SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	:	Standard Mixture for SWA each 10µg/mL in Acetone
NAME OF SUPPLIYER	:	GL Sciences Inc.
ADDRESS	:	22-1 Nishishinjuku 6-chome Shinjuku-ku Tokyo 163-1130, Japan
CHARGE SECTION	:	International Sales Section
TELEPHONE No.	:	+81-3-5323-6620
FACSIMILE No.	:	+81-3-5323-6621
PRODUCT No.	:	1021-58003
SDS No.	:	1021-58003

Research use only.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION :

Flammable liquid	:	Category 2
Eye damage/irritation	:	Category 2B
Reproductive toxicity	:	Category 2
Specific target organ toxicity (Single exposure)	:	Category 3(respiratory irritation, narcotic effect)
Specific target organ toxicity (Repeated exposure)	:	Category 1(central nervous system, respiratory tract, digestive tract)

HAZARD SYMBOL :

SIGNAL WORD : Danger

HAZARD STATEMENTS :

H225	Highly flammable liquid and vapour
H320	Cause eye irritation
H361	Suspected of damaging fertility or the unborn child
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H372	Cause damage to central nervous system, respiratory tract and digestive tract through prolonged or repeated exposure

PRECAUTIONARY STATEMENTS :

[Prevention]

P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. –No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe fume/gas/mist/vapours.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

[Response]

P303+P361+ P353	IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+ P351+ P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P314 Get medical attention if you feel unwell.
P337+P313 If eye irritation persists: Get medical attention.

[Storage]

P403+ P233+P235 Store in a well-ventilated place. Keep container tightly closed. Keep cool.
P405 Store locked up.

[Disposal]

P501 Dispose of contents/container in accordance with all applicable regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL IDENTITY : Mixture

CHEMICAL NAME	CONTENT	CHEMICAL FORMULA	CAS RN	TSCA INVENTRY	EINECS No.
Acetone	≧99 %	C_3H_6O	67-64-1	Listed	200-662-2
Dodecamethylcyclohexasiloxane	0.001 %	$C_{12}H_{36}O_6Si_6$	540-97-6	Listed	208-762-8
Dibutyl hydroxytoluene	0.001 %	$C_{15}H_{24}O$	128-37-0	Listed	204-881-4
Tris(2-chloroethyl) Phosphate	0.001 %	$C_6H_{12}C_{13}O_4P$	115-96-8	Listed	204-118-5
Dibutyl Phthalate	0.001 %	$C_{16}H_{22}O_4$	84-74-2	Listed	201-557-4
Bis(2-ethylhexyl) Adipate	0.001 %	$C_{22}H_{42}O_4$	103-23-1	Listed	203-090-1
Bis(2-ethylhexyl) Phthalate	0.001 %	$C_{24}H_{38}O_4$	117-81-7	Listed	204-211-0

4. FIRST AID MEASURES

GENERAL ADVICE : Consult a physician. Show this safety data sheet to the doctor in attendance.

INHALATION : Move victim to fresh air. If breathing is difficult, give oxygen. If irritation persists, consult a physician.

SKIN CONTACT : Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. Consult a physician immediately.

EYE CONTACT : Flush eyes well with flooding large amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If possible, remove any contact lenses. Consult a physician immediately.

INGESTION : Rinse mouth, give plenty of water to dilute the substance. Do not induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician immediately.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA : Water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

FIRE & EXPLOSION HAZARDS : Toxic, irritating, dust/fume/smoke may be emitted. Carbon monoxide may be foamed.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS : Firemen should wear normal protective equipment(full bunker gear) and positive-pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS : Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid raising dust and avoid contact with skin and eyes.

ENVIRONMENTAL PRECATIONS : Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

METHODS FOR CLEAN UP : Do not touch spilled material without suitable protection. Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

HANDLING : Keep away from ignition sources and ventilate the area －No smoking. In case of insufficient ventilation, wear suitable respiratory equipment.

Avoid contact with eyes, skin, and clothing. Avoid inhalation of vapour or mist. Avoid prolonged or repeated exposure. Handle this product with suitable protection.

STORAGE : Store away from sunlight, heat and all ignition sources in well-ventilated dry place. Keep container tightly closed. Keep cool(2 ~ 10℃).

INCOMPATIBLE PRODUCTS : Strong oxidizers, acids

8. EXPOSURE CONTROL/PERSONAL PROTECTION

ENGINEERING MEASURES : Use exhaust ventilation to keep airborne concentrations below exposure limits.

Use adequate ventilation.

VENTILATION : Local Exhaust ; Necessary, Mechanical(General) ; Necessary

PERSONAL PROTECTION

Respiratory protection : Use respirators approved under appropriate government standards and follow all regulations.

HAND PROTECTION : Chemical resistant gloves

EYE PROTECTION : Safety glasses(goggles)

SKIN PROTECTION : Protective clothing

CONTROL PARAMETERS

CHEMICAL NAME	ACGIH	OSHA Final Limits	NIOSH REL
Acetone	TWA 250ppm STEL 500ppm	TWA 1000ppm	TWA 250ppm
Dibutyl hydroxytoluene	TWA 2mg/m^3	Not established	TWA 10mg/m^3
Dibutyl Phthalate	TWA 5mg/m^3	TWA 5mg/m^3	TWA 5mg/m^3
Bis(2-ethylhexyl) Phthalate	TWA 5mg/m^3	TWA 5mg/m^3	Ca TWA 5mg/m^3 ST 10mg/m^3
Other	Not established		

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE : Liquid

PHYSICAL STATE : Colorless, Clear

ODOR : Characteristic odor

pH : No data available

BOILING POINT : approx.56 °C(Acetone)

MELTING POINT : -95 °C(Acetone)

FLASH POINT : -18 °C (TCC)(Acetone)

EXPLOSIVE LIMITS : 2.15% (lower), 13 % (upper)(Acetone)

VAPOR PRESSURE : 24.7 kPa (at 20°C)(Acetone)

VAPOR DENSITY : 2.0(Acetone)

SPECIFIC GRAVITY : 0.790 - 0.793 g/cm^3 (at 20°C)(Acetone)

SOLUBILITY IN(Acetone)

Water : Miscible

Organic solvent : Miscible

PARTITION COEFFICIENT ; n-octanol/water

: log Pow: -0.24(Acetone)

AUTOIGNITION TEMPERATURE : 560 °C(Acetone)

DECOMPOSITION TEMPERATURE

: No data available(Acetone)

10. STABILITY AND REACTIVITY

REACTIVITY : If exposed to sunlight or air, it forms peroxides and becomes explosive. Reacts violently with strong oxidants (sodium perchlorate, sodium chlorate, chromic acid anhydride etc.) causing fire and explosion hazard. The container containing acetone purifies the explosive mixture at a temperature around -9 °C to 15 °C.

CHEMICAL STABILITY : Reacts with strong oxidizers.

CONDITION TO AVOID : Sunlight, heat, open flames, high temperature, sparks, static electrical charge, other ignition sources, moisture

INCOMPATIBILE MATERIALS : Oxidizers and strong acids

HAZARDOUS DECOMPOSITION PRODUCTS

: CO, CO_2 may be formed.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY : oral, dermal, inhalation; This mixture is not classified.

SKIN CORROSION/IRRITATION : This mixture is not classified by Acetone.

EYE DAMAGE/EYE IRRITATION : This mixture is classified in category 2B.

(Acetone) : rabbit; strong irritation (SIDS(2005),EHC 207(1998(ACGIH(7th,2001))

(Dibutyl hydroxytoluene) : Mild inflammation in the conjunctiva was observed in 6/6 cases 24 hours after the application of 100 mg of the substance in rabbits in the Draize test using rabbits, but it has been described that it completely recovered after 72 hours(SIDS),2002).

(Tris(2-chloroethyl) Phosphate) : Mild edema and conjunctival flares were observed in 2 reports of eye irritation tests using rabbits (only 1 test was in accordance with OECD TG 405), but there was a report that it recovered within 3 days(EU-RAR(2009). In addition, as a result of applying 0.1 mL of this substance to the eyes of rabbits, mild conjunctival hyperemia was observed in all cases on day 1 after administration, but it was reported that symptoms continued to day 2 in one case.(NITE Initial Risk Assessment(2008),EHC 209(1998))

(Bis(2-ethylhexyl) Phthalate) : There are two eye irritation test results(OECD TG 405)in which 0.1 mL of the stock solution of this substance is applied to rabbits. In one study, the average scores for conjunctival flare and corneal opacity / conjunctival swelling were 0.1 and 0.0, respectively. In the other study, mild conjunctival redness (3/3 mice) and mild eye leakage (1/3 animals) were observed 1 hour after application but recovered after 24 hours. In addition, in another eye irritation test (FDA recommended method, GLP compatible) using rabbits, as a result of applying 0.1 mL of the stock solution of this substance, mild conjunctival redness was observed after 1 hour and 24 hours, Recovered after 72 hours(EU-RAR(2003))

RESPIRATORY SENSITIZATION : Lack of data.

SKIN SENSITIZATION : his mixture is not classified.

(Dibutyl Phthalate) : From the descriptions of EU-RAR(2004) and EHC 189(1997), dibutyl phthalate has not shown skin sensitization in animal experiments, but there are results suggesting positive from human case studies. Japan Society for Occupational Health(2012) classified skin sensitization into the second group, and the Japan Society of Occupational and Environmental Allergy Special Committee(2004) classified skin sensitization.

GERM CELL MUTAGENICITY : The classification is not possible in this mixture.

(Acetone) : In vivo, it is negative in the micronucleus test using mouse and hamster red blood cells, and in vitro, there is only one positive result(ACGIH (7th, 2001)) in the non-metabolism activation system of chromosomal aberration test using mammalian cultured cells. However, there are other reports of negative results in reverse mutation tests using bacteria, gene mutation tests using cultured mammalian cells, chromosomal aberration tests, and sister chromatid exchange tests(SIDS(2002),ACGIH(7th,2001),EHC 207(1998),PATTY(6th,2012),NTP DB(Access on July 2014)).

CARCINOGENICITY : The classification is not possible in this mixture.

(Tris(2-chloroethyl) Phosphate) : In a carcinogenicity test in which rats and mice were gavaged for 2 years, the frequency of renal tubular adenomas was increased in both males and females, and there was also a slight increase in thyroid follicular cell tumor frequency. Also, there is a slight increase in tubular tumors in males and a slight increase in Harderian adenomas in females in mice, and NTP is considered to be clear evidence of carcinogenicity in males and females, and uncertain in males and females(NTP TR 391 (1991)). On the other hand, in the carcinogenicity test in which mice were mixed and fed for 18 months, renal tubular adenomas in males and females, renal tubular carcinomas in males increased in frequency, adenoma / cancer in hepatocytes in males, and anterior gastric flattening in females The incidence of epithelial papilloma / cancer and leukemia increased(EU-RAR(2009),NITE initial risk assessment report(2008)). As the existing classification results, the IARC classified the group 3 as limited evidence in laboratory animals(IARC 71(1999)), while the EU classified it into Carc. 2 (ECHA C & L Inventory(Access on October),2016)).

(Bis(2-ethylhexyl) Phthalate) : It is classified as 2B in IARC(2013), A3 in ACGIH(2001), Group 2B in Japan Society for Occupational Health(2001), B2 in EPA(1988), and R in NTP(2001). In addition, IARC continuously collects information on the hepatic carcinogenic mechanism of this substance and PPAR agonists, and the mechanism of tumorigenesis in the liver (hepatocellular adenoma / cancer) and testis (Leidig cell adenoma) is PPARα. In addition to the mechanism via mediation, multiple mechanisms (Mechanism causing DNA damage by activation of hepatic Kupffer cells by oxidative stress, mechanism via nuclear receptors other than PPAR(CAR, PXR, etc.), etc.) are assumed. Of the substance in the liver and testis can not be explained simply by the hypothesis that it is a rodent-specific mechanism for the development of toxicity due to PPAR. Nature has been changed from group 3 (IRAC vol.77(2000)) to group 2B(IARC(2011),IARC vol.101(2013)).

REPRODUCTIVE TOXICITY : This mixture is classified in category 1A by Acetone.

(Acetone) : There is a report on epidemiological investigation that there is no impact on abortion(ATSDR(1994)). Fetal weight loss is observed at high concentration exposure (11,000 ppm(26.1 mg/L)) where maternal toxicity (weight gain suppression) is observed in teratogenicity test by inhalation route using rats, and fetal malformation Although there was no significant increase in the incidence rate, an increase (11.5%) (control group: 3.8%) has been reported for mothers with one or more malformed children. . In addition, fetal weight loss, late absorption embryo at high concentration exposure (6,600 ppm(15.6 mg/L)) where maternal toxicity (relative weight increase of liver) is observed in teratogenicity test by inhalation route using mice An increase in (EHC 207(1998)) has been reported. The EHC states that human and animal studies require further investigation.

SPECIFIC TARGET ORGAN TOXICITY - single exposure -

: This mixture is classified in Category 3 by Acetone and other 2 components.

(Acetone) : In humans, in the inhalation route, exposure to acetone vapor reports moderate airway irritation (PATTY (6th,2012), SIDS(2002), MOE Risk Assessment Volume 6: Provisional Hazard Assessment Sheet (2008)) Stimulation of throat and trachea with 100 ppm (6h) of vapor exposure (ACGIH(7th,2001)), irritation of nose, throat and trachea with exposure of 500 and 1000 ppm (EHC 207(1998)) , 100-12,000 ppm, exposure for 2 minutes to 6 hours, reports irritation of nose, throat, trachea, lung, dizziness, vomiting, uncoordinated behavior, loss of coordinated speech, sleepiness, loss of consciousness, central nervous system such as coma Suppression has been reported (ATSDR(1994), ACGIH(7th,2001), SIDS(2002), Ministry of the Environment Risk Assessment Volume 6: Temporary Hazard Assessment Sheet (2008)). Most symptoms are transient and reversible (SIDS(2002)), but few deaths have been reported (PATTY(6th,2012)). In the oral route, large exposures such as nausea, vomiting and accidental ingestion mainly cause central nervous system depression and irritation such as fatigue, irritation, dizziness, uneven breathing, vomiting, progression of gastrointestinal disorder, impaired consciousness, and no response. (MOE Risk Assessment Volume 6: Provisional Hazard Assessment Sheet (2008), SIDS(2002), IRIS TR(2003)). In experimental animals, the acute effects of acetone vapor exposure are the same as central nervous system depression seen in human poisoning cases. Drowsiness, loss of coordination, loss of autonomic reflex, coma, respiratory failure and death have been reported (SIDS(2002), ACGIH(7th, 2001)).

(Dibutyl Phthalate) : Upper respiratory tract irritation, respiratory depression etc. have been observed at 250 mg / m3 (converted to guidance value: 0.125 mg / L /4 hr) in a study in which mice were exposed by inhalation (aerosol) to mice (ACGIH (7th, 2001)) .

(Bis(2-ethylhexyl) Phthalate) : The substance is respiratory irritant (MOE Risk Assessment Volume 1: Initial Environmental Risk Assessment(2002), ACGIH(7th, 2001), SDB(Access on August 2014)). Although many cases have been reported in humans, there are few that can be judged as acute toxicity symptoms caused by this substance alone. Abdominal pain and diarrhea have been reported after large oral intake (MOE Risk Assessment Volume 1: Environmental Risk Initial Assessment(2002), ACGIH(7th, 2001), HSDB (Access on August 2014), ATSDR(2002)), DF GOT vol. 25(2009), EHC 131(1992), EU-RAR(2008), NICNAS(2010)).

SPECIFIC TARGET ORGAN TOXICITY - repeated exposure -

: This mixture is classified in Category 1 by Acetone.

(Acetone) : In humans, when exposed to 700 ppm of this substance for 3 hours a day for 7 to 15 years, workers exposed by inhalation had dizziness, weakness, and inflammation in the respiratory tract, stomach and duodenum as effects of occupational exposure. (ACGIH(7th,2001), DFGOT vol. 7(1996)) and even in the reevaluation by ATSDR Addendum (2011), the target organs for exposure to this substance in humans are respiratory organs, digestive tracts, nerves It is reported that the system is central. In addition, ATSDR Addendum (2011) reported cases of nephritis and renal failure caused by exposure to a product containing this substance (1 case with onset of glomerulonephropathy and tubulointerstitial nephritis as chronic poisoning cases) Reported year: 2002) There is a possibility of acute poisoning due to unknown duration of exposure, and there is a high possibility of acute poisoning cases. One renal failure case (original report year:2003)). As few as one or two, the evidence is not sufficient to be included in this classification as a target organ. On the other hand, ACGIH(7th,2001) was exposed to inhalation at a concentration of 500 ppm for 6 hours / day for 6 days, resulting in blood system effects (increase in white blood cell count and eosinophil count, neutrophils) There is a description that reduction in phagocytosis was observed, and it was regarded as the basis of Category 2(blood system) in the old classification, but there is also a report that no blood effect is seen in ACGIH(7th,2001). Epidemiological studies comparing the control group with the group exposed to 600 or 1,000 ppm of this substance for 5 years or more and no blood effect was confirmed (DFGOT vol. 7(1996)) In the description and the more recent IRIS(2003) and ATSDR Addendum(2011) for hazard assessment, there is no description of blood effects due to human exposure, so the blood system was excluded from the target organs. In the 13-week drinking water administration test using rats and mice in experimental animals, and in the 13-week gavage oral administration test on rats, no obvious toxic effects were observed in the dose range up to Category 2 (SIDS(2002)).

ASPIRATION HAZARD : Classification is not possible in this mixture.

12. ECOLOGICAL INFORMATION

Hazardous to the aquatic environment - Acute hazard

: Classification is not possible in this mixture.

(Dibutyl hydroxytoluene) : Daphnia magna; 48 hours EC50 = 0.84 mg/L(Environmental Agency Ecological Impact Test(1999), Ministry of the Environment Risk Assessment Volume 6 (2008))

(Dibutyl Phthalate) : Yellow perch; 96 hours LC50 = 0.35 mg/L(NITE initial risk assessment re port(2005), CEPA(1994), EU-RAR(2003), EHC 189(1997))

(Bis(2-ethylhexyl) Phthalate) : Daphnia magna; 48 hours EC50 = 0.133 mg/L(MOE Risk Assessment Vo lume 1(2002), NITE Initial Risk Assessment Report(2005))

(Acetone) : Fathead Minnow; 96 hours LC 50>100 mg/L(EHC 207,1998)

Hazardous to the aquatic environment - Chronic hazard

: Classification is not possible in this mixture.

(Dibutyl hydroxytoluene) : It is not rapidly degradable (BOD decomposition rate: 4.5%(existing check, 1979)), and it is ELS NOEC = 0.053 mg/L of the fish(Oryzias latipes)(M OE eco-impact test,2007).

(Acetone) : It is not poorly water-soluble (water solubility = 1.00 x 106 mg/L(PHYSP ROP Database,2005)) and has low acute toxicity.

BIODEGRADABILITY : Acetone is not poorly water-soluble.

BIOACCUMULATIVE POTENTIAL : No data available

MOBILITY IN SOIL : No data available

OTHER ADVERSE EFFECTS : Not listed in Montreal Protocol list.

13. DISPOSAL INFORMATION

Dispose in a hazardous-waste site in accordance with all applicable regulations. Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environment agency for specific rules).

14. TRANSPORT INFORMATION

IATA

UN NUMBER	:	1090
UN PROPER SHIPPING NAME	:	Acetone
CLASS	:	3, flammable liquid
PACKING GROUP	:	II
ADR/RID	:	1090, Acetone
DOT	:	1090, Acetone
MARINE POLLUTANT	:	Not classified

15. REGULATORY INFORMATION

For classification and labeling of chemicals in accordance with the applicable rules and regulations in the EU or each country, refer to GHS classification of this product (See Section 2).

US REGULATION	:	OSHA HCS 2012/29 CFR 1910.1200
EU REGULATION	:	CLP Regulation ((EC) No. 1272/2008)

16. OTHER INFORMATION

NOTICE:

The information contained in the SDS description is applicable exclusively to the chemical substance identified herein and for its intended use as an analytical reference standard or reagent and to the unit quantity intended for that purpose. The information does not relate to, and may not be appropriate for, any application or larger quantity of the substance described. Our products are intended for the use by individuals possessing sufficient technical skill and qualification on use the material potential hazardous chemical. Accordingly, no representation or warranty, express or implied, with respect to merchantability and fitness for a particular purpose is made with respect to the information contained herein.

Attention:

This product in terms of chemical identity and the unit amount provide is intended for use in chemical analysis and not for human consumption, nor any other purpose.