

Material Safety Data Sheet

COMPANY INFORMATION

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Product Name **Gold Bonding Wire (4N type)**

Material specifications Type of material: Simple substance product.
 Chemical Name: Gold
 Ingredients & composition: Au 99.99 mass % or more.
 Chemical formula: Au
 No. of the Existing chemical substance: Not included in the list.
 CAS No.: 7440-57-5
 UN No.: Not included in the list.

Classification of dangerousness & harmfulness

Name of classification: Not classified as dangerous and harmful item.
 Dangerousness: Not classified as dangerous item.
 Harmfulness: Not classified as harmful item.
 Environmental impact: Not impact to environment.

Emergency measures

When enters eyes: No special measures are specified.
 When contacts skin: No special measures are specified.
 When inhaled: No special measures are specified.
 When swallowed: No special measures are specified.

Fire fighting measures

Extinguishing method: Gold is noninflammable.
 Extinguishing agents: Not otherwise specified.

Measures for leakage: Gold wire is a simple metal and solid. There is no fear of leakage.

Instruction manual & notes for handling and storage

Handling: Not otherwise specified.

Storage: Not otherwise specified.

Exposure prevention measures

Controlled concentration: Not established.

Permissible concentration(TWA)

Japan Association on Industrial Health: Not established.

ACGIH: Not established.

Facilities: Good general ventilation should be sufficient for many cases.

Safety tools:

Respirator: Not needed in most cases.

Safety glasses: Not needed in most cases.

Safety gloves: Not needed in most cases.

Safety wears: Not needed in most cases.

Physical/Chemical Characteristics

Appearance: Golden lusted metal.

Specific gravity: 19.320

Melting point: 1064°C

Boiling point: 2710°C

Solubility: Insoluble in water under normal temperature.

Information on the dangerousness

Flash point: Not be flashed.

Ignition point: Not be ignited.

Explosion limits: Upper limit: Not be exploded.

Lower limit: Not be exploded.

Flammability: Noninflammable.

Spontaneous combustibility: Not combustible.

Oxidizability: No oxidizable.

Self-reactivity/Explosiveness: Not self-reactive/explosive.

Dust explosiveness: Not explosive by dust.

Stability/Reactivity: Gold wire has little chemical reactivity and does not react with oxygen, sulfur and ordinary acid and base.

But it reacts with halogen, so is soluble in aqua regia that releases chlorine. It is soluble in the solution containing cyanogen ion under the existence of oxygen, and makes complex ion $[\text{Au}(\text{CN})_2]$.

Information on the harmfulness

Corrosive property:	Tumorigenesis is indicated through animal experiments.
Irritating property(skin/eyes):	Not be irritated.
Sensitization:	Not be caused.
Acute toxicity (containing 50% of lethal dose):	No acute toxicity.
Sub-acute toxicity:	No sub-acute toxicity.
Chronic toxicity:	No chronic toxicity.
Cancer source property:	No cancer source toxicity.
Variation property (microorganism, abnormality of chromosome):	No variation property.
Reproduction toxicity:	No reproduction toxicity.
Teratological property:	No teratological property.

Effect on the environment

Decomposition property:	Not bio-degradable.
Accumulation property:	Not be accumulated.
Fish poisoning property:	Not be poisoning source for fish.

Cautions on waste disposal: No special cautions should be needed for ecology.

Notes for transportation: Not a dangerous goods for transportation.

* IMDG (maritime transport)
Class : No information available

* IATA-DGR (air transport)
Class : no information available

Relevant laws or regulations: Our product does not contain the substances prohibited in RoHS instruction.
Follow all regulations in your country.

Others (References)

- 1) *Handbook on Dangerousness & Harmfulness of Chemical Substances*
Compiled under the editorial supervision of The Safety and Hygiene Department of The Labor Ministry, edited and published by Central Labor Accident Prevention Association
 - 2) *Threshold Limit Values for Chemical Substances and Physical Agents, and Biological Exposure Indices (1998)*
Published by ACGIH
 - 3) *Handbook of Reactive Chemical Hazards*
Written by L. Bretherick, translated under the supervision of Tadao Yoshida and Shozo Tamura, published by Maruzen Co., Ltd.
 - 4) *Safety Data Book for Chemical Substances*
Edited by the Society for the Study of Safety Information of Chemical Substances under the editorial supervision of Yoichi Uehara, published by Ohm-sha Co., Ltd.
 - 5) *Hazardous Chemicals Desk Reference*
Written by N. Irving Sax and Richard J. Lewis, Sr., translated under the supervision of Shizuo Fujiwara, published by Maruzen Co., Ltd.
 - 6) *Data Book on Dangerous Objects*
Edited by Tokyo Fire Protection Association under the editorial supervision of The Metropolitan Fire Department, published by Maruzen Co., Ltd.
 - 7) *Handbook for Dangerous Objects*
Written by Tetsu Yamamoto, published by Shinsei Publishing Co., Ltd.
 - 8) *Regulations on Chemical Products Application*
Published by The Chemical Daily Co., Ltd.
 - 9) *Science of Precious Metal*
Compiled under the editorial supervision by Seiichiro Tanaka, Taira Suzuki and Kenjiro Meguro, published by Tanaka Kikinzoku Kogyo K.K.
 - 10) *Story on Precious Metal*
Edited by Hironobu Yamamoto, published by Gihodo Publishing Co., Ltd.
 - 11) *Dictionary of Elements*
Edited by Hisao Mabuchi, published by Asakura Bookstore Co., Ltd.
 - 12) *Encyclopaedia Chimica*
Edited by The Editing Committee for Encyclopedia Chimica
Published by Kyoritsu Publishing Co., Ltd.
 - 13) *New Chemical Index*
Published by The Chemical Daily Co., Ltd.
 - 14) *Chemistry Handbook*
Edited by The Chemical Society of Japan, published by Maruzen Co., Ltd.
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Notes: This document is based on currently available information and materials, and no guarantee is made concerning the data or evaluation mentioned herewith. The datasheet is only applicable under normal application conditions; thus for special purposes, please refer to other relevant documents.