Safety Data Sheet

Reference No. 1064-2

Issue: 1st September 2017
Revision: 1st April 2025

1. Chemical product and company identification

Product name PACKTEST Vitamin C (L-Ascorbic Acid) Model WAK-VC-2

Company name KYORITSU CHEMICAL-CHECK Lab., Corp.
Address 1-18-2 Hakusan, Midori-ku, Yokohama, Kanagawa 226-0006, JAPAN
Tel +81-45-482-6937
Fax +81-45-507-3418

Recommended uses and restrictions Reagent for water quality measurement

2. Hazards identification

[GHS Classification]

Physical hazards: Classification not possible (no data for GHS classification available)

Health hazards:
- Skin corrosion/irritation: Category 1 (applicable only K-1 reagent)
- Serious eye damage/eye irritation: Category 1 (applicable K-1, K-2 reagents)
- Respiratory or skin sensitization: Category 1 (respiratory sensitization) (applicable only K-1 reagent)
- Specific target organ toxicity (single exposure): Category 2 (respiratory system) (applicable only K-1 reagent)
- Specific target organ toxicity (repeated exposure): Category 2 (teeth, respiratory system) (applicable only K-1 reagent)

For those health hazards not listed above are not classified or classification not possible (no data for GHS classification available)

Environmental hazards:
Hazards to the aquatic environment-Acute: Category 3 (applicable only K-1 reagent)

For those environmental hazards not listed above are not classified or classification not possible (no data for GHS classification available)

[GHS labeling elements]

[Signal word]
Danger

[Hazard statements]

- Causes severe skin burns and eye damage. (applicable only K-1 reagent)
- Causes serious eye damage. (applicable K-1,K-2 reagents)
- May cause allergy or asthma symptoms or breathing difficulties if inhaled. (applicable only K-1 reagent)
- May cause damage to respiratory system. (applicable only K-1 reagent)
- May cause damage to teeth and respiratory system through prolonged or repeated exposure. (applicable only K-1 reagent)
- Harmful to aquatic life. (applicable only K-1 reagent)

[Precautionary statements**]**

Keep out of reach of children and store in the dry and dark place at room temperature.
Carefully read instructions before use and do not use for other purposes.
Wear personal protective equipment if necessary.
Do not inhale reagents.
Wash contaminated clothing.
Wash hands well before and after handling.
Avoid release to the environment.

3. Composition/ information on ingredients

Discrimination of single substance or mixture: Mixture

Reagent name	K-1 reagent						
Chemical name	Sodium tungstate (VI) dihydrate	Sodium molybdate (VI) dihydrate	Phosphoric acid	Hydrochloric acid	Lithium sulfate monohydrate	Other (not regulated)	Water
Content	1 – 4.9 %	0.5 – 0.9 %	1 – 4.9 %	1 – 4.9 %	1 – 4.9 %	0.04 %	80 – 89 %
Chemical formula	Na2WO4・2H2O	Na2MoO4・2H2O	H3PO4	HCl	Li2SO4・H2O	–	H2O
METI No. (reference number under CSCL in Japan)	1-794	1-478	1-422	1-215	1-769	–	–
CAS No.	10213-10-2	10102-40-6	7664-38-2	7647-01-0	10102-25-7	–	7732-18-5

Reagent name	K-2 reagent	
Chemical name	Sodium Carbonate	Polyethylene
Content	10 - 19 %	80 – 89 %
Chemical formula	Na2CO3	(C2H4)n
METI No. (reference number under CSCL in Japan)	(1)-164	(6)-1
CAS No.	497-19-8	9002-88-4

4. First-aid measures

If reagents or test solutions;

Enter in eyes: Immediately rinse with water for more than 15 minutes followed by the treatment by an ophthalmologist.
Contact with skin: Immediately wash out contaminated site with plenty of water.
Enter into mouth: Immediately rinse mouth with plenty of water.

If any symptoms appear after above measures, immediately get medical advice or treatment.
Especially in case ingested reagents or test solutions, drink plenty of milk or water and immediately get medical advice or treatment.

5. Fire-fighting measures

Extinguishing methods: Cut off ignition sources and extinct by a suitable media.
Suitable extinguishing media: Water (mist), powder, carbon dioxide, dry sand.

6. Accidental release measures

In case of outdoor use: Avoid spill of reagents or waste solutions.
In case of indoor use: If spilled on a table or floor, wipe off immediately spilled reagents and dispose of them.
Do not contact with eyes or skin.
Concentrated waste solutions should not be released into sewer or rivers.

7. Handling and storage

Handling: Do not inhale or ingest the reagent. Avoid contact the reagent with eyes and skin.
Since the remaining K-1 reagent is strong acid of pH2 or less, and the final solution after the measurement will be strong alkali of pH10, handle with special care.
Especially for outdoor use, ensure to bring back reagents, waste solutions after the measurement, and the used containers.
Storage: Avoid direct sunlight and store in a well-ventilated, dry and dark place at room temperature.

8. Exposure controls and personal protection

Administrative control level
Working environment standard: Not established

Occupational exposure limits
ACGIH (TLVs): TWA 1 mg(W)/m^3, STEL, 3 mg (W)/m^3
(only for Sodium tungstate (VI) dihydrate)
ACGIH (TLVs): TWA 0.5 mg (Mo)/m^3 (only for Sodium molybdate (VI) dihydrate)
Japan Society for Occupational health: 1 mg/m^3 (only for Phosphoric acid)
ACGIH (TLVs): TWA 1 mg/m^3, STEL 3 mg/m^3 (only for Phosphoric acid)
Japan Society for Occupational health (ceiling value): 5 ppm (7.5 mg/m^3) (only for Hydrochloric acid)
ACGIH (TLVs): STEL 2 ppm (ceiling) (only for Hydrochloric acid)

Protective equipment: Recommended to wear protective glasses and gloves

9. Physical and chemical properties

Physical state:	K-1: Liquid reagent	3mL x 1 poly-bottle in a poly bag
	K-2: Tube containing powder reagent	
		1.1 g x 40 tubes/kit (5 tube per aluminum laminated packaging)
Color:	K-1: yellow (liquid), K-2: white (powder), semi-transparent (polyethylene tube)	
Odor:	No odor	
pH:	$\leq$2 (K-1 reagent)	
	10 (final measurement solution)	

Melting point, boiling point, flash point, ignition point, lower explosion limit, vapor pressure, density, relative density, solubility, Pow, kinetic viscosity: not available as a mixture

10. Stability and reactivity

Avoid leaving in a place where high temperature, humid or under direct sunlight.
Stable under normal use conditions and no dangerous reactions under specific conditions are expected.
No information on hazardous decomposition product is available.

11. Toxicological information

No data on mixture is available. Data on K-1and K-2 reagents are shown below.

K-1 reagent

Sodium tungstate (VI) dihydrate:

Acute toxicity:

Oral: Rat-LD_{50} = 1190 mg/kg

Oral: Mouse-LD_{50} = 240 mg/kg

Oral: Rabbit-LD_{50} = 875 mg/kg

Skin corrosion/ irritation: Out of category because pH of the aqueous solution is almost neutral.

Other data: Not available

Sodium molybdate (VI) dihydrate:

Acute toxicity:

Oral: Rat-LD_{50} = 4233 mg/kg

Dermal: Mouse-LD_{50} > 2000mg/kg

Carcinogenic effects: ACGIH classifies Molybdenum water soluble compounds A3 (confirmed animal carcinogen with unknown relevance to humans.)

Other data: Not available

Phosphoric acid:

Acute toxicity:

Oral: Rat-LD_{50} = 1530 mg/kg (RTECS 2006, IUCLID 2000, HSDB 2006)
1250mg/kg (RTECS 2006)

Dermal: Rabbit- LD_{50} = 2740 mg/kg (RTECS 2006, IUCLID 2000, HSDB 2006)

Skin corrosion/ irritation:

Although it was the effects of exposure for 24 hours, there are description that caustic was admitted in the test which applied 75-85% aqueous solutions to the rabbit skin (IUCLID (2000)), and pH of 0.1N aqueous solutions was strong acids of 1.5. So it was set as Category 1A-1C.

Serious eye damage/ eye irritation:

Since it had skin corrosiveness, it was categorized as Category 1.

Specific target organ toxicity (single exposure):

The substance was classified as Category 3 (airway irritant) because it is reported in ACGIH (7th, 2001) and Japan Society for Occupational Health Recommendations (1993) that the mist is an irritant to upper airways.

Other data: Not available

Hydrochloric acid (gas) (no data on solution is available):

Acute toxicity:

Oral: Rats-LD_{50} = 238 - 277, 700 mg/kg (SIDS (2009))

Dermal: Rabbits-LD_{50}>5010 mg/kg (SIDS (2009))

Inhalation (gas): Rats-LC_{50} = 4.2, 4.7, 283 mg/L/60 min (SIDS (2009)). (4-hr ppm = 1411, 1579, 95083 ppm)

Inhalation (dust, mist): Rats-LC_{50} (aerosol) = 1.68 mg/L/1hr (SIDS (2009)) (4-hour equivalence: 0.42 mg/L)

Skin corrosion/ irritation:

In a rabbit skin irritation test, application for 1 - 4-hour caused corrosion at higher concentrations (SIDS (2009)). Skin irritation and ulceration with fur discoloration occurred in mice and rats dermally exposed for 5 - 30 minutes (SIDS (2009)). In human experiments, there are reports that contact caused slight to strong irritation, or ulceration and severe burns to the skin (SIDS (2009)). Based on these data, the substance was considered to have corrosive properties, and was classified into Category 1

Serious eye damage/ eye irritation:

The substance was classified as a skin corrosive substance. In eye damage and irritation tests, solutions of the substance, hydrochloric acid, was used as a test substance. In animal tests including rabbit tests, high irritation, damage and corrosion to eyes have been reported (SIDS (2002)). For humans, the concentrated solution can cause permanent damage and loss of sight (SIDS (2002)). Based on these data, the substance was classified into Category 1.

Respiratory or skin sensitization

Respiratory sensitization:

Since the substance is on the sensitizing chemical substance list by Japanese Society of Occupational and Environmental allergy, the substance was classified into Category 1. There is a report that after exposure to a cleaning product that contained hydrogen chloride, the subject developed bronchospasm and still had marked asthma symptoms 1 year after exposure that were triggered by exercise and inhalation of trivial concentrations of irritants (ACGIH (2003)).

Skin sensitization:
A guinea pig maximization test and a mouse ear swelling test demonstrated negative results (SIDS (2009)) for the substance. In a human test using fifty volunteers, none gave a positive reaction in a challenge application, 10 - 14 days after the final induction application (SIDS (2009)). The substance was classified as "Not classified".

Carcinogenicity:
Based on the classifications of "Group 3" in IARC (1992) and "A4" in ACGIH (2003), the substance was classified as "Not classified". As relevant information, no evidence of carcinogenicity was observed in rat and mouse carcinogenicity tests (SIDS (2009)). Epidemiologic tests did not suggest an association between exposure to hydrogen chloride and cancer development (IARC 54 (1992), PATTY (5th, 2001)).

Specific target organ toxicity (single exposure):
In humans, inhalation exposure caused symptoms such as dyspnea, laryngitis, bronchitis, bronchoconstriction, pneumonia and edema. Inflammation and necrosis of the upper respiratory tract and pulmonary edema have also been reported (DFGOT vol. 6 (1994), PATTY (5th, 2001), IARC 54 (1992), ACGIH (2003)). In animal tests, toxic effects with morphological change of the lung and bronchus such as bronchitis with mucosal necrosis, pulmonary edema, hemorrhage, and thrombus were observed at dose levels within the guidance value range for Category 1 (ACGIH (2003), SIDS (2009)). Based on the information for humans and animals, the substance was classified into Category 1 (respiratory system).

Specific target organ toxicity (repeated exposure):
There are 2 or more reports for humans in which repeated exposure caused tooth damage by erosion (SIDS (2002), EHC 21 (1982), DFGOT vol. 6 (1994), PATTY (5th, 2001)). Additionally, an increase in the frequency of chronic bronchitis was reported (DFGOT vol. 6 (1994)). Based on the information, the substance was classified into Category 1 (tooth, respiratory system).

Other data: Not available

Lithium sulfate monohydrate:

Acute toxicity
Oral: Rat-LD_{50}= 613 mg/kg,
Oral: Mouse- LD_{50}: 1190 mg/kg

Other data: Not available

Water:

Acute toxicity: Oral-rat LD_{50} >90 mL/kg (used 90g/kg for the calculation of ATEmix below)

Other data: Not available

K-2 reagent

Polyethylene:

Acute toxicity:
Oral: Rat LD_{50} > 7,950 mg/kg (used 7,950 mg/kg for the calculation of ATEmix below)

Carcinogenicity: IARC Group 3 (not classifiable as to carcinogenicity to humans).

Other data: Not available

GHS classification results of K-1 and K-2 reagents as mixtures are shown below.

[Skin corrosion/ irritation]
K-1 reagent: Classified as Category 1 (Danger, Causes severe skin burns and eye damage.) because pH of K-1 reagent is $\leq$ 2.
K-2 reagent classification is not possible because of data lack.

[Serious eye damage/ eye irritation]
K-1 reagent: Classified as Category 1 (Danger, Causes serious eye damage.) because pH of K-1 reagent is $\leq$ 2.
K-2 reagent: Classified as Category1 (Danger, Causes serious eye damage.) because K-2 reagent contains more than or equal to 1% of category 1 substances.

[Respiratory or skin sensitization]
K-1 reagent: Classified as Category 1 because K-1 reagent contains more than or equal to 1% of respiratory sensitizer.
K-2 reagent: classification is not possible because data on ingredients are not available.

[Specific target organ toxicity (single exposure)]
K-1 reagent: Classified as Category 2 (Warning, May cause damage to respiratory system.) because K-1 reagent contains 1 to 10% of category 1 substances.
K-2 reagent: classification is not possible because data on ingredients are not available.

[Specific target organ toxicity (repeated exposure)]
K-1 reagent: Classified as Category 2 (Warning, May cause damage to respiratory system through prolonged or repeated exposure.) because K-1 reagent contains 1 to 10% of category 1 substances.
K-2 reagent: classification is not possible because data on ingredients are not available.

[Acute toxicity (oral)], [Acute toxicity (dermal)],[Acute toxicity (inhalation: dust, mist)], [Germ cell mutagenicity], [Carcinogenicity], [Reproductive toxicity], [Aspiration hazard]:
Not classified or classification is not possible due to not enough data available.

12. Ecological information

No data on mixture is available. Data on K-1and K-2 reagents are shown below.

K-1 reagent
Sodium tungstate (VI) dehydrate, Sodium molybdate (VI) dehydrate, Phosphoric acid, Lithium sulfate monohydrate:
No eco-toxicological information available.

Hydrochloric acid:
Hazardous to the aquatic environment, short-term (acute):
Crustacea (*Daphnia magna*): 48-h EC_{50} = 0.492 mg/L (SIDS, 2005).
Hazardous to the aquatic environment, long-term (chronic):
Classified into Not classified since the toxicity is mitigated in environmental water by buffer action though it is considered to be a factor of toxicity that water solution becomes strongly acidic.

K-2 reagent
No data for the classification is available.

GHS classifications as a mixture of each K-1 and K-2 reagents are shown below.
[Hazardous to the aquatic environment, short-term (acute)]
K-1 reagent: Classified as Category 3 because K-1 reagent contains 1 to 25% of category 1 substance.
K-2 reagent: classification is not possible because data on ingredients are not available.
[Hazardous to the aquatic environment, long-term (chronic)]
K-1 and K-2 reagents: Classification is not possible due to not enough data available.
[Harmful effects on the ozone layer]
Classification is not possible because each of the substances is not described in Annex to Montreal Protocol.

13. Disposal considerations

pH of the remaining K-1 reagent and the final solution after the measurement will be 2 or less. pH of reacted solution in poly tube is 10.
Always dispose of in accordance with local regulations.

14. Transport information

In addition to precautionary measures regarding the handling and the storage, avoid rough handling that may cause damaging the containers. It is recommended to ship by air because of the storage under high temperature for long period of time may lead to deterioration.

UN classification and number:	3264
Proper shipping name:	Corrosive liquid, acidic, inorganic,n.o.s. (applicable only K-1 reagent)
UN classification:	Class 8 (corrosive substances)
Packing group:	III
Civil Aeronautics Act:	Same as above. Applicable as Dangerous Goods in Excepted Quantity.
Fire Service Act:	Not applicable
Total weight of the product:	ca.140 g/kit

15. Regulatory information

Poisonous and Deleterious Substances Control Act: Not applicable.
PRTR Act: Not applicable
(Concentrations of Sodium molybdate (VI) dehydrate is lower than or equal to 1% and the product is not applicable as “class I Designated Chemical Substances).
Industrial Safety and Health Act: Applicable
K-1 reagent contains more than 1% of Sodium tungstate (VI) dehydrate, more than 0.1% of Sodium

molybdate (VI) dehydrate, more than 1% of Phosphoric acid and more than 1% of Hydrochloric acid.
: “Cabinet order, article 18, shall be notified the Name of the substances, #2”
: “Cabinet order, article 18-2, shall be indicated the Name of the substances, #2”
: “Designated substances class 3”
K-2 reagent contains more than 1% of Sodium Carbonate.
: “Cabinet order, article 18, shall be notified the Name of the substances, #2”
: “Cabinet order, article 18-2, shall be indicated the Name of the substances, #2”

Waste Disposal and Cleaning Act: Applicable
pH of waste solutions after the measurement is 2 or less, and is applicable as Special Controlled Industrial Waste under the Act.

16. Other information

Reference literature

Safety Data Sheet No.37300, Kanto Chemical Co., INC. (2016.06.01)
Safety Data Sheet No.37216, Kanto Chemical Co., INC. (2016.06.01)
Safety Data Sheet No.24140, Kanto Chemical Co., INC. (2013.07.30)
NITE, GHS Classification, ID1003 Phosphoric acid (2006.02.10)
NITE, GHS Classification, ID21B3004 Hydrochloric acid (2009.3)
Safety Data Sheet No.W01W0104-1670, Wako Pure Chemical Industries, Ltd. (2015.01.08)
Material Safety Data Sheet No.051110033, TOSOH CORPORATION (2004.07.09)
Koukuu Kikenbutsu Yusou Houreisyu, Ed. MLIT, HOUBUN SHORIN CO., LTD. (2019)
JIS Z 7252:2019 Classification of chemicals based on “Globally Harmonized System of Classification and Labelling of Chemicals (GHS)” (Japanese Industrial Standards Committee)
JIS Z 7253:2019 Hazard communication of chemicals based on GHS-Labelling and Safety Data Sheet (SDS) (Japanese Industrial Standards Committee)
UN GHS (tentative translation, forth revised version), GHS Kankei Syocho Renraku Kaigi (2011)
Ministry of Economy, Trade and Industry, GHS Classification Guidance for Enterprises 2013 Revised Edition (2013)

NOTE) This information is not always exhaustive and use with care.
This data sheet only provides information but any description cannot be warranted.
Descriptions may possibly be changed because of new findings or modification of the current knowledge.
Precautions only cover normal handling.
This English SDS is prepared in the cooperation with the Chemicals Evaluation and Research Institute (CERI), Japan.