Creation date: February 7, 2013
Revision date

Safety Data Sheet

1. Identification of the substance or mixture and of the supplier

Product name： Vitrified Bond Wheels： WA (red)Grinding Wheel
Reference number： MSDS-WA(red) Grinding Wheel
Company name： Kure Grinding Wheel, Co., Ltd
Address ： 3-20 2-chome, Yoshiura-shinmachi, Kure-shi, Hiroshima Pref. 737-8518, Japan
Recommended use and restrictions of operation ： For grinding metal and non-metal

2． Hazard identification

Vitrified bond wheels are mixtures of abrasive grains and vitrified material. The hazard statements are stated as below:
The hazardous statements of substances which are components of grinding wheels, are listed by
Global Harmonized System classification as below, which apply Industrial Safety and Health Act Article 57-2
and Law concerning Pollutant Release and Transfer Register in Japan.

・Hazards： If grinding wheel burst during operation and pieces of an accidentally broken wheel hit a person, it may cause injury or death.
Sparks generated by grinding can cause burn wound and fire.

・Environmental effects： Dust generated by grinding can contaminate the working environment.

GHS classification of the mixtures

	Aluminum Oxide	Amorphous Silica
Physical hazards	Not applicable	Not applicable
Health hazards		
Acute toxicity (Oral)	Not classified	Classification not possible
Skin corrosion/irritation	Classification not possible	Classification not possible
Serious eye damage/eye irritation	Classification not possible	Classification not possible
Specific target organ and systemic toxicity following single exposure	Category3（Respiratory tract irritation）	Classification not possible
Specific target organ and systemic toxicity -Repeated exposure	Category1（lungs；inhalation）	Classification not possible
Environmental hazards	Classification not possible	Classification not possible

Label elements

Name of the substance	Aluminum Oxide	Amorphous Silica
Pictogram		No data
Signal word	Danger	No data
Hazards statements	Causes damage to organs through prolonged or repeated exposure (Inhalation : Lungs) (Respiratory tract irritation) May cause respiratory irritation	No data

3． Composition/information on ingredients

＜Identification of the substance＞Classification of hazardous substances and mixtures : Mixture of aluminum oxide and vitrified material.

Information on ingredients

Name	Molecular formula or structural formula	Industrial Safety and Health Act Cabinet Order Number or Chemical Substances Control Law Class Reference Number in the Gazette List of Japan	C A S number	Regulatory information
Aluminum Oxide	Al_2O_3	189 (1)-23	1344-28-1	Industrial Safety and Health Act
Amorphous Silica, Silicon Dioxide	SiO_2	312 (1)-548	60676-86-0	Industrial Safety and Health Act

4. First-aid measures

If inhaled : If inhaled dust, immediately remove person to fresh air, rinse mouth with plenty of water, and keep comfortable for breathing.

If on skin : Do not rub, and wash affected area with soap and water after handling.

If swallowed : Do not induce vomiting.

If a part of the grinding whheel or workiece hit directly a human

:（If a high-speed rotating grinding wheel burst during operation and a part of the grinding wheel or workpiece hit directly the human body.)

Expected immediate and delayed symptoms : If inhaled dust or mist of grinding fluid during operation, it may cause respiratory irritation; through prolonged exposure it may cause pneumoconiosis, delayed symptoms or damage to lungs.

Mosr important singns and symptoms : If sparks from workpieces or chips blasted into the eye, it may cause oscular tissue damage such as burn injury.

Protection for first-aiders : Stop the machine before providing first-aid.

Precautions for doctors : Grinding wheels have abrasive grains with cutting edges on the surface, which may cause incised wound if contacted with human body.

5. Fire-fighting measures

Extinguishing media : This product does not combust itself.

Unsuitable extinguishing media : No information

Unsuitable extinguishing media : Not applicable

Specific ways to extinguish : Not applicable

Protective equipment for fire-fighters : Not applicable. Use of suitable protective equipment is preferable.

6. Accidental Release Measures

Personal precautions : If dust, etc. got in eyes, rinse cautiously with water for several minutes.

Protective equipment and emergency procedures : When recovering dust, wear protective equipment (such as eye and respiratory protections). Wash hands after handling

Environmental precautions : Do not emit grinding chips to surface water. Dissolvement of controlled substances in soil and water may occur.

Recovery / neutralization : Not applicable

Second disaster : Not applicable

7. Handling and storage

Handling

Technical measures : Before operation, read safety material of the product and related equipments, and do not handle until all safety precautions have been read and understood.

- Do not involve replacement of grinding wheels or their test runs without receiving Special Education.
- Check if the Maximum Operation Speed and the diameter marked on the grinding wheel are adequate for the machine.
- Prior to mounting, all grinding wheels shall be performed visual inspection and ring test for crack, and chipping.
- Select proper flanges when mounting grinding wheels, and don't tighten the nut excessively.
- Make a test run for one minute or longer before commencing the work for the day and for three minutes or longer when replacing a grindin
- When mounting grinding wheels to flanges, always perform visual inspection and ring test to check there is no defect.
- Always use flanges of materials and diameter according to legal requirement.
- Do not use the side surfaces of a grinding wheel except for a grinding wheel designed for use of their side surfaces.
- Furnish with required safety devices (ex. protection covers).

Local exhaust ventilation and general ventilation : Provide local exhaust ventilation or general ventilation during grinding operation where dust is generated.

Precautions for safe handling : 1. Do not drop wheels.
2. Do not bump wheels.
3. Do not roll wheels.
4. Avoid human contact with abrasive wheels during operation.

Technical measures : Abrasive wheels should be stored in a dry area in rooms not subject to extreme temperature changes since some bonds may be affected by excessive humidity, dampness and extreme temperature differentials. They should be stored on surface plates or in racks.

Incompatible materials : Not applicable

Conditions for storage : Grinding wheels shall be stored in rooms at normal temperatures and humidity. Grinding wheels shall not be stored subject to freezing temperat

Packing material : Use material to absorb shocks when grinding wheels are handled.

8. Exposure controls/personal protection

Standard Control Concentration :3.0mg／m3 Industrial Safety Health Act

Occupational Exposure Limits (OELs) : Class 2 Respirable dust=1mg／m3

Total dust 4mg/m3 Japan Society for Occupational Health (2005)

Occupational Exposure Limits (OELs) for composed substances

: Aluminum Oxide : ACGIH TLV-TWA 10mg/m3 (Do not include asbestos nor ≥1% crystalline silica.)

Amorphous Silica : No data

Engineering control : To control dust, install dust collectors or use general ventilation if appropriate.
Take measures for the sparks not to reach dust collectors , as it could ignite a fire.

Protective equipments : Workers must wear the protective equipments as follows:

- Respiratory protection : Dust protective mask with national test certificate
- Protection with hands : Spark resistant gloves.
- Eye protection : Fully protective dust-proof glasses.
- Hearing protection : Hearing protection should be worn where required.
- Skin and body protection : Wear helmet, safety shoes and standard work clothes.
- Protective clothing : Wear work clothing of spark resistant material.

Hygiene measures : Installation of water washing equipment is preferable for rinsing mouth or eyes.

9. Physical and chemical properties

Appearance (physical state, colour etc) : Grinding wheels are coloured articles, solid, the volume density is 1.4-2.5g/cm3, and insoluble in water.
The physical and chemical properties of each substance are as below:

	Aluminum Oxide	Amorphous Silica
Appearance (physical state, colour etc)	White crystalline power	Colourless amorphous powder
Odour	Odourless	No data
pH	No data	No data
Melting point/freezing point	2053 ℃	1610℃ (Melting point)
Boiling point, initial boiling point and boiling range	2980℃	2230℃ (Boiling point)
Flash point	Not combustible	Not combustible
Upper/lower flammability or	No data	No data
Vapour pressure	0.073Pa (mp.)	1333Pa(1732℃)
Vapour density (air=1)	No data	No data
Relative density	3.97	2.5
Solubility(ies)	Insoluble in water Slightly soluble in non-polar organic solvents	Insoluble in water
Partition coefficient: n-octanol/wate	No data	No data
Auto-ignition temperature	Not combustible	Not combustible
Decomposition temperature	No data	No data
Odour threshold	No data	No data
Evaporation rate (Butyl Acetate = 1)	Not applicable	No data
Flammability (solid, gas)	Not combustible	No data
Viscosity	No data	No data

10. Stability and reactivity

Stability : Stable under normal conditions

Reactivity : None known

Conditions to avoid (e.g. static discharge, shock or vibration) : High temperatures, high humidity or shocks

Incompatible materials : None known

Hazardous decomposition products : None known

１１． Toxicological information

Aspiration toxicity of grinding wheels

If inhaled dust during grinding operation through prolonged exposure, it may cause pneumoconiosis.

Specific considerations concerning toxicological information of composed substances are as below

		Aluminum Oxide	Amorphous Silica
Acute toxicity	Oral	Rat: LD50 > 5000mg/kg	Rat LDL0=5mg/kg
	Dermal	No data	Physical irritation may occur although specific data cannot be found.
	Inhalation (Dusts, mists)	No data	Rat: LCL0=2190mg/m3/4H
Skin corrosion/ irritation		No data	Physical irritation may occur although specific data cannot be found.
Serious eye damage/ eye irritation		No data	The substance has potential to cause irritation.Rabbit: 25mg/24H
Respiratory or skin sensitization		No data	No data
Germ cell mutagenicity		Lack of data	No data
Carcinogenicity		ACGIH: A4 (Not classifiable as a human carcinogen)	IARC Classification: 3 (Not classifiable as to carcinogenicity in humans)
Reproductive toxicity		No data	No information
Specific target organ and systemic toxicity following single exposure		Category 3 (Respiratory tract irritation) Upper respiratory tract irritation (ICSC (2000))	No information
Specific target organ and systemic toxicity - Repeated exposure		Category 1 Pulmonary fibrosis (Occupational exposure) (EHC (1997)) Causes damage to organs through prolonged or repeated exposure (Inhalation: Lungs)	No information
Aspiration hazard		No data	No data

１２． Ecological information

Persistence and degradability : No findings

Bioaccumulative potential : No findings

Mobility in soil : No findings

Other adverse effects : Grinding chips (including dust and mist） are generated during cutting and grinding.

Specific considerations concerning toxicological information of composed substances are as below.

	Aluminum Oxide	Amorphous Silica
Acute hazards to the aquatic environment	Lack of data	Lack of data
Long-term hazards to the aquatic environment	Lack of data	Lack of data

１３． Disposal considerations

Waste from residues : For proper disposal, follow the related regulations and standards of local authority.

Contract with authorized industrial waste disposal contractor with contents clarification.

Sort the waste into glass, concrete and ceramic wastes and dispose as industrial waste.

May elute into soil or water.

Contaminated container and packaging : No findings

１４． Transport information

International regulation

Regulatory information on sea transportation ： Not regulated as dangerous goods

Regulatory information on air transportation ：Not regulated as dangerous goods

Domestic regulation

Regulatory information on ground transportation ： No regulatory information

Regulatory information on sea transportation ： Not regulated as dangerous goods

Regulatory information on air transportation ：Not regulated as dangerous goods

Special precautions ： Keep dry and be aware not to damage the packaging.

- Use container with inner packaging, to absorb some degree of pressure, shocks, and of damp-proof property.
- Handle grinding wheels carefully to prevent damaging.
- Transport grinding wheels without rolling, dropping and bumping. As they are breakables, do not through or drop.
- Report the manufacturer or users in case they have possibly given unusual shocks or pressures.

１５． Regulatory information

Industrial Safety and Health Act, Japan

- Dangerous and Toxic Substances Subject to Notify Their Names
  (Article 57-2, Enforcement Order 18-2, Appended Table 9)
- Special Education pertaining work involving replacement of grinding wheels
  (Article 59-3, Rules on Special Education for Safety and Health, Article 1)
- Precaution for handling (Ordinance on Industrial Safety and Health, Part II)
- Provided with safety devices (Article 13 of the Order for Enforcement of the Industrial Safety and Health Act)

Ordinance on Prevention of Dangers Due to Dust, Japan : Dust work(Chapter 1 Article 2)

Safety requirement for use, care and protection of abrasive wheel and grinder, Japan : Operating and manufacturing precautions

Law concerning Pollutant Release and Transfer Register, Japan ：Not applicable

１６． Regulatory information

Other information

[Safety Manual for Grinders]

Japan Industrial Safety & Health Association , Japan Society for Occupational Health ， ACGIH (American Conference of Governmental Industrial Hygienists)

http://www.jaish.gr.jp/user/anzen/kag/kag_main01.html

Kure Grinding Wheel, Co., Ltd makes no warranty with the content or Physical and Chemical Properties of any specific substance as described in this Material Safety Data Sheet.

Users must be responsible for handling the data with precautions, as the evaluation of hazardous properties of substances is based on the materials, information and data available as of the date this Material Safety Data Sheet was created by Kure Grinding Wheel, Co., Ltd, however, the materials, information and data are not exhaustive.