MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name : **EzWestLumi plus**

Product Code : **WSE-7120S, 7120L**

MSDS No. : **A0028-1**

General Use : Research use only

MANUFACTURER

Company Name : ATTO Corporation

Address : 2-2, Motoasakusa 3 cho-me, Taito-ku, Tokyo 111-0041, Japan

Telephone No. : +81-3-5827-4861

EMERGENCY TELEPHONE NUMBER

: +81-3-5827-4863

2. COMPOSITION/ INFORMATION ON INGREDIENTS

ReagentA

Chemical Name	wt(%)	Chemical Fomula	CAS Registry No.
2-amino-2-hydroxymethyl-1, 3-propanediol	<10%	H2NC(CH2OH)3	77-86-1
5-amino-1,2,3,4-tetrahydrophthalazine-1,4-dione	Trade secret	C8H7N3O2	521-31-3
Ethanol	<0.9%	C3H6O	64-17-5
enhancer	<0.5%	-	-
stabilizer	<2.0%	-	-

ReagentB

Chemical Name	wt(%)	Chemical Fomula	CAS Registry No.
2-amino-2-hydroxymethyl-1, 3-propanediol	<0.1%	H2NC(CH2OH)3	77-86-1
Hydrogen Peroxydase	<0.1%	H2O2	7722-84-1
2-[2-[bis(carboxymethyl)amino]ethyl-(carboxymethyl)amino]acetic acid (EDTA)	<0.5%	C10H14N2Na2O8・2H2O	6381-92-6
stabilizer	<0.1%	-	-

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

: WARNING!

FLAMMABLE LIQUID AND VAPOR.
MAY CAUSE EYE IRRITATION
MAY CAUSE RESPIRATORY TRACT IRRITATION

If swallowed, may cause headaches, dizziness, drowsiness and nausea, and may lead to unconsciousness. Do not ingest. Avoid contact with skin and clothing. Do not breathe vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

4. FIRST AID MEASURES

GENERAL ADVICE : Wash off immediately with soap and plenty of water. In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.

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

EYE : Remove any contact lenses at once. Flush eyes well with flooding amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, consult a physician.

SKIN : Flush skin well with flooding amounts of running water . Remove contaminated clothing. Wash thoroughly with soap and water. If irritation persists, consult a physician.

INGESTION : Rinse mouth, give plenty of water to dilute the substance. Never give anything by mouth to an unconscious person. Consult a physician.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

: Flammable liquid and vapor

AUTOIGNITION TEMPERATURE

: The lowest known value is 398.9°C (750°F) (ETHANOL)

FLASH POINTS

: CLOSED CUP: 11 to 14°C (51.8 to 57.2°F)

FLAMMABLE LIMITS

: LOWER: >1.3%

PRODUCTS OF COMBUSTION

: These products are carbon oxides (CO, CO2)

UNUSUAL FIRE/EXPLOSION HAZARDS

: Highly flammable in presence of open flames, sparks and static discharge. Vapor may cause flash fire. Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

EXTINGUISHING MEDIA

: Carbon dioxide, dry chemical, foam water.

FIRE FIGHTING INSTRUCTIONS

: **SMALL FIRE: Use DRY chemical powder.**

LARGE FIRE: DO NOT FIGHT FIRE WHEN IT REACHES MATERIAL. Withdraw from area and let the fire burn. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. First move people out of line-of-sight of the scene and away from windows. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

PROTECTIVE CLOTHING (FIRE)

: Firefighters should wear full bunker gear, including a 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 PRECAUTIONS

: Prevent spills from entering sewers, watercourses or low areas.

METHODS FOR CLEANING UP

: Do not touch spilled material without suitable protection (See section 8). After materials completely picked up, wash the spill site with soap and water and ventilate the area. Put all wastes in a plastic bag for disposal and seal it tightly. Remove clean, or dispose of contaminated clothing.

7. HANDLING AND STORAGE

HANDLING : Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical

equipment (ventilating, lighting and material handling).

STORAGE : Store in cool (4°C). Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING MEASURES

: Use exhaust ventilation to keep airborne concentrations below exposure limits.
Use only with adequate ventilation.

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

PERSONAL PROTECTION;

Respiratory protection

: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Hand protection : Wear gloves that cannot be penetrated by chemicals or oil.

Eye protection : Avoid contact with eyes. Chemical splash goggles.

Skin protection : Avoid contact with skin. Wear clothing and footwear that cannot be penetrated by chemicals or oil.

CONTROL PARAMETER

Ethanol

ACGIH TLV (United States, 2000).

TWA: 1880 mg/m3

TWA: 1000 ppm

OSHA PEL 1989 (United States, 1989).

TWA: 1900 mg/m3

TWA: 1000 ppm

OSHA PEL (United States, 1971).

TWA: 1900 MGM3

TWA: 1000 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid (clear)
Odor : Alcohol like
pH : Not available
Boiling Point / Boiling Range
: >76 °C (168.8°F)
Melting Point / Melting Range
: Not available
Decomposition Temperature
: May start to solidify at -113.84°C (-172.9°F) based on data for: ETHANOL
Flash Point : Not available
Auto Ignition Temperature
: Not available
Flammability : Flammable
Explosive Properties : Not available
Oxidizing Properties : Not available
Vapor Pressure : Not available
Relative Density : 1.59 ~ 1.62 (Air = 1)
Solubility : Soluble in cold water
Partition Coefficient(n-octanol /water)
: log Po/w ; -0.32
Viscosity : Not available
Vapor Density : 0.789 ~ 0.806 (Water = 1)
Evaporation Rate : 1.7 (ETHANOL) compared to (n-BUTYL ACETATE=1)

10. STABILITY AND REACTIVITY

STABILITY : Stable for one year at cold storage
CONDITIONS TO AVOID
: Sunlight, moisture and High temperatures. Avoid all possible sources of ignition (spark or flame)
MATERIALS TO AVOID
: Oxidizers, alkalis, Strong Acids
HAZARDOUS REACTIONS / DECOMPOSITION PRODUCTS
: Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Acute Toxicity : Acute oral toxicity (LD_{50}): 3450 mg/kg (Mouse) (Ethanol).

Eye Irritation : The eye irritancy has been investigated by OECD Test method 405. Single application to the rabbit eye produced conjunctival irritation and transient corneal damage. eye. The effect was insufficient to warrant classification as an eye irritant.

Skin Irritation : A single 4h semi-occlusive application to intact rabbit skin produced minimal signs of irritation (mean scores for erythema or oedema less than 2).

Sensitization : The material is not sensitizing in standard animal tests. In rare cases non -irritant contact dermatitis has been identified in humans after skin exposure to this material. Such cases have been identified as delayed hypersensitivity or as urticarial reactions. In reactive individuals such reactions may also be elicited by drinking alcoholic drinks or by cross reaction to certain other alcohols.

Repeated Dose Toxicity

: It has been shown in many animal experiments that the repeated oral consumption of large doses of ethanol can lead to damage in practically all organ systems. The main manifestations of the toxic effects are shown by the liver.

Chronic Toxicity : No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).

Mutagenicity : Ethanol has been tested in a number of bacterial and mammalian systems. Ethanol did not exhibit mutagenic activity in the following systems (with and without metabolic activation): *Drosophila. Salmonella typhimurium.* Human lymphocytes *in vitro.* Most *in vitro* tests and all *in vivo* tests for chromosome abberations report negative results. It did not induce micronuclei in standard bone

marrow tests *in vivo*. There is some evidence that ethanol both induces SCE *in vivo* and can also act as an aneugen at high doses. Overall, there is no robust evidence that ethanol is a genotoxic hazard according to the criteria normally applied for the purpose of classification and labelling of industrial chemicals.

Carcinogenicity : No convincing evidence of carcinogenic effects in animal studies.

Reproductive and Developmental Toxicity
: Adverse effects on the male reproductive system have been reported in laboratory animals following repeated exposure to high concentrations. Developmental effects have been observed in laboratory animals following large oral exposures.

12. ECOLOGICAL INFORMATION

ECOTOXICITY : Practically non-toxic to aquatic organisms. Ecological testing has not been conducted on this product.

MOBILITY : This product is likely to volatize rapidly into the air because of its high vapor pressure. The product is poorly absorbed onto soils or sediments.

PERSISTANCE AND BIODEGRADABILITY
: This product is readily biodegradable.

BIOACCUMULATIVE POTENYIAL
: This product is not expected to bioaccumulate through food chains in the environment.

OTHER ADVERSE EFFECTS
: Not available

13. DISPOSAL CONSIDERATIONS

Comply with all federal, state and local regulation.

Do not dump this product into sewers, on the ground or into any body of water.

14. TRANSPORT INFORMATION

IATA : Not Restricted.

MARINE POLLUTANT : Not pollutant

DOT (Department of Transportation): Not a Hazardous Material for DOT shipping.

15. REGULATORY INFORMATION

US REGULATIONS	US INVENTORY (TSCA): Listed on inventory. SARA Title III Section 302 Extremely Hazardous Substances (40 CFR Part 355):: This product is not regulated under Section 302 of SARA and 40 CFR Part 355. SARA Title III Sections 311/312 Hazardous Categorization (40 CFR Part 370):: ETHANOL: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard SARA 313 toxic chemical notification and release reporting: No products were found. CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):: This material is not regulated under CERCLA Sections 103 and 107.
State Regulations	Pennsylvania RTK: ETHANOL: (generic environmental hazard) Massachusetts RTK: ETHANOL New Jersey: ETHANOL
Other Regulations	AUSTRALIAN INVENTORY (AICS): Listed on inventory. CANADA INVENTORY (DSL): Listed on inventory. CHINA INVENTORY (IECS): Listed on inventory. EC INVENTORY (EINECS/ELINCS): Listed on inventory. JAPAN INVENTORY (ENCS): Listed on inventory. KOREA INVENTORY (ECL): Listed on inventory. PHILIPPINE INVENTORY (PICCS): Listed on inventory.

16. OTHER INFORMATIONS

This information is furnished without warranty, express or implied, expect that it is accurate to the best knowledge of ATTO Corporation. It relates only to the specific product designated herein, and does not relate to use in combination with any other material or in any process. ATTO Corporation assumes no legal responsibility for use of or reliance upon this information.