

Material Safety Data Sheet (MSDS)

(In compliance with JIS Z 7250:2005)

1. Identification

Product Identifier : Alloy-Tool Steel Tool
Supplier's Details:
Name : OSG Corporation
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442-8543 Japan
Department in Charge : Global Quality Assurance Dpt.
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Creation Date : April 1, 2009
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Reference Number : Alloy090408-1E

2. Hazard Identification

GHS Classification

Not classified

Other Hazards which do not result in classification

- * Alloy Tool Steel Tool is physically and chemically stable in solid form. There is no physical or chemical hazard such as ignition ability or flammability. There is no human health hazard such as reproductive toxicity. There is no environmental hazard such as acute aquatic toxicity.
- * Although not classified in GHS classifications, when dust or fine powder of grinding dust of the tool is dry or deposited together with oil and grease, it becomes pyrophoric or highly flammable.
- * The inhalation of dust produced through dry surface grinding processes may cause lung disorders such as pneumoconiosis.

3. Composition/Information on Ingredients

Alloy Tool Steel Tool may be coated or surface-treated with the following substances:

Coated with: CrN, TiAlN, TiCN, TiN

Surface-treated with: Steam treatment (Fe₃O₄), nitriding treatment (Fe₄N, Fe₂N)

Substance/Mixture: Mixture (alloy)

Composition and Ingredients

Ingredient	Chemical Formula	CAS No	PRTR Law Reference No	ISHL Ordinance No	Composition wt%
Iron	Fe	7439-89-6	Not applicable	Not applicable	the rest
Silicon	Si	7440-21-3	Not applicable	Not applicable	0-0.7
Manganese	Mn	7439-96-5	Class 1-No.412	Attached List 9-550	0-0.5
Nickel	Ni	7440-02-0	Class 1-No.308	Attached List 9-418	0-1.8
Chromium	Cr	7440-47-3	Class 1-No.87	Attached List 9-142	3-5
Molybdenum	Mo	7439-98-7	Class 1-No.453	Attached List 9-603	0-10
Tungsten	W	7440-33-7	Not applicable	Attached List 9-337	1-19
Vanadium	V	7440-62-2	Not applicable	Not applicable	1-8
Cobalt	Co	7440-48-4	Class 1-No.132	Attached List 9-172	0-12

4. First-Aid Measures

IF INHALED:

- * If the high concentration of dust from grinding dust is inhaled or respiratory symptoms (coughs, gasping, shortness of breath, etc.) are shown during work, immediately remove victim from the workplace to fresh air, loosen his clothes, tie, belt, etc., and keep him warm with blanket and the like for a rest.
- * Get immediate medical advice. Meanwhile, if breathing stops or is weak, administer artificial respiration according to observations.
- * If vomiting, turn the face sideways to avoid asphyxiation.

IF ON SKIN:

- * If an abnormal sensation is felt when the skin is contacted with dust from, for instance, grinding dust, immediately take off the contaminated clothes, shoes, etc. Wash the skin with plenty of water or water at a proper temperature. If required, rinse the skin thoroughly with soap and the like.
- * If the condition changes or pain exists, get medical advice.

IF IN EYES:

- * If dust such as grinding dust is in eyes, immediately flush eyes with clean water at least 15 minutes and then get medical advice.
- * Keeping eyelids open so that water can clean all over the eyeball thoroughly, be very careful not to damage the eyeball by rubbing.

IF SWALLOWED:

- * If a great amount of dust is swallowed, get medical attention after ingesting a plenty of water to dilute.

5. Fire-fighting Measures

Extinguishing Media:

- * When stored or used, this product is in non-flammable solid form, and therefore, no restrictions are imposed on uses of normal water sprayers or fire extinguishers etc. in case of fire in the surrounding area.

Fire:

- * When dust or fine powder from grinding dust of the tool is dry or deposited together with oil and grease, it becomes pyrophoric or highly flammable.
- * Dust scattered in the air may be inflammable fire under certain conditions. In case, use fire extinguisher.
- * In fire extinguishing, use personal protective equipment such as protecting clothing, air breathing apparatus, closed-circuit oxygen breathing apparatus, rubber boots, and fire resistant clothing.

Extinguishing Media for a Fire

- * Use a powder extinguisher for a metal fire. If not available, use dry sand.
- * As steam explosion is possible, water must not be applied directly. However, it is not a problem to spray water over areas yet to be burned to lower the temperature of the areas.

6. Accidental Release Measures

No spills and release because this product is in solid form when stored or used.

Personal Precautions

- * Wear suitable personal protective equipment to prevent dust inhalation and eye contact.

Environmental Precautions

- * Immediately take up the dust from, for instance, processing, dispose of it as industrial wastes, and prevent release in soil and water systems.

Cleanup Procedures

- * It is most desirable that dust from grinding and mechanical processing should be cleaned up with a cleaner equipped with a filter which can take up fine particles very efficiently. If moistening is allowed, sweep with water sprayers or wet mops to prevent from dust generation.

7. Handling and Storage

Handling

- * When dust or fume of metal and metal compounds is produced from grinding processing, wear

suitable protecting clothing and face shield etc. and use local exhaust ventilation or dust collector not to be affected by dust or fume exceeding exposure limits of ingredients.

- * If metal is resolved by acid washing, descaling, etc., do not touch and inhale the resolved material.
- * Wash hands thoroughly before drinking, eating, or smoking. Do not drink, eat, and smoke at the handling area.
- * Periodical medical checkups are recommended.

Storage

- * Store avoiding a rapid change of temperature and high humidity.

8. Exposure Controls/Personal Protection

Provide local exhaust ventilation etc. so that dust in the air may not exceed the exposure limits in the following table. If it is possible that a concentration may exceed the exposure limit, use a dust-proof respirator or respiratory protection.

Exposure Limits in Working Environment (Reference 1, 2, and 4)

Ingredient	Chemical Formula	*OSHA PEL mg/m ³ (Metal Dust Concentration)	**ACGIH TLV mg/m ³ (Metal Dust Concentration)	Japan Association on Industrial Health Exposure limit mg/m ³
Iron	Fe	****N/A	N/A	N/A
Silicon	Si	15	10	N/A
Manganese	Mn	5	0.2	0.3
Nickel	Ni	1	1.5	1
Chromium	Cr	0.5	0.5	0.5
Molybdenum	Mo	15	10	N/A
Tungsten	W	N/A	5	N/A
Vanadium	V	N/A	N/A	N/A
Cobalt	Co	0.1	0.02	0.05

*OSHA : U.S .Occupational Safety & Health Administration

PEL : Permissible Exposure Limit.

**ACGIH : American Conference of Governmental Industrial Hygienists

TLV : Threshold Limit Value

***JSOH : Japan Society for Occupational Health

****N/A : Not Applicable

Respiratory Protection

- * Use of dust protective mask or respiratory protective equipment is recommended.

Hand Protection

- * Use of protective gloves for dust is recommended.

Eye Protection

* Use of safety glasses or goggles for dust is recommended.

Skin/Body Protection

* Clean up deposited dust on clothing, rags, etc. by washing or absorbing with suitable filters but not by whisking off. Change the contaminated clothing into a clean one.

* Local exhaust ventilation is recommended.

9. Physical and Chemical Properties

Appearance/Odor	*1 Lustrous silver (grinded surface), odorless		
Boiling point	Alloy tool steel tool: Unknown*2 Pure iron: 2,750°C (for Reference)	Specific gravity (H ₂ O=1)	7 ~ 9
Vapor pressure (mmHg)	Unknown	Volatile matter	0
Gas Density (air=1)	Unknown	Evaporation rate	Unknown
Solubility to Water	Insoluble	Melting Point	1,200 - 1,400 °C

*1 In many instances, the appearance of the product with a coated or processed surface changes.

*2 Rikagaku Jiten, 5th Edition, Iwanami Shoten (1998)

10. Stability and Reactivity

Reactivity

The case contact with chemicals such as acid may cause to generate harmful gases.

Chemical Stability

This product is in solid form and therefore chemically stable as it is but not explosive, flammable, combustible, pyrophoric, water-incompatible, and oxidizing.

Possibility of Hazardous Reactions

Not classified

Conditions to Avoid

Contact with the following 'Incompatible Materials'

Incompatible Materials

Oxidizer (hydrogen peroxide solution, fluoride, lead oxide, nitric acid, sulfuric acid, etc.)

11. Toxicological Information

Acute Toxicity (Inhalation: mist, dust)

* For Alloy Tool Steel Tool, there is no data of evaluation on acute toxicity and no hazard

information.

- * Iron, a main ingredient, is rarely toxic. Many of primary disorders due to iron are caused by mechanical reasons, which may induce secondary disorders of skin and respiratory organs. Although materials for this tool are not toxic per se, dust may cause mechanical irritation or disorder to respiratory organs.

Skin Corrosion/Irritation

- * For Alloy Tool Steel Tool, there is no data of evaluation on skin corrosion/irritation and no hazard information.

Eye Irritation

- * For Alloy Tool Steel Tool, there is no data of evaluation on eye irritation and no hazard information.

Skin Sensitization

- * For Alloy Tool Steel Tool, there is no data of evaluation on skin sensitization and no hazard information.

Germ Cell Mutagenicity

- * For Alloy Tool Steel Tool, there is no data of evaluation on germ cell mutagenicity and no hazard information.

Carcinogenicity (Reference 1, 2, and 3)

- * For Alloy Tool Steel Tool, there is no data of evaluation on carcinogenicity and no hazard information.

Reproductive Toxicity

- * For Alloy Tool Steel Tool, there is no data of evaluation on reproductive toxicity and no hazard information.

Specific Target Organ Toxicity

- * For Alloy Tool Steel Tool, there is no data of evaluation on specific target organ toxicity and no hazard information.

Aspiration Hazard

- * For Alloy Tool Steel Tool, there is no data of evaluation on aspiration hazard and no hazard information.

12. Ecological Information

Hazardous to the Aquatic Environment

- * For Alloy Tool Steel Tool, there is no data of evaluation on acute or chronic aquatic toxicity and no hazard information.

13. Disposal Considerations

Disposal Methods

- * Tungsten, cobalt, Nickel, etc. in materials are rare metals and therefore it is recommended to be recycled as resources.
- * For disposal, conform to the applicable laws regarding industrial wastes such as 'Waste Disposal and Public Cleansing Law' and relevant local bylaws.

14. Transport Information

International Regulation

Maritime Regulatory Information	Non-dangerous goods (other than metal powder)
Marine Pollutant	Not applicable
Aviation Regulatory Information	Non-dangerous goods (other than metal powder)

Local Regulation

Land Regulatory Information	Not applicable (other than metal powder)
Maritime Regulatory Information	Non-dangerous goods (other than metal powder)
Marine Pollutant	Not applicable
Aviation Regulatory Information	Non-dangerous goods (other than metal powder)

Special Precautions

- * Load so that the container may not damage or corrossions may not occur to ensure that the cargo should be protected from collapsing.
- * Handle carefully so as not to get injured with the edges.

15. Regulatory Information

The Industrial Safety and Health Law

16. Other Information

Disclaimer

- * The contents of this MSDS are based on material and information available as of the end of xxxxx in 2008 and may be revised due to knowledge newly obtained.
- * The precautions described herein apply only to normal uses, and not guarantee of use.

Reference

1. Japan Advanced Information Center of Safety and Health
 - * Online safety and health information/chemical substances
2. Japan Society for Occupational Health
 - Recommendation of Occupational Exposure Limits (2003)/Occupational carcinogens (2003)

3. International Chemical Safety Cards (English version, Japanese version)
<http://www.nihs.go.jp/ICSC/>
4. U.S. Department of Labor Occupational Safety & Health Administration
Regulations (Standards - 29 CFR) /TABLE Z-1 Limits for Air Contaminants
- 1910.1000 TABLE Z-1 (OSHA PEL)