SHOWA DENKO K.K.

GPS/JIPS Safety Summary

1. SUBSTANCE NAME

Glycine (CAS No.: 56-40-6)

2. GENERAL STATEMENT

Glycine is one of the amino acids regarded as non-essential for humans that constitute a lot of proteins in nature. In general, it is included in many animal proteins. In particular, it contains a lot to extract, such as in sea urchins and shellfish shrimp and crab, it is the main resource of good taste.

3. CHEMICAL IDENTITY

Item	Description
Chemical or generic name	Aminoacetic acid
Product name	Glycine (Aminoacetic acid)
CAS No.	56-40-6
Other Nos.	Japan: Chemical Substances Control Law (9)-77 EC No./EINECS No.: 200-272-2
Chemical formula	H_2NCH_2COOH
Structural formula	$H_2N\text{-}CH_2\text{-}COOH$
Sources/references	Sections 3 and 16 of the SDS issued by SHOWA DENKO K.K.

4. USES AND APPLICATIONS

Main uses	The substance is used as a food additive, feed additive, and as a source material for cosmetic products, pharmaceutical agent and amino acid synthesis.In particular, it is used as an additive in any food for long shelf life and flavor enhancer component in brewing, meat processing, beverages, seasonings industry.In addition, it is used in the plating reagent such as industrial.

5. PHYSICAL/CHEMICAL PROPERTIES

Under normal temperatures, glycine is a odorless and white powder.

Appearance	Crystal or Crystalline powder
Color	White
Odor	Odorless
Relative density	1.57

Melting point	182 / 233-290 ºC(Decomposition)
Burning quality	No reliable data available.
Lower and upper Flammability limits	No reliable data available.
Auto-ignition temperature	No reliable data available.
Molecular weight	75.05 g/mol
Vapor pressure	1.28×10^{-7} mmHg (25 ºC)
Solubility in water	250 g/L (25 ºC)
Partition coefficient (n-octanol/water)	LogPow: -3.2
Others	Minimum-ignition energy: 3600mJ
Sources/references	Section 9 of the SDS issued by SHOWA DENKO K.K.

6. HEALTH EFFECTS

Effect assessment	Results (GHS(Note 1) hazard classification)
Acute toxicity (oral)	Not classified (Note 2)
Acute toxicity (dermal)	Classification not possible (Note 3)
Acute toxicity (inhalation; gases)	Not applicable (Note 4)
Acute toxicity (inhalation; vapor)	Classification not possible
Acute toxicity (inhalation; dust/mist)	Classification not possible
Skin corrosion/irritation	Classification not possible
Serious eye damage/eye irritation	Classification not possible
Respiratory sensitization	Classification not possible
Skin sensitization	Classification not possible
Germ cell mutagenicity	Classification not possible
Carcinogenicity	Classification not possible
Reproductive toxicity	Classification not possible
Specific target organ toxicity (single exposure)	Classification not possible
Specific target organ toxicity (repeated exposure)	Classification not possible
Aspiration hazard	Classification not possible
Sources/references	Sections 11 of the SDS issued by SHOWA DENKO K. K.

(Note 1) GHS (Globally Harmonized System of Classification and Labeling of Chemicals): It is a system for classifying chemicals according to type and hazard level, and for indicating label information pursuant to the globally unified rules for offering Safety Data Sheets.
(Note 2) Not classified: when the hazards are believed to be less than even the lowest hazard classification defined in the GHS.
(Note 3) Classification not possible: when unable to classify due to a lack of sufficiently reliable data for defining the classification.
(Note 4) Not applicable: when chemicals do not fall within the scope of classification because the physical properties defined in the GHS do not apply.

7. ENVIRONMENTAL EFFECTS

Effect assessment	Results (GHS hazard classification)
Hazardous to the aquatic environment	
Acute hazard	Not classified
Long-term hazard	Not classified
Hazardous to the ozone layer	Montreal Protocol on Substances that Deplete the Ozone Layer (revised version): not included in the list
Sources/references	Sections 12 of the SDS issued by SHOWA DENKO K.K.

Environmental fate/dynamics	Results
Mobility in soil	No reliable data available.
Persistence/degradability	Readily biodegradable in nature.
Bioaccumulation potential	Bioaccumulation potential is presumed to be low.
Conclusion about PBT/vPvB	The criteria for persistent bioaccumulative and toxic (PBT; remaining persistently in the environment and possessing high bioaccumulation potential and toxicity) and very persistent and very bioaccumulative (vPvB; remaining very persistently in the environment and possessing very high bioaccumulation potential) chemicals are believed to inapplicable.
Sources/references	Section 12 of the SDS issued by SHOWA DENKO K.K.

8. EXPOSURE

	Exposure potentials through main uses
Occupational exposures	Glycine is used mainly as a food additive, feed additive, and as a source material for pharmaceutical agent and amino acid synthesis. No harmful influence has been found so far in the general environment, but workers could be exposed through the skin or inhalation. This could occur when powders of the substance are handled under normal temperatures, in mixing/blending, measuring, packing, unpacking and other processes. Although no harmful effect has been reported, irritation to the respiratory tracts could result if high-density dusts of the substance are inhaled. Moreover, the eyes or skin could also be affected through direct contact. No harmful effects caused by swallowing have been reported.
	(PROC3) There is a possibility of dermal, inhalation exposure to workers when such a device failure, maintenance, sampling and etc., at synthesis in the closed batch system or preparation work. (PROC4) In the process and other batch of opportunities for exposure, there is a possibility of dermal, inhalation exposure to workers at the time of the device failure maintenance, sampling, filling, and discharge.
Consumer exposures	Glycine is used mainly as a food additive, feed additive, and as a source material for pharmaceutical agent.

	There is the potential that consumers could be exposed though dermal and inhalation exposure. Although no harmful effects have been reported, the substance could irritate respiratory tracts when its high-density dusts are inhaled, and the eyes and skin could be affected upon direct contact. No harmful effects caused by swallowing have been reported. (PC14) There is a possibility of dermal exposure to consumers, when it is used as a product of the metal treatment agents such as plating.
Environmental exposures	(ERC1) It may be released mainly into the aquatic environment and the atmosphere from the manufacturing process of the material in the industry. (ERC6a) There is a possibility of release into the aquatic environment and the atmosphere mainly when it will be used as an intermediate for the chemical components in the manufacture of food additives and materials preparation of others. Although environmental exposure is possible, no specific environmental effects have been observed as mentioned in Section 7 Environmental Effects.
Precautions	If there is the potential for exposure during use in other applications, please implement appropriate measures by referring to the risk management recommendations.

9. RISK MANAGEMENT RECOMMENDATIONS

	Risk management recommendations
Occupational exposures	Technical measures; local ventilation; general ventilation
	The substance is manufactured mainly in closed processes, but there is the potential for worker's exposure during sampling, analysis, packing and other processes at manufacturing places. It is required to manage and control worker's exposure by installing local or general ventilation, and a facility for washing the eyes and body at places where the substance is used.
	Allowable exposure limit
	Has not been set.
	Protective equipment
	While working, wear appropriate protective eyewears, dust-proof masks, air-supplied respirators, clothes and protective gloves made of materials impermeable to powders.
	Precautions
	Managers are asked to provide workers training concerning the selection and use of appropriate protective equipment, worksite management, etc.
Consumer exposures	It is believed that end-products, which are commercially distributed, could not contain powders. However, if they do, take a precaution not to inhale carelessly their dusts and not to be largely exposed to their dusts on skin.

Environmental exposures	The substance is low in acute toxicity and readily biodegradable. Additionally, no influence on the environmental life has been reported. However, avoid discharging it carelessly into the environment.
Sources/references	Sections 6, 7, 8, and 13 of the SDS issued by SHOWA DENKO K.K.

10. STATE AGENCY REVIEW

Hazard assessment	Situations of review
International Chemical Safety Cards	None
OECD HPV	None
REACH	Intermediate use only http://apps.echa.europa.eu/registered/data/dossiers/DISS - 9d843495 - afb9 - 39c4 - e044 - 00144f67d249/DISS - 9d843495 - afb9 - 39c4 - e044 - 00144f67d249_DISS - 9d843495 - afb9 - 39c4 - e044 - 00144f67d249.html－
Others	
Japan Challenge program	http://www.safe.nite.go.jp/jcheck/detail.action?cno=56-40-6&mno=9-0077&request_locale=ja=en

11. REGULATORY INFORMATION/GHS CLASSIFICATION-LABELING INFORMATION

Regulatory information in Japan

Applicable laws	Regulatory situations
Food Sanitation Act	・Specified Additives, Article 10 of the Act, Article 12 Appended Table 1 of Ordinance for Enforcement (99 glycine)
Feed Safety Act	・Specified Feed Additives, paragraph 3, Article 2 of the Act (aminoacetic acid)
UN No.	None

GHS classification, label information

Hazards	Classification results (hazard information)
Health hazards	
Acute toxicity (oral)	Not classified
Hazardous to the aquatic environment	
Acute hazard	Not classified
Long-term hazard	Not classified
GHS label elements	
Pictogram or symbol	None
Signal word	None
Hazard statement	None

12. CONTACT INFORMATION

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13. DATE OF ISSUE AND REVISION, ADDITIONAL INFORMATION

Date of issue:October 10, 2013
Revisions:

Date of revision	Revised section	Revised item	Version

Special instructions: None

14. DISCLAIMER

This Safety Summary which is a translation of original Safety Summary prepared in Japanese, has been prepared as a part of the efforts by GPS/JIPS: Japan Initiative of Product Stewardship by the chemical industry. This Safety Summary is meant to provide an outline of information related to the safe handling of the subject substance rather than provide expert information regarding the risk assessment processes, the effect on human health or the environment, etc. Moreover it is not a replacement for the Safety Data Sheet (SDS), the Chemical Safety Report (CSR), or other risk assessment documents. To the greatest extent possible, the Safety Summary contains accurate statements based on laws, materials, information and other data available at the time of issue. However, it does not cover all such data. Additionally, it does not intend to provide a guarantee in any way.