Material Safety Data Sheet

1. Manufacturer's Information

Identity	Standard Liquid LK for calibration of refractometers
Manufacturer	ATAGO CO., LTD.
Address	The Front Tower Shiba Koen, 23rd Floor 2-6-3 Shiba-koen, Minato-ku, Tokyo 105-0011, Japan
Department	Planning
Telephone	81-3-3431-1943
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Email	overseas@atago.net
Filing number	00002

2. Hazard Data

Danger and hazard	Edible. Not hazardous.
Toxicity	No data
Circumstantial hazard	Categorized as flammable liquid. Becomes flammable when heated. Keep away from heat sources.
GHS category	None
Label elements	None

3. Composition

Chemical identity	Glycerol fatty acid esters	D-α-Tocopherol
Concentration	> 99.9%	< 0.1%
Other name	Vegetable oil	Vitamin E
Chemical structure	CH2-OCORI, etc.	$C_{29}H_{50}O_2$
CAS number	8002-13-9	59-02-9

4. First Aid Procedures

Inhalation	Unlikely. Does not vaporize under normal pressure. If concern arises, remove to fresh air.
Skin	Prompt water and soap wash. If concern arises, consult physician.
Eye	Flush with water for a few minutes. Remove contact lenses if possible. If irritation persists, consult physician.
Ingestion	Rinse mouth with water. A large amount ingested may cause diarrhea. If concern arises, consult physician.
Bodily protection	Rubber gloves.

5. In Case of Fire Emergency

Firefighting materials	Powder/carbon dioxide/foam fire extinguisher or dry sand. *Do not use water as it may aggravate the fire danger.
Hazard	Wear protective clothing so as not to breath in smoke.
Firefighting method	Use powder/carbon dioxide/foam fire extinguisher or dry sand for early stage fire. Use air-blocking firefighting foam for fire in more advanced stage.
Bodily protection	Stand upwind at a safe distance. Wear protective clothing.

6. In Case of Leak Emergency

Bodily caution	Edible and non-toxic. Precautions are advised to avoid slip and fall injuries in the spillage area.
Environmental caution	Do not flush the surface with water. It may cause contamination of sewage, water supply, and groundwater.
Collection, neutralization	[Small amount] Blot the spill with a paper towel. Dispose of the paper towel. [Large amount] Scoop up as much of the spill as possible and transfer to an airtight container. Wipe the remaining spill with a paper towel. Dispose of the paper towel. [In water] Put polypropylene absorbent pads, paper, cloths, etc. over the spill.

7. Handling and Storage Instructions

Handling instruction	Once opened, use up quickly. Oxidization will occur.
Caution	Fire risk of materials with a large surface area, such as paper or cloths, when soaked in this liquid and piled up in a large quantity.
Safety precaution	Fire risk of materials with a large surface area, such as paper or cloths, when soaked in this liquid and piled up in a large quantity.
Storage instruction	Store in an airtight container in a cool place away from direct sunlight.
Storage condition	Store in an airtight container, away from heat sources.
Container and packaging material	Low chemical reactivity. Most materials – glass, metals, plastics, are acceptable.

8. Exposure Prevention Measures

Facility control	Prepare nearby washing station for eyes and body.
Bodily protection	Low to no toxicity. Wear protective glasses, gloves, etc. as needed.

9. Physical and Chemical Properties

Physical characteristics	Liquid at room temperature.
Color	Transparent light yellow.
Odor	Odorless. Some odor as oxidization progresses.
Flash point	253 to 320°
Autoignition temperature	282 to 400°
Density	
Solubility	Not water-soluble. Soluble in some organic solvents. Does not easily dissolve in alcohol below room temperature.

10. Reactivity

Stability	Highly stable in an airtight container at room temperature. Little polymerization or decomposition.
Hazardous reactivity	Hydrolysis when base/acid is dissolved in water, then decomposition of glycerol and fatty acids. Slow reaction of partial production of peroxide upon contact with oxygen, then polymerization or decomposition.
Dangerous condition, contact substance	Keep away from direct sunlight or heat sources. When heated, avoid contact with water. No data on dangerous contact substances.

Harmful product	No dangerous products by chemical reaction.

11. Toxicity

Acute toxicity	Glycerol fatty acid esters D-α-Tocopherol… orl-mus LD50:>25 mL/kg
Skin irritation/corrosion	No data
Eye damage/irritation	No data
Respiratory organs and skin desensitization	No data
Germ cell mutagenicity	D-α-Tocopherol… dni-rat-lvr 100 umol/L , dna-rat-ivn 27 nmol/kg

12. Ecological Impact

Biodegradability	Decomposed by lipases or microorganism. Eventually returns to water and carbon dioxide.
Mobility in soil	No data

13. Disposal Procedures

Wear appropriate protective clothing. Follow the federal and local regulations. Use an afterburner with scrubber to burn a small amount at a time. When disposing of the container, empty it completely. Glycerol fatty acid esters turn into water and carbon dioxide if burned completely. Contact waste management if necessary.

14. Caution Regarding Transportation

UN code	No
Product name	No
UN classification	No
Container protection	No
Marine pollutant	Yes
General caution	Check for leaks from container. Transport safely, securely.
Regulations	Keep away from heat sources. Follow applicable fire safety regulations.

15. Applicable Regulations

Fire safety regulation	Flammable liquid. • Glycerol fatty acid esters – flammable liquid • D-α-Tocopherol – category 4 petroleum, hazard class III
Labor safety and hygiene regulation	No
Chemical manufacturing examination and regulation	No
Marine sanitation regulation	Category 'Y' (vegetable oil)
Chemical substance management regulation/Japanese Pollutant Release and Transfer Register (PRTR) law	No
European Inventory of Existing Commercial Chemical Substances (EINECS) number	232-299-0 (glycerol fatty acid esters)

16. Other information

Sources:

1. Chemical Safety Data Sheet of glycerol fatty acid esters by Nissin Oillio Group Co., Ltd.
2. Product Safety Data Sheet of D-α-Tocopherol by Tokyo Chemical Industry Co., Ltd.

Important note:

Although the information on this Material Safety Data Sheet is based on several reliable sources, it does not cover everything about the substance. Always handle with care. Precautions noted here apply for intended use of the substance. When using it for purposes other than calibration of refractometers, follow the safety procedures for that particular use. The composition, physical/chemical properties, and hazard data are intended to be merely informational and not a guarantee.

It is recommended to finish a bottle within a reasonable time frame. If any concern arises regarding uses after a prolonged storage period has passed, contact ATAGO.

All chemicals should be treated with great care. The ambient conditions of use, handling, and storage conditions and length largely influence the risk of hazardous accidents. Only those who are experienced and knowledgeable must handle or supervise others handling chemicals, from opening to storage, and disposal. Each user is responsible for setting and following appropriate safety measures.