOC) or not covered by GHS-none

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### **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substances  
Synonyms: Ruthenium dioxide  
Formula: O<sub>2</sub>Ru  
Molecular Weight: 133.07 g/mol  
CAS-No.: 12036-10-1  
EC-No.: 234-840-6

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### **SECTION 4. FIRST AID MEASURES**

Description of first aid measures  
General advice  
Consult a physician. Show this safety data sheet to the doctor in attendance.  
Move out of dangerous area.  
If inhaled  
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.  
In case of skin contact  
Wash off with soap and plenty of water. Consult a physician.  
In case of eye contact  
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.  
If swallowed  
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.  
Most important symptoms and effects, both acute and

delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

Indication of any immediate medical attention and special treatment needed

no data available

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## **SECTION 5. FIREFIGHTING MEASURES**

Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture

Ruthenium oxide

Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Further information

no data available

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing Vapors, mist or gas.

Ensure adequate ventilation. Avoid breathing dust.

For personal protection see section 8.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust.

Sweep up and shovel. Keep in suitable, closed containers for disposal.

Reference to other sections

For disposal see section 13.

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## **SECTION 7. HANDLING AND STORAGE**

Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

For precautions see section 2.

Conditions for safe storage, including any incompatibilities  
Keep container tightly closed in a dry and well-ventilated place.  
Keep in a dry place.  
Specific end use(s)  
Apart from the uses mentioned in section 1 no other specific uses are stipulated

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Control parameters  
Components with workplace control parameters  
Contains no substances with occupational exposure limit values.  
Exposure controls  
Appropriate engineering controls  
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.  
Personal protective equipment  
Eye/face protection  
Safety glasses with side-shields conforming to EN166  
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).  
Skin protection  
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.  
Body Protection  
impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.  
Respiratory protection  
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).  
Control of environmental exposure  
Do not let product enter drains.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Form: Powder or solid in various forms

Odor

no data available

Odor Threshold

no data available

pH

no data available

Melting point/freezing point

no data available

Initial boiling point and boiling range

no data available

Flash point

not applicable

Evaporation rate

no data available

Flammability (solid, gas)

no data available

Upper/lower flammability or explosive limits

no data available

Vapor pressure

no data available

Vapor density

no data available

Relative density

6.97 g/cm<sup>3</sup> at 25 °C (77 °F)

Water solubility

no data available

Partition coefficient: n-octanol/water

no data available

Auto-ignition temperature

no data available

Decomposition temperature

no data available

Viscosity

no data available

Explosive properties

no data available

Oxidizing properties

no data available

Other safety information

no data available

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## SECTION 10. STABILITY AND REACTIVITY

Reactivity

no data available

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions  
no data available  
Conditions to avoid  
Avoid moisture.  
Incompatible materials  
Strong oxidizing agents  
Strong oxidizing agents  
Hazardous decomposition products  
Other decomposition products-no data available  
In the event of fire: see section 5

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## **SECTION 11. TOXICOLOGICAL INFORMATION**

Information on toxicological effects  
Acute toxicity  
LD50  
Oral-rat-4,580 mg/kg  
Remarks:  
Behavioral:Somnolence (general depressed activity).  
Behavioral:Change in motor activity (specific assay).  
Behavioral:Ataxia.  
Inhalation: no data available  
Dermal: no data available  
no data available  
Skin corrosion/irritation  
no data available  
Serious eye damage/eye irritation  
no data available  
Respiratory or skin sensitisation  
no data available  
Germ cell mutagenicity  
no data available  
Carcinogenicity  
IARC:  
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.  
ACGIH:  
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.  
NTP:  
No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.  
OSHA:  
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.  
Reproductive toxicity

no data available  
no data available  
Specific target organ toxicity -single exposure  
no data available  
Specific target organ toxicity -repeated exposure  
no data available  
Aspiration hazard  
no data available  
Additional Information  
RTECS: VM2654000  
To the best of our knowledge, the chemical, physical,  
and toxicological properties have not been thoroughly  
investigated.

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## **SECTION 12. ECOLOGICAL INFORMATION**

Toxicity  
no data available  
Persistence and degradability  
no data available  
Bioaccumulative potential  
no data available  
Mobility in soil  
no data available  
Results of PBT and vPvB assessment  
PBT/vPvB assessment not available as chemical  
safety assessment not required/not conducted  
Other adverse effects  
no data available

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

Waste treatment methods  
Product  
Offer surplus and non-recyclable solutions to a  
licensed disposal company.  
Contact a licensed professional waste disposal  
service to dispose of this material.  
Contaminated packaging  
Dispose of as unused product.

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## **SECTION 14. TRANSPORT INFORMATION**

DOT (US)  
Not dangerous goods  
IMDG  
Not dangerous goods  
IATA



Not dangerous goods

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## **SECTION 15. REGULATORY INFORMATION**

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

Ruthenium (IV) oxide

CAS-No.

12036-10-1

Revision Date

New Jersey Right To Know Components

Ruthenium (IV) oxide

CAS-No.

12036-10-1

Revision Date

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## **16. OTHER INFORMATION**

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL

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