

Manufacturer: ÅngströmLink™

Product Name:

ÅngströmLink™ AL-2233 Optical Coating (1.33)

Manufacturer Part Number:

AL-2233

Click here for more details on the ÅngströmLink™ AL-2233 Optical Coating (1.33)



AL1-2233, AL2-2233. AL5-2233 and AL10-2233 Rev B 1

Advanced Polymers for High Tech Applications

SDS # AL1-2233, AL2-2233, AL5-2233 and AL10-2233

Safety Data Sheet

SDS #: AL1-2233, AL2-2233, AL5-2233 and AL10-2233

Issue Date: 6/2/2015 Revision Date: 11/11/2025

Section 1: Identification

GHS Product Identifier/Name AngstromLink AL1-2233

AngstromLink AL2-2233 AngstromLink AL5-2233 AngstromLink AL10-2233

Other means of identification

Product Code AL1-2233, AL2-2233, AL5-2233 and AL10-2233

Other means of identification Not available

Recommended use of the chemical and restrictions on use

Identified Uses Optical grade coating and low surface energy treatment

Details of the supplier of the Safety Data Sheet

Supplier Address Fiber Optic Center, Inc.

23 Centre Street

New Bedford, MA 02740-6322 USA Tel: 1-508-992-6464

Fax: 1-508-991-8876

Emergency Telephone CHEMTREC 1-800-424-9300 (24 hrs)

For product emergencies involving spill, leak, fire exposure or accident please contact CHEMTREC.

For all other inquires please contact Fiber Optic Center, Inc.TM at 1-800-473-4237

Section 2: Hazard(s) Identification

Emergency Overview:

IFPA : H=1 F=0 I=

GHS Pictogram(s):



Signal Word: WARNING

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General Information:

Appearance : Liquid Color : Colorless Odor : Odorless

Main effects:

This product is biologically inert.

Not hazardous in normal conditions of handling and use Ecological injuries are not known or expected under normal use. Thermal decomposition can lead to release of toxic and corrosive gases.

Potential Health Effects:

Inhalation:

No known effect.

Eye Contact:

Contact with eyes may cause irritation.

Redness

Skin Contact:

Symptoms: Redness, irritation.

Ingestion:

Ingestion may provoke the following symptoms: nausea, vomiting, diarrhea

Other toxicity effects:

See Section 11: Toxicological Information

Environmental Effect:

See Section 12: Ecological Information

Section 3: Composition / Information on Ingredients

Ingredients

Chemical Name	%	Cas#
Fluoropolymer	1 -15	Privilege
Perfluoropolyether	85 – 99	69991-67-9

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

Section 4: First-Aid Measures

Inhalation

Move to fresh air in case of accidental inhalation of fumes from overheating or combustion. Oxygen or artificial respiration if needed.

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Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes If eye irritation persists, consult a specialist.

Skin contact

Wash off with soap and water.

If symptoms persist, call a physician.

Ingestion

Drink 1 or 2 glasses of water.

Do NOT induce vomiting.

If symptoms persist, call a physician.

Section 5: Fire-Fighting Measures

Suitable extinguishing media

Water

Powder

Foam

Dry chemical

Carbon dioxide (CO₂)

Extinguishing media which shall not be used for safety reasons

None

Special exposure hazards in a fire

The product is not flammable

Not explosive

In case of fire hazardous decomposition products may be produced such as gaseous hydrogen

fluoride (HF), Fluorophosgene

Hazardous decomposition products

Gaseous hydrogen fluoride (HF).

Fluorophosgene

Special protective equipment for fire-fighters

Wear self-contained breathing apparatus and protective suit.

When intervention in close proximity wear acid resistant over suit.

Other information

Evacuate personnel to safe areas.

Approach from upwind.

Protect intervention team with a water spray as they approach the fire

Keep containers and surroundings cool with water spray.

Keep product and empty container away from heat and sources of ignition.

Section 6: Accidental Release Measures

Personal precautions

Ensure adequate ventilation.

Material can create slippery conditions

Sweep up to prevent slipping hazard.

Prevent further leakage or spillage if safe to do so.

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Keep away from open flames, hot surfaces and sources of ignition.

Refer to protective measures listed in Sections 7 and 8.

Environment precautions

Should not be released into the environment.

The product should not be allowed to enter drains, water courses or the soil.

In case of accidental release or spill, immediately notify the appropriate authorities if required by Federal State/Provincial and local laws and regulations.

Do not flush into surface water or sanitary sewer system.

Methods for cleaning up

Soak up with inert absorbent material.

Suitable material for picking up:

Dry sand

Earth

Shovel into suitable container for disposal.

Section 7: Handling and Storage

Handling

No special handling advice required.

Ensure adequate ventilation.

Use personal protective equipment.

Keep away from heat and sources of ignition.

To avoid thermal decomposition, do not overheat.

Take measure to prevent the buildup of electrostatic charge. Clean and dry piping circuits and equipment before any operations.

Ensure all equipment is electrically grounded before beginning transfer operations.

Storage

No special storage conditions required.

Keep away from heat and sources of ignition.

Keep in properly labeled containers.

Keep away from combustible material. Keep away from incompatible products.

Packaging material

Glass

Plastic material

Other Information

Refer to protective measures listed in Sections 7 and 8.

Section 8: Exposure Controls / Personal Protection

Exposure Limit Values

Remarks: Threshold limit values of by-products from thermal decomposition

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Hydrogen fluoride anhydrous

US. ACGIH Threshold Limit Values 2009

Time weighted average = 0.5 ppm

Remarks: as F

US. ACGIH Threshold Limit Values 2009

Ceiling Limit Value = 2 ppm

Remarks: as F

US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989

Time weighted average = 3 ppm

Remarks: as F

US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989

Short term exposure limit = 6 ppm

Remarks: as F

US. ACGIH Threshold Limit Values 2009

Remarks: as F, can be absorbed through skin

US. OSHA Table Z-2 (29 CFR 1910.1000) 02 2006

Time weighted average = 3 ppm
US. OSHA Table Z-1 Limits of Air Contaminants (29 CFR 1910.1000) 02 2006

Permissible exposure limit = 2.5 mg/m³

Remarks: as F

US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008

Time weighted average = 3 ppm

Remarks: as F

US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008

Short term exposure limit = 6 ppm

Remarks: as F

Carbonyl difluoride

US. ACGIH Threshold Limit Values 2009

Time weighted average = 2 ppm

US. ACGIH Threshold Limit Values 2009

Short term exposure limit = 5 ppm US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989

Time weighted average = 2 ppm

Time weighted average = 5 mg/m³

US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989

Short term exposure limit = 5 ppm

Short term exposure limit = 15 mg/m³

US. OSHA Table Z-2 (29 CFR 1910.1000) 02 2006

Time weighted average = 2.5 mg/m³

Remarks: Dust

US. OSHA Table Z-1 Limits of Air Contaminants (29 CFR 1910.1000) 02 2006

Permissible exposure limit = 2.5 mg/m³

Remarks: as F

US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008

Time weighted average = 2 ppm

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Time weighted average = 5 mg/m³

US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008

Short term exposure limit = 5 ppm Short term exposure limit = 15 mg/m³

Remarks: as F

ACGIH and TLV are registered trademarks of the American Conference of Governmental Industrial Hygienists. No specific TLV STEL (Short Term Exposure Level) has been set. Excursions in exposure level may exceed 3 times the TLV TWA for no more than a total of 30 minutes during a work day and under no circumstances should they exceed 5 times the TLV TWA.

Engineering controls

Provide local ventilation appropriate to the product decomposition risk (see Section 10).

Refer to protective measures listed in Section 7 and 8.

Apply technical measures to comply with the occupational exposure limits.

For additional information, consult the current edition of The Guide to the Safe Handling of

Fluoropolymers published by the Society of Plastics Industry, Inc. (SPI) Fluoropolymer Division.

Personal protective equipment

Respiratory protection

No personal respiratory protective equipment normally required.

Use respirator when performing operations involving potential exposure to vapor of the product.

Use only respiratory protection that conforms to international/national standards.

In case of decomposition (see Section 10), wear a suitable respirator with a combination filter for organic vapor and particulate.

Use NIOSH approved respiratory protection.

Comply with OSHA respiratory protection requirements.

Hand protection

Latex, rubber or plastic gloves

Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration

of contact).

Eye protection

Safety glasses with side shields.

If splashes are likely to occur, wear tightly fitting safety goggles.

Protective goggles/face shield, if appropriate.

Skin and body protection

Long sleeved clothing

Hygiene measures

Ensure that eyewash stations and safety showers are close to the workstation location.

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When using the product, do not eat, drink or smoke.

Wash hands before breaks and at the end of the work day

Handle in accordance with good industrial hygiene and safety practice.

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Section 9: Physical and Chemical Properties

General Information

Appearance : Color colorless Odor odorless

Important health, safety and environmental information

Boiling point/boiling range 80 - 135°C (176 - 275°F) Flash point the product is not flammable Flammability the product is not flammable Explosive properties the product is not explosive

Oxidizing properties non-oxidizer

approx. 10.5 – 140 hPa Vapor pressure

Relative density/Density 1.69 - 1.72 g/cm3 (at 25°C (77°F))

Solubilities Water: insoluble

Fluorinated solvents: soluble approx. 0.95 - 1.7 mPa.s Viscosity

Other data

Melting point/range not applicable Decomposition temperature: >290°C (554 °F)

Section 10: Stability and Reactivity

Stability

Stable under recommended storage conditions.

Metals promote and lower decomposition temperature.

In presence of titanium and its alloys the decomposition temperature decreases to 260°C.

Conditions to avoid

To avoid thermal decomposition, do not overheat.

Keep away from flames and sparks.

Keep at temperature not exceeding 290°C (554°F)

Materials to avoid

Aluminum and magnesium in powder form above 200°C.

Lewis acids (Friedel-Crafts) above 100°C.

Non-aqueous alkalis

Hazardous decomposition products

Gaseous hydrogen fluoride (HF), Fluorophosgene

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Section 11: Toxicological Information

Toxicological data

Acute oral toxicity

LD50, rat, > 5,000 mg/kg

Acute inhalation toxicity

LD50, rat, >1,826 mg/l

Acute dermal irritation/corrosion

LD50, rat, >2,000 mg/kg

Skin irritation

Rabbit, no skin irritation

Eye irritation

Rabbit, no eye irritation

Sensitization

Guinea pig, did not cause sensitization on laboratory animals

Chronic toxicity

Oral, 28-day, rat, NOEL:>1000mg/kg/day (remark: sub-acute toxicity)

Genetic toxicity in vitro

Not mutagenic in Ames Test

Chromosome aberration test in vitro, negative

Remarks

Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.

The product may contain small amounts of residual tetrafluoroethylene (TFE) monomer that can be released during processing. TFE has been shown to cause liver and kidney cancer in laboratory animals in a test conducted by the National Toxicology Program (NTP). It is also listed by the state of California under Proposition 65 as a carcinogen. The product is biologically inert.

Thermal decomposition can lead to release of toxic and corrosive gases.

Exposure to decomposition products causes severe irritation of eyes, skin and mucous membranes.

Section 12: Ecological Information

Ecotoxicity effects

Chronic toxicity : No data available Mobility : No data available

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Persistence and degradability: Abiotic degradation – no data available Biodegradation – no data available

Bioaccumulative potential : No data available

Other adverse effects : No data available

Remarks : Ecological injuries are not known or expected

under normal use

Section 13: Disposal Considerations

Waste from residues/unused products

Do not dump into any sewers, on the ground, or into any body of water. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations.

Waste characterizations and compliance with applicable laws and regulations are the responsibility of the waste generator.

Can be incinerated, when in compliance with local regulations.

The incinerator must be equipped with a system for the neutralization or recovery of HF.

Packaging treatment

Empty containers can be landfilled, when in accordance with the local regulations.

RCRA Hazardous Waste

List RCRA Hazardous Waste (40 CFR 302) - No

Section 14: Transport Information

Sea (IMO/IMDG) : not regulated Air (ICAO/IATA) : not regulated U.S. Dept of Transportation : not regulated Canadian Transportation of Dangerous Good: not regulated

It is recommended that ERG Guide number 111 be used for all non-regulated material.

Section 15: Regulatory Information

USA. Toxic Substance Control Act (TSCA)	In compliance with inventory, contains component(s) that meet the TSCA polymer exemption criteria of 40 CFR 723.250.
Canada. Non-Domestic Substances List (DSL)	Not in compliance with the inventory.
Canada. Domestic Substances List (NDSL)	Not in compliance with the inventory.
Australia. Inventory of Chemical Substances (AICS)	Not in compliance with the inventory.
Korea. Existing Chemicals Inventory (KECI (KR))	Listed on inventory.

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China. Inventory of Existing Chemical Substances (IECSC)	Listed on inventory.
Japan. Industrial Safety & Health Law Inventory (ISHL (JP))	Small Quantity Exemption (SQE).
Japan. Inventory of Existing & New Chemical Substance (ENCS)	Small Quantity Exemption (SQE).
Philippine. Inventory of Chemicals and Chemical Substances (PICCS)	Not in compliance with the inventory.
New Zealand. Inventory of Chemicals (NZIOC)	Not in compliance with the inventory.
Taiwan. National Existing Chemical Substance Inventory (NECSI)	Not in compliance with the inventory.
EU. European Registration, Evaluation, Authorization and Restriction of Chemical (REACH)	Not in compliance with the inventory.

Other regulations

US. EPA Emergency Planning and Community Right-To-	
Know Act (EPCRA) SARA Title III Section 302 Extremely	Not regulated.
Hazardous Substance (40 CFR 355, Appendix A)	Title og anatou.
SARA Hazard Designation (SARA 311.312)	
Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Reactivity Hazard	No
Reactivity Hazard	No
Sudden Release of Pressure Hazard	No
US.EPA Emergency Planning and Community Right-to-	
Know Act (EPCRA) SARA Title III Section 313 Toxic	Not regulated.
Chemicals (40 CFR 372.65) – Supplier Notification Required	
US. EPA CERCLA Hazardous Substances (40 CFR 302)	Not regulated.
US. New Jersey Worker and Community Right-to-Know Act	Not regulated.
(New Jersey Statute Annotated Section 34:5A-5)	
US. Pennsylvania Worker and Community Right-to-Know	Not regulated.
Law (34 Pa. Code Chap. 301-323)	
US. California Safe Drinking Water & Toxic Enforcement Act	This product contains a chemical known
(Proposition 65)	in the Sate of California to cause cancer
	and/or birth defects, or any other
	reproductive harm.
	Tetrafluoroethene, CAS No. 116-14-3,
	trace concentration
OSHA Hazard communication standard	This material is non-hazardous as
	defined by the American OSHA Hazard
	Communication Standard.

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Classification and labeling

Canada. Canadian Enfironmental Protection Act (DEPA). WHMIS Ingredient Disclosure List (Can. Gaz., Part II, Vol. 122, No. 2)

Section 16: Other Information

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

7/11/2023: REV B: no changes, update date

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