

SUSTAINALUBE

Eco Saw Chain LUBRICANT

A proven alternative to dry chainsaw operation

Product Information and MSDS Documentation

- ✓ Offers safer operation
- ✓ Extends the life of the chain and bar vs non lubricated conditions
- ✓ Water Soluble
- ✓ Environmentally Friendly
- ✓ Anti-corrosive
- ✓ Well-functioning under cold conditions (-30°C / -22°F)

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SUSTAINALUBE

Eco Saw Chain Lubricant

GROUNDBREAKING INNOVATION

Eco Saw Chain Lubricant is suitable for saw chains in harvesters and chainsaws. The product is environmentally friendly and has excellent lubricating properties, even under cold conditions. The oil-free lubricant is appreciated by its users as it contributes to a significant reduction in pollution and dirt on machines and windows. Eco Saw Chain Lubricant is offered in two different versions;

- a standard edition that is suitable for use all year round
- a winter edition for use in temperatures below +5 °C/41 °F.

PRODUCT BENEFITS

- Keeps machines and windows cleaner
- Fire and anti-corrosion properties
- Suitable in cold weather conditions
- Excellent lubricating properties prevent abnormal wear
- Non-toxic

INSTRUCTIONS

- Make sure to consume existing product before filling the tank with Eco Saw Chain Lubricant. If possible, increase the flow of lubricant during the first day of operation in order to ensure optimal function. Before using the machine/equipment normally, ensure that the lubricant is able to get to the nose sprocket and that the lubricating function is working properly.
- Keep used saw chains and guide bars in a dry area to avoid that the lubricant and its anti-corrosion properties gets washed away.
- Preferably store the lubricant in room temperature to ensure easy refill.
- Do not mix Eco Saw Chain Lubricant with other lubricants.

DATA

Lowest pour point -49°C/-56.2°F	ASTM D5950
Nonflammable	ASTM D92
Biodegradable	OECD 301A
Anticorrosive	ASTM D665

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Version 1.0

Effective date: 07-07-2017

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SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1 Product identifier

Trade name: Sustainalube
Eco Saw Chain Lubricant

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product use: Lubricants for saw chains in forest harvesters

1.3 Details of the Supplier of the safety data sheet

Company: Sustainalube
Aurorum 1C
977 75 Luleå
Sweden
Phone: +46 (0)70 476 22 60

Contact: Christian Olsson - christian.olsson@sustainalube.com
For questions regarding this safety data sheet, please contact:
johanna.wachtmeister@trossa.se

1.4 Emergency telephone number:

Use your local emergency number.

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture.

Not classified.

However, a safety data sheet is provided for the product on request, as it contains a substance for which there is an Occupational Exposure Limit.

2.2 Label Elements 1272/2008 CLP:

Not classified.

Additional labelling:

EUH 210 Safety data sheet available on request.

Otherwise, not subject to labeling according to Regulation EC 1272/2008 (CLP).

Other information:

The product does not meet the criteria for PBT or vPvB according to Annex XIII REACH 1907/2006.

2.3 Other Hazards

No other known hazards are associated with the product.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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3.2 Mixture

Glycerol based lubricant.

CAS/EC-no.	REACH-no.	Name	Content %	Classification CLP
1310-58-3 / 215-181-3	01-2119487136- 33-xxxx	Potassium hydroxide (a, c)	<0,5 (b)	Acute Tox. 4; H302, Skin Corr. 1A; H314.

- a) *EC-harmonized binding classification according to annex VI, part 3, table 3.1 and 3.2 in Regulation (EC) no. 1272/2008 (CLP).*
- b) *The amount of actual potassium hydroxide is based on the PH of the compound which is 10.8 (Eco Saw Chain Lubricant and 11.0 (...Summer). That corresponds to a concentration of potassium hydroxide on 0.0354 and 0.0561 g/litre which in weight % is 0.00281 and 0.00445% (If you count the density of glycerol).*
- c) *Substance for which there is threshold values in the work environment according to The Work Environment Acts regulation AFS 2015:7 about occupational exposure limits.*

The product mainly contains glycerol, but also water, C16 and C18-fatty acids, methyl ester, mono and diglycerides of those, additive etc. These components are either unclassified or are included in such a small amount they don't need to be covered in the table above.

3.3 Additional information:

See full text of H-phrases in section 16.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation:

Not relevant.

Skin contact:

Remove contaminated clothing. Wash skin with water

Eye contact:

Flush with soft water jet or eye rinse solution for several minutes. Please use tempered water. Keep the eyelids wide apart, remove any contact lenses. If symptoms persist consult a doctor.

Ingestion:

Rinse mouth and drink water.

Information to doctor:

No specific information.

4.2 Most important symptoms and effects, both acute and delayed:

Inhalation: Not expected to give acute or delayed symptoms.
Skin contact: May cause mild/temporary irritation.
Eye contact: May cause temporary irritation. Probably causes discomfort, but is not expected to produce any serious symptoms.
Ingestion: Minor amount is not expected to give acute or delayed symptoms. Large amounts may cause burning in the throat, nausea and vomiting.

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4.3 Indication of any immediate medical attention and special treatment needed:

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SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing media: Use alcohol resistant foam, carbon dioxide or water fog.
Use the same extinguishing media as recommended for the surroundings.

Unsuitable extinguishing media:
Do not use a water jet.

5.2 Special hazards arising from the substance or mixture
Flammable, but not easy to ignite.
In case of fire, toxic gases may develop, such as carbon oxides and nitrogen oxides.

5.3 Advice for firefighters: Use precautions according to standard procedures in the presence of chemical fires. Use breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid contact with skin and eyes. Wear protective gloves and goggles when handling large amounts. Otherwise, no special protective measures are required.

6.2 Environmental precautions:
Avoid discharge to lakes, streams, sewers, etc.

6.3 Methods and material for containment and cleaning up:
Absorb with a liquid binding material such as sand, soil or similar. Collect and treat as conventional waste. Rinse away residues with plenty of water.

6.4 Reference to other sections:
See Section 8 for Exposure controls/personal protection and Section 13 for disposal considerations.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling:
Do not eat, drink and smoke when handling the product. Use normal hand sanitation.

7.2 Conditions for safe storage, including any incompatibilities:
Store in a cool, dry place, out of direct sunlight.

7.3 Specific end use(s): This product should only be used for the applications described in Section 1.2.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limits EH40 (Great Britain):

CAS-no:	Name:	Limits 8 h.:	Limits 15 min.:	Ref:
1310-58-3	Potassium hydroxide	-	2 mg/m ³	EH40

DNEL / PNEC:

-

8.2 Exposure controls

Appropriate technical measures:

Normal room ventilation.

General information / Hygiene measures:

Measures are in place to prevent direct contact. The facilities to rinse eyes may be available at your place of work. Also, safety showers may be available if handling large amounts.

Personal protective equipment:

Only CE-marked personal protection equipment should be used.

Respiratory protection:

Normal not required.

Hand protection:

Normal not required.
Protective gloves should be used when handling large quantities.
Recommended glove material: butyl rubber, neoprene or nitrile.

Eye protection:

Normal not required.
Protective goggles should be used when handling large quantities or when there is risk of splashes.

Other protection:

Normal not required.

Thermal hazard:

Not relevant.

Measures to avoid environmental exposure:

Avoid excessive release to the environment.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:
Liquid

Color:
Yellow-brown

Odour:
Weak,
characteristic

PH:
10.8-11

Viscosity 40°C:
82.39 mm²/s*

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Flash point: >200°C – ASTM D92	Boiling point: -	Vapour pressure: -	Density: -	Lowest pour point: -49°C – ASTM D5950
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Evaporation rate: -	Auto-ignition: -	Explosive limits -	Solubility in water: -
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Viscosity -20°C: 7636 mm²/s - EN ISO 3104:1996

Viscosity 100°C: 9.86 mm²/s

Information about the following is missing or is not relevant:

Odour threshold, melting point, boiling point, evaporation rate, flammability and explosive limits, vapor pressure, vapor density, relative density, solubility in water and organic solvents, partition coefficient (Log Pow), auto-ignition temperature, decomposition temperature, explosive and oxidizing properties.

9.2 Other information:

-

SECTION 10. STABILITY AND REACTIVITY

- 10.1 Reactivity:** The product is not reactive in normal handling and storage as recommended in section 7.
- 10.2 Chemical stability:** The product is stable under normal handling and storage as recommended in section 7.
- 10.3 Possibility of hazardous reactions:** None known.
- 10.4 Conditions to avoid:** No specific conditions to avoid.
- 10.5 Incompatible materials:** Oxidizing agents, strong acids and bases.
- 10.6 Hazardous decomposition products:** In case of fire, acrolein is formed from glycerol, which is toxic and appears to be highly corrosive to the lungs and eyes. (3).

SECTION 11. TOXICOLOGICAL INFORMATION

No toxicological data is available for the product or its components. The product is not classified as hazardous to health, and is not expected to have any negative effects on health, but should be handled according to good industrial practice.

11.1 Information on Toxicological effects

Acute toxicity: Not acutely toxic.

Glycerol (3):
Oral – LD50 – Rat: 12600 mg/kg
Dermal – LD50 – Rabbit: >10000 mg/kg
Inhalation – LC50 – Rabbit: 0.57 mg/l/1 h.

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	Fatty acids methylate, C16-18 and C18 (3): Oral – LD50 – Rat: >2000 mg/kg
Skin corrosion/irritation:	Not classified, but contains a very small amount of potassium hydroxide which is corrosive to the skin, prolonged or repeated skin contact may also cause temporary irritation.
Serious eye damage/irritation:	Not classified, but contains a very small amount of potassium hydroxide which is corrosive, splashes also may cause burning and temporary irritation.
Respiratory or skin sensitisation:	Not classified.
Germ cell mutagenicity:	Not classified.
Carcinogenicity:	Not classified.
Reproductive toxicity:	Not classified.
Specific target organ toxicity - single exposure:	Not classified.
Specific target organ toxicity – repeated exposure:	Not classified.
Aspiration hazard:	Not classified.
Additional Information:	-

SECTION 12. ECOLOGICAL INFORMATION

No toxicological data is available for the product or its components. The product is not classified as hazardous to the environment and is not expected to result in any negative environmental consequences, but should be handled according to good industrial standards.

12.1 Toxicity: Eco-Chain is expected to have low acute and chronic aquatic toxicity. The contained constituents glycerol and fatty acids methylate, C16-18 and C18 components are considered to have very low acute toxicity.

Eco Saw Chain (4):
Daphnia – EC50 – 48 h.: >500 mg/l – OECD 202
Glycerol (3):
Fish (Oncorhynchus mykiss) – LC50 – 96 h.: 67500 mg/l
Fatty acids methylate, C16-18 and C18 (3):
Fish (Leuciscus idus) – LC50 – 48 h.: 5500 mg/l

12.2 Persistence and degradability: Eco Saw Chain is easily biodegradable. The constituent components of glycerol and fatty acids methylate, C16-18 and C18 are quite easily degradable.

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Eco Saw Chain (4):
>94 % - 28 days – OECD 301A.
Glycerol (3):
63 % - 14 days – OECD 301C. BOD5/COD= 1.
Fatty acids methylate, C16-18 and C18 (3):
54 % - 30 days – OECD 301C.

12.3 Bioaccumulative potential:

Main component glycerol has no potential for bioaccumulation. BCF: 0.017
Log Pow: -1.76

12.4 Mobility in soil: Main component glycerol is soluble in

12.5 Result of PBT and vPvB assesment:

The product does not meet the criteria for PBT or vPvB according to Annex XIII REACH 1907/2006.

12.6 Other adverse effects: None known.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Product: Classified as conventional waste according to the Commission Regulation (EU) No 1357/2014 on waste.

EWC-code: readily biodegradable engine, gear and lubricating oils.

Do not allow to enter drains or watercourses, etc.

Packaging: Empty containers are treated as conventional waste and sent for recycling or incineration.

SECTION 14. TRANSPORT INFORMATION

This product is not classified as dangerous of transport.

This product is not regulated per IATA.

	ADR/RID	IMDG/IMO
14.1 UN number	-	-
14.2 UN proper shipping name	-	-
14.3 Transport hazard class(es)	-	-
14.4 Packing group	-	-

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14.5 Environmental hazards - MP	- -	- -
Other informations	LQ: - Tunnel -	LQ: - Tunnel -

14.6 Special precautions for user:

-

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

Not applicable.

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Sources:

Pressure Equipment (Amendment) Regulations 2011. Chemicals (Hazard Information and Packaging for Supply) Regulations 2009. Control of Substances Hazardous to Health Regulations 2002 (as amended). Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (as amended). Personal Protective Equipment Regulations 2002. Personal Protective Equipment at Work Regulations 1992. Hazardous Waste (England and Wales) Regulations 2005(as amended). EC regulation 1907/2006 (REACH) Directive 2000/532/EC. Seveso directive: 96/82/EC. EU 453/2010. REACH 1907/2006. CLP 1272/2008.

Additional information:

-

15.2 Chemical safety assessment:

Chemical safety assessments have not been performed for this product.

SECTION 16. OTHER INFORMATION

Test-data is prioritized at classification of the product. In absence of such, the classification-rules in the regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures (CLP) have been used.

Full text of H-phrases as mentioned in section 3:

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

Abbreviations:

BCF: Bio Concentration Factor

EC50: Effective Concentration 50 %

ECHA: European Chemical Agency

IC50: Inhibitory Concentration 50 %

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LC50:	Lethal Concentration 50 %
LD50:	Lethal Dose 50 %
Log Pow:	Partition coefficient: n-octanol
PBT:	Persistent Bio-accumulative and Toxic substance
vPvB:	very Persistent and very Bio-accumulative substance

Advice about education:

To use this product, you should have an education that is relevant to the properties of the product and relevant use.

- 1) *Classification & Labelling Inventory Database, ECHA.*
- 2) *Registered substances, ECHA.*
- 3) *Chemical substances online, Prevent.*
- 4) *Information from manufacturer.*

Version description:

This safety data sheet has been prepared in accordance with title IV and annex II in the regulation (EC) No 1907/2006 of the European parliament and of the council (REACH).

The information has been modified under the following sections in the safety data sheet: 1.

The safety data sheet is dated 2017-07-07 and replaces the version dated 2017-02-02.

SUSTAINALUBE

Product Testing Results

**3rd Party
Controlled Testing #1**

**Nigel Peach, BSc
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PolPlas Services**



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HDPE Fusion

6th September 2019

Tensile Testing

Introduction

HDPE Fusion asked POLPLAS Services to perform a tensile test on a 6inch DR9 in accordance with ISO 13953. It was noted that a piece had been removed and was reported to have been selected for another type of test.

The preferred method to cut larger diameter pipe is the use of a chainsaw. Currently, a dry chain is required to reduce potential contamination in the fusion by chainsaw oil. The high heat generated greatly reduces the life of the chain and bar. HDPE Fusion has been asked to evaluate an alternative chain and bar lubricant and determine if the lubricant had a negative influence on fusion integrity

ISO13953 is specifically designed to test butt fusions by forcing fracture in the fusion zone. Tensile strength is recorded and fractured topography is noted. The beads were removed to remove the variability of the bead stress concentration.



As received

Results

The results are shown in Appendix 1.

Discussion

Three test pieces and a control (unwelded pipe used to establish a baseline) were sampled from the provided pipe. Zero had been consumed by prior sampling but locations 90, 180 and 270 degree locations had produced viable test pieces. Each piece was loaded into a high extensile machine and loaded under tensile stress until fracture. The tensile stress and fracture topography were recorded in accordance with the parameters identified in ISO13953.

It was noted that the average tensile stress was closely consistent with the control sample. The tensile stress was also consistent with the newer resins; namely those of the HDPE PE4710 category. The fractures were not the preferred ductile response for this test but were mixed ductile/ brittle. It is important to note that the fractures observed were typically of early PE4710 HDPE pipe product. In the early pipe production with these newer resins, manufacture was known to impact the fusion fractures experienced in various destructive tests. Therefore the response is not unfamiliar to POLPLAS Services. These fractures pass through parent pipe and are not fusion interface i.e. are not fusion failures.

In Conclusion

The tensile stress ~25MPa was of a magnitude anticipated for an HDPE of a PE4710 class. The fractures experienced are inherent to the pipe not the fusion. Therefore, no fusion degradation through the use of the chainsaw lubrication was established in this test.



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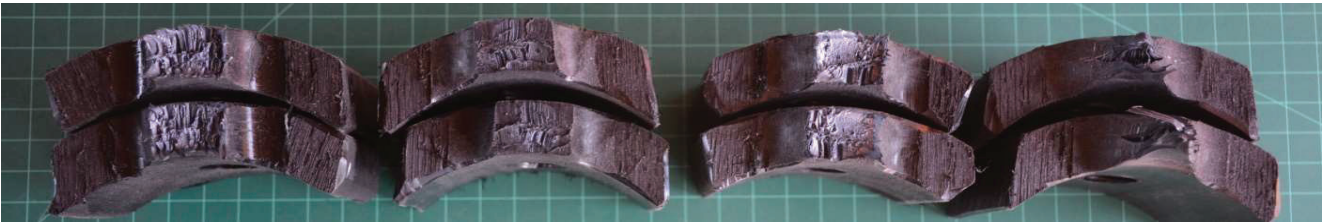
Client:
 HDPE Fusion

Test:
 ISO 13953 Tensile test

Project Ref:
 RZ 01

Results:

Position	Ultimate Tensile Stress (MPa)	Mode of Fracture (Ductile/ Brittle)
Control (Baseline)	24.7	Mixed
90	25.1	Mixed
180	24.6	Mixed
270	25.2	Mixed
Average	24.9	
Average to Baseline	101.0%	



Tested By: *[Signature]*

Date Tested: 6th September 2019

SUSTAINALUBE

Product Testing Results

**3rd Party
Controlled Testing #2**

**Nigel Peach, BSc
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HDPE Fusion

11th February 2020

Tensile Testing

Introduction

HDPE Fusion asked POLPLAS Services to perform a tensile test on a 12inch DR11 in accordance with ISO 13953. This test is follow up testing to validate an alternative chain and bar lubricant and determine if the lubricant had a negative influence on fusion integrity (Re: 6inch DR9, 6th Sept 2019).

ISO13953 is specifically designed to test butt fusions by forcing fracture in the fusion zone. Tensile strength is recorded and fractured topography is noted. Elongation is of interest but is not a critical component of assessment. The beads were removed to remove the variability of the bead stress concentration. This test differed from the previous test in that the wall thickness requires different test piece geometry; this test used a Type B since the wall thickness is greater than 25mm (1inch) and exhibits a more marked elongation behaviour.



As received

Results

The results are shown in Appendix 1.

Discussion

Four test pieces and a control (unwelded pipe used to establish a baseline) were sampled from the provided pipe; 0, 90, 180 and 270 degree locations. Each piece was loaded into a high extensile machine and loaded under tensile stress until fracture. The tensile stress and fracture topography were recorded in accordance with the parameters identified in ISO13953.

It was noted that the average tensile stress was closely consistent with the control sample. The fractures were all of the preferred ductile response for this test. The previous test made reference to pipe quality. No such concern was experienced on this sample. In fairness, the fracture, tensile strength and elongation behaviour were as good as could be reasonably expected for this test.

In Conclusion

The tensile stress ~24MPa was of a magnitude anticipated for an HDPE of a PE4710 class. The fractures experienced are inherent to the expectation of a compliant fusion produced with a quality pipe product.

Therefore, no fusion degradation through the use of the chainsaw lubrication was established in this test.



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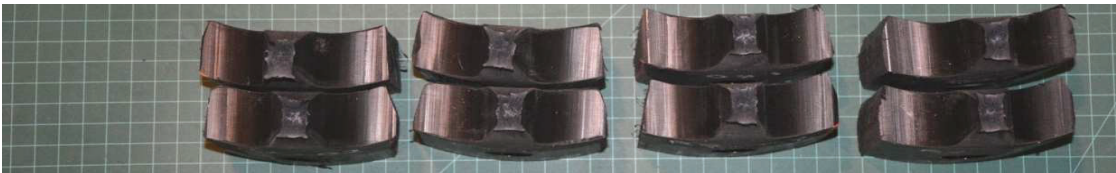
Client:
 HDPE Fusion

Test:
 ISO 13953 Tensile test (Type B)

Project Ref:
 RZ 02

Results:

Position	Ultimate Tensile Stress (MPa)	Mode of Fracture (Ductile/ Brittle)
Control (Baseline)	23.3	Ductile
0	23.3	Ductile
90	23.4	Ductile
180	23.7	Ductile
270	23.8	Ductile
Average	23.6	
Average to Baseline	101.3%	



Tested By: *[Signature]*

Date Tested: 11th February 2020