Cargill

Energy Technologies

Base oils and additives for EU Ecolabel formulations

Explore the a broad range of synthetic esters by Cargill, designed to meet the specific standards of EU Ecolabel compliant formulations.

Formulate EU Ecolabel products with Cargill's proven solutions

Cargill delivers one of the broadest portfolios of high-performance base oils and additives to help formulators meet EU Ecolabel requirements with confidence. Our solutions are designed to support the development of lubricants that meet EU Ecolabel criteria and are technically robust.

To satisfy EU Ecolabel requirements lubricants must meet strict criteria: ingredients must be biodegradable, exhibit low aquatic toxicity, and—if derived from palm or palm kernel oil—must be sustainability sourced. In addition, finished formulations must also achieve minimum technical performance standards.

The EU Ecolabel is a recognized mark of environmental excellence and product excellence—and Cargill's range of tailored solutions can help you achieve EU Ecolabel certification with confidence.

The EU Ecolabel is a mark of environmental excellence and performance.

Lubricants covered by EU Ecolabel:

Total loss lubricants (TLL)

- Chainsaw oils
- Wire rope lubricants
- Concrete release agents
- Total loss greases
- Other total loss lubricants

Partial loss lubricants (PLL)

- Gear oils for use in open gears
- Stern tube oils
- Two-stroke oils
- Temporary protection against corrosion
- Partial loss greases

Accidentall loss lubricants (ALL)

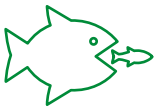
- Hydraulic fluids
- Metalworking fluids
- Gear oils for closed gears

Summary of requirements for EU Ecolabel

The formulation criteria

Excluded or limited substances

A restriction on the types and quantity of components that can be used. Substances which are limited include those which pose hazard to human health or to the environment.



Bioaccumulation

This must be considered for all substances. Those which are readily biodegradable are not considered to be bioaccumulating. If the substances and mixtures are on the LuSC list, no additional documents need to be submitted.

Aquatic toxicity

One of two approaches can be taken when formulating the lubricant. The formulating company can either provide toxicity data for the candidate product and all the main components (>5% by weight in the final product) or provide toxicity data for all individual substances used or formed, at or above 0.10% by weight in the candidate product.

Renewable ingredients

There is no absolute requirement for renewable ingredients in any lubricant application group, unless the formulating company wishes to use the term ‘biobased’, in which case the biobased carbon content in the final product must be ≥ 25%. If palm oil or palm kernel oil or derivatives are used then 100% of these ingredients must meet the requirements for sustainable production.

Biodegradability

It must be determined on all organic substances, whether added or formed in the lubricant at a level of 0.10% w/w or higher. Depending on the application group (TLL, PLL, ALL or greases), there are limits on how much of the final formulation may not be biodegradable.

Minimum technical performance

Lubricants placed on the market must comply with minimum technical performance requirements. Evidence can be in the form of an approval letter, documents or statements and/or supporting test results

Refer to the EU’s Ecolabel for lubricants user manual for further information

The packaging criteria

Packaging/container requirements

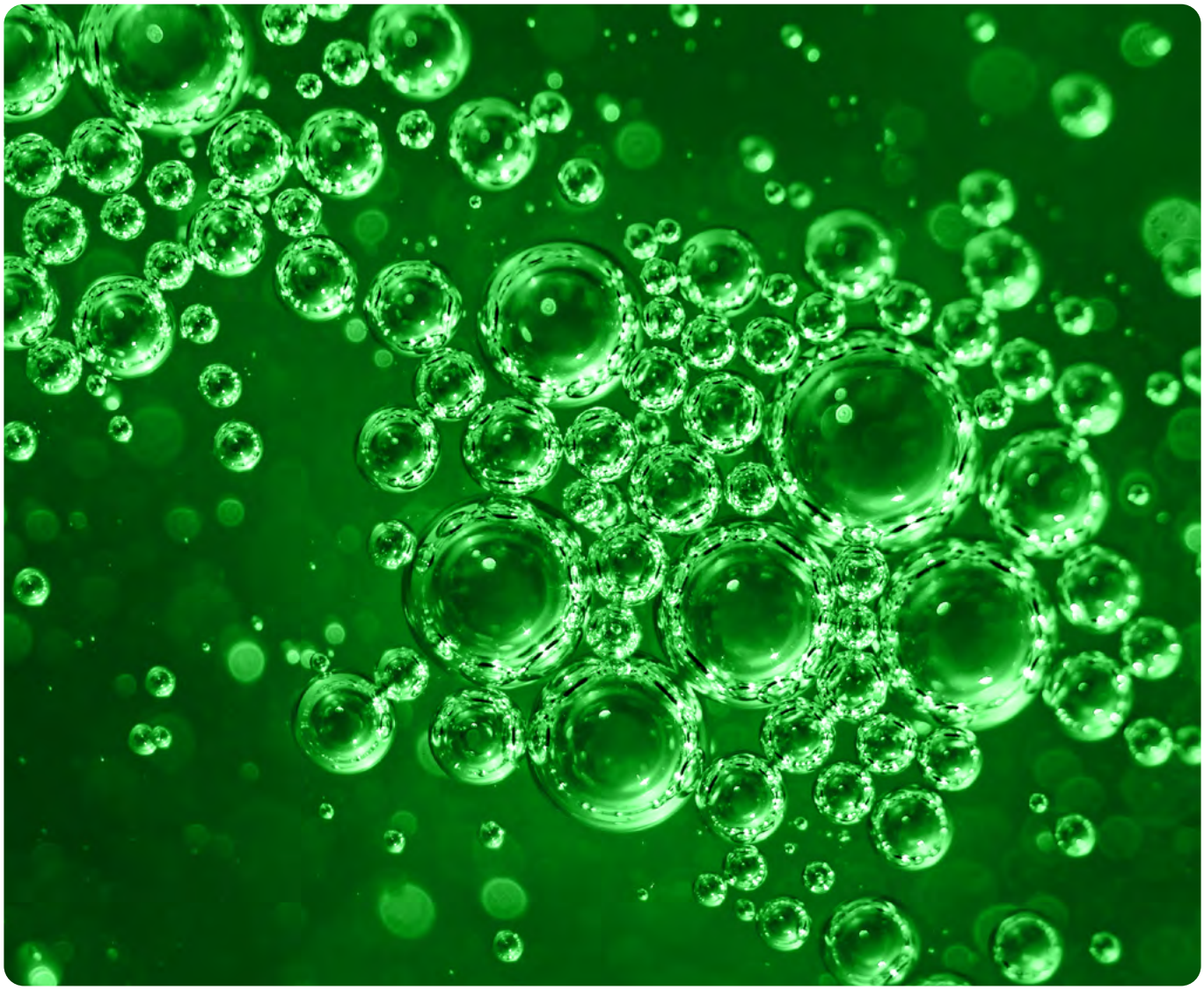
Lubricants sold in plastic containers must contain at least 25% post-consumer plastic. For private end consumers, packaging should prevent spillage during use.

Consumer information on use & disposal

In the case of lubricants designed to be sold to private end-consumers, specific information shall be present on the packaging/container.

Information on EU Ecolabel

An optional label with text box may be included with specific text relating to EU Ecolabel.



The broad range of oleochemical esters

Whilst lubricants must comply with strict environmental criteria, they must also meet minimum technical performance standards. Cargill has a portfolio of products ranging in viscosity from ISO 22 to ISO 1000, including both oxidatively stable and highly oxidatively stable esters. We have the base fluid technologies to enable formulations in all three categories to comply with the environmental and technical performance requirements of EU Ecolabel.

We also offer Ecolabel compliant thickeners, friction modifiers and grease complexing agents. Depending on the category, there may be limitations on % inclusion rates. Please refer to the table or contact us for further information.

Recommendations for ISO 22 – ISO 1000 lubricants

To formulate a lubricant...

With viscosity	With properties	Use these additives
ISO 22	Oxidatively stable	Priolube™ 3970 MBPO
ISO 32	Highly oxidatively stable	Priolube™ 3970 MBPO blended with a higher viscosity ester, such as Priolube™ 1973 or Priolube™ 1847
	Oxidatively stable	Priolube™ 1446
ISO 46	Highly oxidatively stable	Priolube™ 1973 or Priolube™ 3971 MBPO
	Oxidatively stable	Priolube™ 1427 or Priolube™ 2065
	Excellent low temperature performance	Priolube™ 2089 MBPO
ISO 68	Highly oxidatively stable	A blend of Priolube™ 1973 and a higher viscosity ester such as Priolube™ 1847
	Oxidatively stable	Priolube™ 1445
ISO 100	Highly oxidatively stable	Priolube™ 1973 blended with Priolube™ 1847
	Oxidatively stable	Priolube™ 2065 or Priolube™ 1445 or Priolube™ 2500 blended with Priolube™ 2087 MBPO
	Non-sheening	Emkarox VG 100 NS
ISO 150	Highly oxidatively stable	Priolube 3987
	Oxidatively stable	Priolube™ 2065 or Priolube™ 1445 blended with Priolube™ 2087 MBPO
	Non-sheening	Emkarox™ VG 150 NS
ISO 220	Highly oxidatively stable	Priolube™ 1973 thickened with Priolube™ 1847
ISO 320	Highly oxidatively stable	A blend of Priolube™ 1973 with Priolube™ 1847
	Oxidatively stable	Priolube™ 2087 MBPO or Priolube™ 2088 MBPO
ISO 460 & ISO 680	Highly oxidatively stable	A blend of Priolube™ 1973 with Priolube™ 1851 or Priolube™ 1847
	Oxidatively stable	Priolube™ 2065 or Priolube™ 2089 MBPO thickened with Priolube™ 1847 or Priolube™ 1851
ISO 1000	Oxidatively stable	Priolube™ 1847
Thickener	Oxidatively stable	Priolube™ 3986 – Limited treat-rate depending on lubricant or grease category. Please refer to the LuSC list for maximum allowable treat-rate for all non-biodegradable, non- bioaccumulating components.
Friction modifier	–	Perfad™ FM 3336 – Not limited by biodegradation and aquatic toxicity
Grease complexing agent	–	Priacid™ A95 MBPO – Can be used up to 10% in grease formulations

MBPO = product is manufactured with ingredients containing sustainable palm oil

Specifications

Product	Viscosity			Physical Tests					
	Kinematic viscosity at 40°C (mm^2/s)	Kinematic viscosity at 100°C (mm^2/s)	Viscosity index	Acid value (mgKOH/g)	Cloud point (°C)	Pour point (°C)	Flash point COC (°C)	Iodine value (gI/100g)	Tost test, 2% additive pack (hrs)
Priolube™ 3960	19	4.5	163	0.05	-	-72	230	0.8	-
Priolube™ 3970 MBPO	20	4.4	140	<0.1	-39	-51	250	0.5	>4000
Priolube™ 1936	26	5.3	139	0.05	-	-54	244	0.3	-
Priolube™ 1976	26	5.4	157	0.08	-	-35	260	1.2	-
Priolube™ 1446	30	7	207	1.5	-32	-36	290	81	-
Priolube™ 3971 MBPO	30	5.9	144	0.05	-10	-3	285	0.5	-
Priolube™ 1843 MBPO	35	7.5	193	0.1	-	-42	295	74	-
Priolube™ 1435	41	9	195	1.5	-	-15	290	89	-
Priolube™ 2089 MBPO	44	8.7	181	<0.1	-25	-54	315	72	540
Priolube™ 1973	46	8	148	<0.1	-27	-44	280	2	>4000
Priolube™ 1427	48	9.5	187	1	-15	-39	300	84	500
Priolube™ 2065	48	9.8	196	1	-15	-39	300	84	500
Priolube™ 1445	67	12.5	188	0.5	-25	-30	290	88	-
Priolube™ 2500	90	13	143	0.5	-	-24	280	3	-
Emkarox™ VG 100 NS	107	17.6	181	-	-	-42	280	-	-
Priolube™ 3987	145	18.2	140	0.1	-21	-33	320	3.5	>4000
Emkarox™ VG 150 NS	152	24.9	198	-	-	-42	280	-	-
Priolube™ 2087 MBPO	320	35	150	0.5	<-60	-40	260	30	-
Priolube™ 2088 MBPO	320	35	150	0.2	<-60	-40	260	30	-
Priolube™ 1851	495	49	153	0.1	-34	-36	300	3	>4000
Priolube™ 1847	1040	90	167	0.1	-50	-24	300	4	>4000
Priolube™ 3986	47000	2000	278	0.01	-	6	325	89	-
Perfad™ FM 3336	-	-	-	-	12	-25	-	5	-
Priacid™ A95 MBPO	-	-	-	575	-	-	-	-	-

* According to Read-across OECD 301B data
** According to OECD 301F based on SDS
† Calculated according to CFR 4270.2.
- N/A (Not Applicable)

Foam tests					Total acid number			Environmental profile		
seq 1, 24 °C (ml)	seq 2, 93 °C (ml)	seq 3, 24 °C (ml)	Air release (mins)	Demulsification (mins)	Initial TAN (mgKOH/g)	TAN after 5 days (mgKOH/g)	TAN after 15 days (mgKOH/g)	Biodegradability OECD 301B (%)	Biobased carbon content (%, ASTM D6866)	on LuSC List?
-	-	-	-	-	-	-	-	72	33	YES
0/0	0/0	0/0	<1	3	0.1	0.3	0.8	78	81	YES
-	-	-	-	-	-	-	-	69	-	YES
-	-	-	-	-	-	-	-	68*	48	YES
10/0	0/0	10/0	4	>30	0.2	0.5	1.8	95.6	90	YES
-	-	-	-	-	-	-	-	75**	91	YES
-	-	-	-	-	-	-	-	77*	88	YES
-	-	-	-	-	-	-	-	77	100†	YES
5/0	15/0	20/0	1	15	0.1	0.5	2.1	77	92	YES
140/0	20/0	140/0	1	10	<0.1	<0.1	0.4	72	87	YES
5/0	0/0	5/0	2	>30	1.5	3.3	11	79*	92	YES
5/0	0/0	5/0	2	15	0.2	0.4	2.8	79*	90	YES
150/0	0/0	100/0	6	>30	0.6	1.5	8.5	71.9	96	YES
-	-	-	-	-	-	-	-	91*	>80†	YES
-	-	-	-	-	-	-	-	>60	N/A	YES
400/0	25/0	170/0	6	>30	0.1	0.8	2.4	70*	95	YES
-	-	-	-	-	-	-	-	>60	N/A	YES
10/0	10/0	10/0	16	16	0.5	2.9	16	63	88	YES
10/0	10/0	10/0	16	1	0.5	2.5	15.3	63	93.9†	YES
60/0	55/0	40/0	14	1	<0.1	0.3	2.9	65	95	YES
370/30	530/0	210/20	>30	>30	0.1	1.4	2	63	81	YES
-	-	-	-	-	-	-	-	14	85	YES
-	-	-	-	-	-	-	-	83	100	YES
-	-	-	-	-	-	-	-	-	100	YES

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Learn more at **cargill.com/lubricants**
or email **energy_technologies@cargill.com**

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