

# Metal Working Additives

Lankem 



Product Guide

# Expertise in Surfactant Technology



Lankem founded in 1999 is a rapidly expanding business supplying surfactant products to industrial markets such as coatings, emulsion polymerisation, agrochemicals, textiles, oils and lubricants and industrial cleaning. In recent years we have shifted our focus on the development of novel biobased surfactants and have introduced the new BioLoop surfactants. Our primary business focus is surfactant technology in which we provide true expertise and advice to the formulator. With an on-site laboratory facility and production lines, we are able to offer both conventional and unique surfactant products.

## Expertise in surfactant technology

We pride ourselves on being able to provide true expertise and assistance to help the formulator develop new products and technologies. We have a dedicated laboratory facility aimed at analysing and matching products, and we also provide technical support to assist customer queries. We see technical support as key to the growth of the business, and as a company, we continually develop new products to meet customer demands.

## Our chemistries

Surfactants contain both a hydrophobic and a hydrophilic section, and as a combination of these two different characteristics within the molecule, many different properties can be achieved. We have products that produce high or low foam. Some products offer excellent detergency and are used

in cleaning formulations. We have surfactants that offer good emulsification of oils and monomers, in the case of emulsion polymerisation. We have some products that offer excellent wetting power and some that offer both wetting and dispersing properties. Products are available for each of the surfactant types, anionic, nonionic, cationic and amphoteric.

## Bespoke products

We offer a service to provide the customer with products that can be labelled in neutral markings. These products can either be re-brands or customer-specific formulations. The packaged material will range from 25kg, 200kg, 1000kg IBC and bulk tanker.

## Global player

A network of both agents and sales offices are in place to offer support to all global regions. The head office is located in the UK, with a sales office located in Ireland to support the European business and a sales office in the US to support the North America business.

## Quality and the environment

We view both quality and environmental compliance as essential components of the business. As expected we are a quality assured company with compliance in accordance with ISO9001 and with an excellent environmental profile, we have been certified to ISO14001. As a member of the Responsible Care programme, we are committed to managing the business both ethically and responsibly. Our Occupational Health and Safety Management System is certified to the ISO45001 standard.

The following table gives an overview of the current Lankem range of products that find application in metal working and provides an indication of the key performance attributes.

	Corrosion Inhibitors	Emulsifiers	Lubricity Additive	Coupling Agents	Low Foam	Metal Cleaning
<b>BioLoops</b>						
BioLoop 56L			*		*	*
BioLoop 68L			*		*	*
BioLoop 84L			*		*	*
BioLoop RPS56L			*		*	*
BioLoop RPS68L			*		*	*
BioLoop RPS84L			*		*	*
<b>Phosphate Esters</b>						
Lanphos PE74	*	*	*			
Lanphos PE35	*	*	*			*
Lanphos PE36	*	*	*			*
Lanphos PE244	*	*	*			*
<b>Fatty Alcohol Ethoxylates</b>						
Lansurf AE73		*		*	*	
Lansurf AE107						*
Lansurf AE37						*
<b>Fatty Alcohol Alkoxylates</b>						
Lansurf AEP63					*	*
Lansurf AEP66					*	*
<b>Fatty Acid Ethoxylates</b>						
Lansurf OA7		*	*			
Lansurf OA10		*	*			
Lansurf OA14		*	*			
<b>Castor Oil Ethoxylates</b>						
Lansurf CO12	*	*				
Lansurf CO40	*	*				
<b>Sorbitan Esters</b>						
Lansurf SMO		*		*	*	
Lansurf STO		*		*	*	
<b>Sorbitan Esters Ethoxylate</b>						
Lansurf SMO81		*		*	*	
Lansurf STO85		*		*	*	
<b>EO/PO Block Polymers</b>						
Lansurf DPE201			*		*	
Lansurf DPE253			*		*	
<b>Fatty Acid Alkanolamides</b>						
Lansurf CDE	*	*				
Lansurf CDE-G	*	*				

## BioLoops

The BioLoop range of biobased surfactants can be used as lubricating additives in the formulation of synthetic metalworking fluids where they offer lubricity and dispersion characteristics in combination with low foaming properties. The BioLoop products can also be used in the formulation of biobased metal cleaning formulations.

	BioLoop 56L	BioLoop 68L	BioLoop 84L	BioLoop RPS56L	BioLoop RPS68L	BioLoop RPS84L
Appearance at 25°C	Clear liquid	Clear liquid	Clear liquid	Clear liquid	Clear liquid	Clear liquid
Active content %	100	80	75	100	80	75
Cloud point °C	56(b)	68 (a)	84(a)	52(b)	65(a)	80(a)
pH 5% aqueous	7	7	7	7	7	7
HLB	10.8	13.2	14.9	10.5	13.0	14.7
Viscosity at 20°C cps	470	510	600	500	585	555
Density at 20°C	1.03	1.08	1.08	1.07	1.08	1.07
Flash point °C	>150	>100	>100	>150	>100	>100

a) Cloud point 1% aqueous

b) Cloud point 5g in 45g (BGD/water)

## Phosphate Esters

The Lanphos range of phosphate esters finds application in the formulation of neat oils, soluble oils, semi-synthetic and synthetic lubricants. They offer a combination of extreme pressure protection in combination with emulsification and corrosion inhibition. They can also be used in metal cleaning formulations, where they can be used alone or to solubilise nonionic surfactants into formulations containing caustic and silicate.

	Lanphos PE74	Lanphos PE35	Lanphos PE36	Lanphos PE244
Description	Cetyl oleyl + 4EO phosphate	C13 alcohol ether phosphate	C13 ethoxy phosphate ester - free acid	C12-14 alcohol ether phosphate
Appearance at 25°C	Amber liquid	Clear liquid	Clear liquid	Clear liquid
Density at 20°C (g/cm <sup>3</sup> )	1.06	1.05	1.01	1.04
Viscosity at 20°C centipoise	2500	-	-	-
Acid value mg KOH/gm	87	80	82	165 (second inflection)
Phosphorous content %	4.9	4.4	12	5.4

## Fatty Alcohol Ethoxylates

This range of fatty alcohol ethoxylates find application as emulsifiers and coupling agents for mineral oil, vegetable oil and ester based soluble oils and semi-synthetic lubricants. These products are also used in the formulation of metal cleaning products.

	Lansurf AE73	Lansurf AE107	Lansurf AE37
Description	Cetyl oleyl + 3EO	C10 alcohol + 7EO	C13 alcohol + 7EO
Appearance at 25°C	Liquid	Liquid	Liquid
Density at 20°C (g/cm <sup>3</sup> )	-	0.99	0.98
Viscosity at 20°C centipoise	57	290	100
HLB	6.8	13.2	12
Cloud point °C 10% in 25% BDG	56	70	-
Cloud point °C 16% in 25% BDG	-	-	70
pH 5% aqueous	6.5	6.5	6.5

## Fatty Alcohol Alkoxylates

The following products are used in systems where good wetting and detergency is required along with the need to have low foam characteristics.

	Lansurf AEP63	Lansurf AEP66
Description	Fatty alcohol EO/PO copolymer	Fatty alcohol EO/PO copolymer
Appearance at 25°C	Clear liquid	Clear liquid
Density at 20°C (g/cm <sup>3</sup> )	1.00	0.99
Viscosity at 20°C centipoise	141	144
Cloud point °C 1% aqueous	41	33
pH 1% aqueous	6.5	6.5

## Castor Oil and Oleic Acid Ethoxylates

The range of castor oil ethoxylates and oleic acid ethoxylates find application as emulsifiers for mineral oil, vegetable oil and ester based soluble oils and semi-synthetic lubricants.

	Lansurf CO12	Lansurf CO40	Lansurf OA7	Lansurf OA10	Lansurf OA14
Description	Castor oil + 12EO	Castor oil + 40EO	Oleic acid + 7EO	Oleic acid + 10EO	Oleic acid + 14EO
Appearance at 25°C	Amber liquid	Amber liquid	Amber liquid	Amber liquid	Amber liquid
Density at 20°C (g/cm <sup>3</sup> )	1.01	1.07	0.96	0.96	1.04
Viscosity at 20°C centipoise	790	360	90	110	140
HLB	7	13.5	10.4	11.8	13.6
Cloud point °C 10% in 25% BDG	52	-	63	67	-
Cloud point °C 16% in 25% BDG	-	70	-	-	-
Cloud point °C 1% aqueous	-	-	-	-	42
pH 5% aqueous	6.0	6.0	-	-	-

## Sorbitan Esters and Ethoxylates

Our Sorbitan esters and their ethoxylates find application as emulsifiers for mineral oil, vegetable oil and ester based soluble oils and semi-synthetic lubricants.

	Lansurf SMO	Lansurf STO	Lansurf STO85
Description	Sorbitan mono-oleate	Sorbitan tri-oleate	Sorbitan tri-oleate + 20EO
Appearance at 25°C	Amber liquid	Amber liquid	Amber liquid
Density at 20°C (g/cm <sup>3</sup> )	1.00	1.00	1.02
Viscosity at 20°C centipoise	1100	230	270
HLB	4.3	1.8	11
Acid value mg KOH/g	<8	<18	11

## EO/PO Block Copolymers

The Lansurf range of ethylene oxide/propylene oxide block copolymers are used in a variety of applications including soluble oils, semi-synthetic but are most suited to the manufacture of synthetic lubricants, where they offer a combination of good lubricity, emulsification, solubilisation and dispersion combined with low foaming/defoaming characteristics.

	Lansurf DPE201	Lansurf DPE253
Description	Diol EO/PO block polymer	Diol EO/PO block polymer
Appearance at 25°C	Clear liquid	Clear liquid
Density at 20°C (g/cm <sup>3</sup> )	1.02	1.04
Viscosity at 20°C centipoise	390	650
Mean molecular weight	2000	2500
Cloud point °C 16% in 25% BDG	34	59
Cloud point °C 1% aqueous	-	-
pH 5% aqueous	7.5	6.5

## Fatty Acid Alkanolamides

This range of fatty acid alkanolamides provides good emulsification characteristics in combination with corrosion inhibition and lubricity.

	Lansurf CDE	Lansurf CDE-G
Description	Coconut diethanolamide	Coconut diethanolamide
Appearance at 25°C	Amber liquid	Amber liquid
Density at 20°C (g/cm <sup>3</sup> )	1.00	1.0
Viscosity at 20°C centipoise	1400	1300