PRODUCT RANGE

WE ARE THE OXO PEOPLE

Oxo chemicals are OXEA's core competency. We produce Oxo intermediates and Oxo derivatives in our plants in Germany, the Netherlands, and the USA and started up in 2014 our first manufacturing facility in China. Our global customer base is served from sales offices in numerous locations, including Europe, North America, Asia and Latin America.

As "The Oxo People", OXEA has more than 75 years of experience in the production of Oxo chemicals. We are the inventor of the Oxo synthesis process (or "hydroformylation") as well as several other proprietary technologies for the manufacture of Oxo chemicals. The production process for Oxo intermediates and Oxo derivatives is complex, requiring efficient integration and an understanding of the underlying processes and end-markets. We benefit from highly integrated production facilities and a well-balanced value chain in Oxo chemicals. Our flexible production process allows us to manage our production flow carefully and react to short-term demand patterns for key products. OXEA's unmatched and well-honed experience in these areas has enabled us to develop our core competencies across the entire Oxo value chain and to create a broad portfolio of Oxo chemicals.

OXEA is the second largest manufacturer of Oxo chemicals by production capacity, producing more than 70 products for customers in a wide range of industries with various end-market applications. With a total production capacity of over 1.2 million tons, we are the largest Oxo chemicals producer for the Oxo merchant market overall.

Being a market leader requires constant innovation and a stringent process of business optimization. At OXEA, we continuously analyze the geographies and industrial sectors we serve – always eager to learn more about the dynamics and perspectives in our clients' industries.

OXEA is recognized by our customers as a knowledgeable partner and a reliable supplier. Our long-standing and trusted customer relationships, some spanning more than 50 years of productive cooperation, provides our global commercial teams with a deep understanding of our customers' needs and allow us to align closely with our customers' strategies and growth activities.

OXEA uses modern technologies and operates efficient economic and ecological processes. Product quality, plant safety, environmental protection, and customer service are always top priority.

This brochure, featuring over 70 products, offers a more detailed overview of our product portfolio.

We invite you to learn more about OXEA.

Products by Classes

PRODUCT PORTFOLIO

Diversified product portfolio for a wide range of end-uses

Oxo-Intermediates

Aldehydes

Applications: Lacquers, Polymer Additives, Flotation Chemicals, Flavors & Fragrances

Alcohols

Applications: Surface Coatings, Lacquers & Paints, Polymer Additives, Lubricants, Solvents, Disinfectants

Esters

Applications: Chemical Intermediates, Cosmetics, Paints & Coatings, Printing Inks, Pharmaceuticals, Solvents

Oxo-Derivatives

Higher Aldehydes

Applications: Chemical Intermediates, Flavors & Fragrances

Polyols

Applications: High Solids Coatings, Powder Coatings, Cosmetics, Lubricants, Polymer Additives

Carboxylic Acids

Applications: Lubricants, Siccatives, Flavors & Fragrances, Polymer Stabilizers Feed Additives, Corrosion Inhibitors

Amines

Applications: Agrochemicals, Rubber Chemicals, Polymer Additives, Pharmaceuticals, Surfactants, Dye Intermediates, Specialty Chemicals, Corrosion Inhibitors

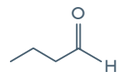
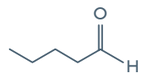
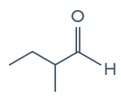
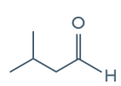
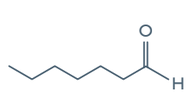
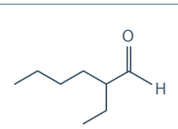
Specialty Esters

Applications: Plasticizers, Lubricants, Coalescing Agents

Higher Alcohols

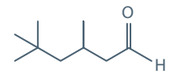
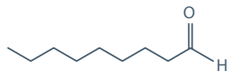
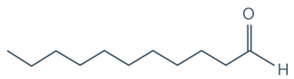
Applications: Plasticizers, Lubricants, Flavors & Fragrances, Surfactants

1 ALDEHYDES

OXEA products	Other names / Short form	CAS No.		Physical data	
Propionaldehyde	Propanal	123-38-6		MM 58.1 Bp @ 1013 hPa [°C] 48 Mp −81 Flp [°C] −30 Vp 364	d 0.797 rVd 1.8 @ 37.8 °C (Air = 1) ρ 0.43 n_D 1.362 ST – Sol. in Water 306 g/l @ 25 °C
n-Butyraldehyde	n-Butanal	123-72-8		MM 72.11 Bp @ 1013 hPa [°C] 75 Mp < −20 Flp [°C] −6.7 Vp 144	d 0.81 rVd 2.5 ρ 0.43 n_D 1.379 ST 70 (1 g/l) Sol. in Water 50
Isobutyraldehyde	Isobutanal	78-84-2		MM 72.11 Bp @ 1013 hPa [°C] 64 Mp −69.5 Flp [°C] −5 Vp 153	d 0.783 rVd 2.5 ρ 0.43 n_D – ST – Sol. in Water 60
n-Valeraldehyde	n-Pentanal	110-62-3		MM 86.13 Bp @ 1013 hPa [°C] 104 Mp −85 Flp [°C] 6.5 Vp 50	d 0.809 rVd 3 ρ 0.543 n_D 1.393 ST – Sol. in Water 18
2-Methylbutyraldehyde	2-Methylbutanal	96-17-3		MM 86.13 Bp @ 1013 hPa [°C] 92 Mp < −90 Flp [°C] −5 Vp 76	d 0.803 rVd – ρ 0.53 n_D 1.39 ST 48.8 Sol. in Water 13
Isovaleraldehyde	3-Methylbutanal	590-86-3		MM 86.13 Bp @ 1013 hPa [°C] 92 Mp < −90 Flp [°C] 0.5 Vp 75	d 0.797 rVd 2.96 ρ 0.56 n_D 1.387 ST 46.1 Sol. in Water 15
n-Heptanal	n-Heptylaldehyde	111-71-7		MM 114.18 Bp @ 1013 hPa [°C] 156 – 160 Mp −43 Flp [°C] 42 Vp [hPa] @ 25 °C 6.6	d 0.8187 rVd 3.94 ρ 0.98 @ 15 °C n_D 1.426 ST – Sol. in Water 2.03
2-Ethylhexanal	2-Ethylhexylaldehyde	123-05-7		MM 128.22 Bp @ 1013 hPa [°C] 159.6 Mp < −100 Flp [°C] 44 Vp 2.3	d 0.819 rVd 4.4 ρ 0.951 n_D 1.416 ST – Sol. in Water 0.39

Data / Values @ 20 °C, 1013 hPa (unless otherwise noted): **MM** = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa] **d** = Density [g/cm³] **rVd** = rel. Vapor Density **ρ** = Viscosity [mPa*s] **n_D** = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

1 ALDEHYDES

OXEA products	Other names / Short form	CAS No.		Physical data	
Isononanal	3,5,5-Trimethylhexanal	5435-64-3		MM 142.23 Bp @ 1013 hPa [°C] 169 Mp < –100 Flp [°C] 34 Vp 9	d 0.82 rVd – ρ 1.72 [mm²/s] n_D 1.419 – 1.423 ST 45.6 Sol. in Water 0.3
n-Nonanal	Pelargonaldehyde n-Nonylaldehyde	124-19-6		MM 142.24 Bp @ 1013 hPa [°C] 183 Mp –19 Flp [°C] 75 Vp 2	d 0.823 rVd 4.9 ρ 1.4 n_D 1.424 ST – Sol. in Water –
n-Undecanal	–	112-44-7		MM 170.29 Bp @ 1013 hPa [°C] 225 Mp –10 Flp [°C] 105 Vp 0.38	d 0.828 rVd 5.94 ρ 2.295 n_D 1.413 – 1.415 ST 44.8 Sol. in Water 0.012
n/i-C13/C15-Aldehyde	–	93821-14-8		MM – Bp @ 1013 hPa [°C] 263 – 286 Mp –9 Flp [°C] 122 Vp 3	d 0.830 rVd – ρ 3.7 n_D – ST 42.3 Sol. in Water 0.002

Data / Values @ 20 °C, 1013 hPa (unless otherwise noted):

MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

1 ALDEHYDES APPLICATION AREAS

Product	CAS No.	Agrochemicals	Chemical Intermediates	Animal Feed	Fine Chemicals	Flavors & Fragrances	LDPE/EVA Polymers	Lubricant Additives	Pharma	Resins	Rubber Additives
Propionaldehyde	123-38-6	■	■			■	■		■		
n-Butyraldehyde	123-72-8		■								
Isobutyraldehyde	78-84-2		■			■			■		
n-Valeraldehyde	110-62-3		■		■	■			■		
2-Methylbutyraldehyde	96-17-3		■						■		
Isovaleraldehyde	590-86-3	■	■	■		■			■		
n-Heptanal	111-71-7					■					
2-Ethylhexanal	123-05-7		■		■	■			■	■	
Isononanal	5435-64-3		■			■					■
n-Nonanal	124-19-6		■					■			
n-Undecanal	112-44-7					■					
n/i-C13-C15-Aldehyde	93821-14-8					■					

All information on application areas is derived from our experience and customer feedback. Please note that each use of a specific product, the regulatory framework and IP situation still has to be verified by the customer in each individual case.

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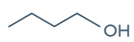
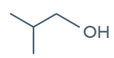
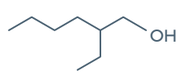
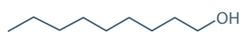
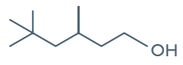
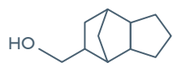
2 ALCOHOLS

OXEA products	Other names / Short form	CAS No.		Physical data		
n-Propanol	n-Propyl alcohol	71-23-8		MM 60.1 Bp @ 1013 hPa [°C] 97 Mp < −90 Flp [°C] 22−24 Vp 26	d 0.8036 rVd 2.1 ρ 2.21 Sol. in Water completely soluble	n_D 1.386 ST 70.8 (1 g/l)
n-Butanol	n-Butyl alcohol	71-36-3		MM 74.12 Bp @ 1013 hPa [°C] 119 Mp < −90 Flp [°C] 35 Vp 10	d 0.81 rVd 2.6 ρ 2.947 Sol. in Water 66	n_D 1.399 ST 69.9
Isobutanol	2-Methylpropan-1-ol	78-83-1		MM 74.12 Bp @ 1013 hPa [°C] 108 Mp < −90 Flp [°C] 31 Vp 16	d 0.802 rVd 2.6 ρ 3.1 Sol. in Water 70	n_D 1.396 ST 69.7
n-Heptanol	Heptyl alcohol n-Heptyl alcohol Enanthic alcohol	111-70-6		MM 116.2 Bp @ 1013 hPa [°C] 175.8 Mp −34.6 Flp [°C] 71 Vp [hPa] @ 25 °C 0.29	d 0.8219 rVd 4.01 ρ 7.4 Sol. in Water 1.67 mg/l @ 25 °C	n_D 1.4249 ST –
2-Ethylhexanol	2-Ethyl-hexan-1-ol 2-EHOH	104-76-7		MM 130.23 Bp @ 1013 hPa [°C] 184 Mp −89 Flp [°C] 77 Vp < 1	d 0.832 rVd 4.5 ρ 9.8 Sol. in Water 0.9	n_D 1.431 ST 47 (0.81 g/l)
n-Nonanol	n-Nonyl alcohol, Pelargonic alcohol, n-C9 alcohol	143-08-8		MM 144.26 Bp @ 1013 hPa [°C] 212 Mp −3 Flp [°C] 95	d 0.8278 rVd not available ρ 14.2 Sol. in Water 69.5 mg/l @ 20 °C	n_D 1.4338 ST 17.8 (0.10 g/l)
Isononanol	3,5,5-Trimethylhexan-1-ol	3452-97-9		MM 144.26 Bp @ 1013 hPa [°C] 193.5 Mp −80 Flp [°C] 76 Vp 2	d 0.8264 rVd 5 ρ 14.2 Sol. in Water 0.4	n_D – ST 38 (0.37 g/l)
TCD Alcohol M	Octahydro-4,7-methano-1H-indenmethanol TCD-monol	31308-55-1		MM 166.26 Bp @ 1013 hPa [°C] 266 Mp −31 Flp [°C] 132 Vp < 1	d 1.0517 rVd – ρ 200.5 Sol. in Water 0.4	n_D – ST 52 (0.36 g/l)

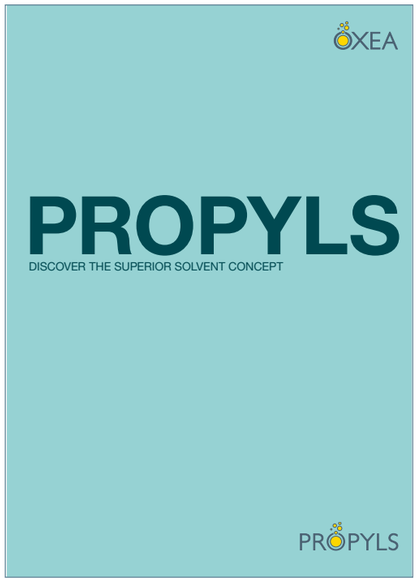
Data/Values @ 20 °C, 1013 hPa (unless otherwise noted):

MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

2 ALCOHOLS APPLICATION AREAS

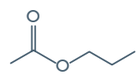
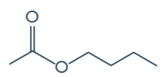
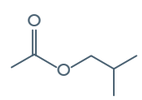
Product	CAS No.	Printing Inks	Plasticizers	Chemical Intermediates	Agrochemicals, Crop Science	Paints & Coatings	Fuel Additives	Flavors & Fragrances	Personal Care	Disinfectant
n-Propanol	71-23-8	■							■	■
n-Butanol	71-36-3		■	■	■	■				
Isobutanol	78-83-1		■	■		■				
n-Heptanol	111-70-6					■	■			
2-Ethylhexanol	104-76-7		■	■			■			
n-Nonanol	143-08-8		■	■				■	■	
Isononanol	3452-97-9			■				■	■	
TCD Alcohol M	31308-55-1			■				■		

All information on application areas is derived from our experience and customer feedback. Please note that each use of a specific product, the regulatory framework and IP situation still has to be verified by the customer in each individual case.



For more information about Propyls please visit http://www.propyls.com/

3 ESTER

OXEA products	Other names / Short form	CAS No.		Physical data	
n-Propyl Acetate	Acetic Acid n-propyl ester	109-60-4		MM 102.13 Bp @ 1013 hPa [°C] 101.5 Mp −93 Flp [°C] 12 Vp 38	d 0.888 rVd 3.5 ρ 0.58 n_D 1.384 ST – Sol. in Water 18.9
n-Butyl Acetate	Acetic Acid n-butyl ester	123-86-4		MM 116.16 Bp @ 1013 hPa [°C] 126 Mp < −90 Flp [°C] 27 Vp 15	d 0.881 rVd 4 ρ 0.73 n_D 1.393 ST 61.3 (1 g/l) Sol. in Water 5.3
Isobutyl Acetate	Acetic Acid isobutyl ester	110-19-0		MM 116.16 Bp @ 1013 hPa [°C] 117 Mp < −90 Flp [°C] 22 Vp 21	d 0.871 rVd 4 ρ 0.7 n_D 1.39 ST 62.5 (1 g/l) Sol. in Water 5.6

Data/Values @ 20 °C, 1013 hPa (unless otherwise noted):
MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

3 ESTERS APPLICATION AREAS

Product	CAS No.	Detergents Additives	Chemical Intermediates	Flavor & Fragrances	Pharma	Paint and Coatings	Printing Inks
n-Propyl Acetate	109-60-4		■			■	■
n-Butyl Acetate	123-86-4	■	■	■	■	■	
Isobutyl Acetate	110-19-0		■	■	■	■	

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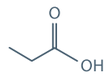
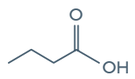
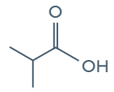
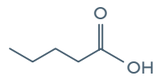
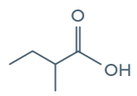
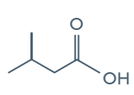
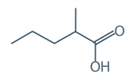
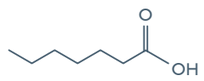
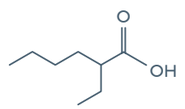
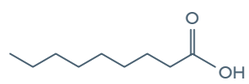
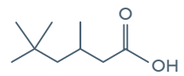
4 ACID

OXEA products	Other names / Short form	CAS No.		Physical data	
Propionic Acid (AF)	C3 Acid Propanoic Acid	79-09-4		MM 74.08 Bp @ 1013 hPa [°C] 141 Mp −21.5 Flp [°C] 50.50	d 0.99 ρ 1.18 n_D 1.387 ST not available Sol. in Water completely soluble at roomtemperature rVd not available
n-Butyric Acid (AF)	n-C4 Acid n-Butanoic Acid	107-92-6		MM 88.11 Bp @ 1013 hPa [°C] 164 Mp −7 Flp [°C] 71	d 0.957 ρ 1.67 n_D 1.398 ST 68.5 (1 g/l) Sol. in Water completely soluble
Isobutyric Acid	iso-C4 Acid	79-31-2		MM 88.11 Bp @ 1013 hPa [°C] 156 Mp −64 Flp [°C] 56 –62	d 0.948 ρ 1.32 n_D 1.393 ST 70.2 (1 g/l) Sol. in Water 618
n-Valeric Acid	n-Pentanoic Acid n-C5 Acid	109-52-4		MM 102.13 Bp @ 1013 hPa [°C] 186 Mp −34 Flp [°C] 84	d 0.94 ρ 2.173 n_D 1.408 ST 51.6 (1 g/l) Sol. in Water 37.5
2-Methylbutyric Acid	2-MB Acid	116-53-0		MM 102.13 Bp @ 1013 hPa [°C] 177 Mp −90 Flp [°C] 77	d 0.936 ρ 2.1 n_D 1.405 ST 64.2 (1 g/l) Sol. in Water 45
3-Methylbutyric Acid	Isovaleric Acid 3-MB Acid	503-74-2		MM 102.13 Bp @ 1013 hPa [°C] 178.5 Mp −31 Flp [°C] 84 @ 80	d 0.9258 ρ 2.4 n_D 1.403 ST 63.3 (1 g/l) Sol. in Water 48
Isopentanoic Acid				MM 102.13 Bp @ 1 atm (101,3 kPa) [°C] 177 – 186 Mp < −34 Flp [°C] 77 – 84	d 0.94 ρ 2.1 – 2.2 n_D 1.405 – 1.408 ST 51 – 64 (1 g/l) Sol. in Water 37.5
2-Methylpentanoic Acid	2-Methylvaleric Acid 2-MP Acid	97-61-0		MM 116.16 Bp @ 1013 hPa [°C] 196 Mp < −90 Flp [°C] 93	d 0.923 ρ 2.8 n_D 1.413 ST 56.6 Sol. in Water 12.2

Data/Values @ 20 °C, 1013 hPa (unless otherwise noted):
MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

4 ACID

OXEA products	Other names / Short form	CAS No.		Physical data			
n-Heptanoic Acid (HP)	n-C7 Acid	111-14-8		MM Bp @ 1013 hPa [°C] Mp Flp [°C]	130.19 223 –8 117	d ρ n_D ST Sol. in Water	0.92 3.4 @ 30 °C 1.422 – 2 to 5
2-Ethylhexanoic Acid	2-EH Acid	149-57-5		MM Bp @ 1013 hPa [°C] Mp Flp [°C]	144.21 228 (226 – 229) –57 114	d ρ n_D ST Sol. in Water	0.907 4.8 1.425 – 1.4
Pelargonic Acid (HP) (HALAL)	n-Nonanoic Acid n-C9 Acid	112-05-0		MM Bp @ 1013 hPa [°C] Mp Flp [°C]	158.23 253 13 137	d ρ n_D ST Sol. in Water	0.905 8.1 1.433 31.7 (0.27 g/l) 0.3
Isononanoic Acid (M)	iso-C9 Acid	3302-10-1		MM Bp @ 1013 hPa [°C] Mp Flp [°C]	158.23 230–240 –77 117–137	d ρ n_D ST Sol. in Water	0.900 10 to 12 1.429 35.3 (0.63 g/l) 0.7

Data/Values @ 20 °C, 1013 hPa (unless otherwise noted):

MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

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4 ACID APPLICATION AREAS

Products	CAS No.	Paint Driers	PVB Plasticizer	Antifreeze	Detergents Additives	Carboxylates	Chemical Intermediates	Animal Feed	Flavor & Fragrances	Polymerization Catalysts	Cosmetic Ingredients	Synthetic Lubricants	Agrochemicals
Propionic Acid	79-09-4					■	■	■	■				■
n-Butyric Acid	107-92-6						■	■	■				■
Isobutyric Acid	79-31-2						■		■				
n-Valeric Acid	109-52-4						■	■	■			■	
2-Methylbutyric Acid	116-53-0								■			■	
3-Methylbutyric Acid	503-74-2						■		■				
Isopentanoic Acid												■	
2-Methylpentanoic Acid	97-61-0								■				
n-Heptanoic Acid	111-14-8						■					■	
2-Ethylhexanoic Acid	149-57-5	■	■	■		■				■	■	■	
Pelargonic Acid	112-05-0				■							■	■
Isononanoic Acid	3302-10-1	■		■		■				■	■	■	

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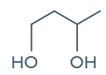
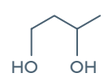
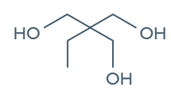
5 POLYOLS

OXEA products	Other names / Short form	CAS No.	Product Form		Physical data		
TCD Alcohol DM	3(4),8(9)-Bis-(hydroxymethyl)-tricyclo-[5.2.1.0^{2,6}] decane TCD-Diol	26160-83-8 26896-48-0	Liquid		MM 196.28 Bp @ 1013 hPa [°C] 334 Mp 18 Flp [°C] 191 Vp < 1	d 1.136 rVd – ρ 52.600 @ 40 °C n_D 1.52	ST 58.9 (1 g/l) Sol. in Water 11
1,3-Butylene Glycol Cosmetic Quality	1,3-Butanediol 1,3-BG	107-88-0	Liquid		MM 90.12 Bp @ 1013 hPa [°C] 209 Mp –57 Flp [°C] 115 Vp < 1	d 1.0035 rVd 3.2 ρ 131.8 n_D 1.44	ST 72.6 (1 g/l) Sol. in Water completely soluble
1,3-Butylene Glycol Industrial Quality	1,3-Butanediol 1,3-BG	107-88-0	Liquid		MM 90.12 Bp @ 1013 hPa [°C] 209 Mp –57 Flp [°C] 115 Vp < 1	d 1.0035 rVd 3.2 ρ 131.8 n_D 1.44	ST 72.6 (1 g/l) Sol. in Water completely soluble
Trimethylolpropane	1,1,1-Tris-(hydroxymethyl)-propane TMP	77-99-6	Molten, Flakes		MM 134.17 Bp @ 1013 hPa [°C] 304 Mp 58 Flp [°C] 149 – 180 Vp < 0.001	d 1.084 – 1.09 rVd 4.63 ρ – n_D –	ST – Sol. in Water 100 – 1000
Neopentylglycol	2,2-Dimethylpropane-1,3-diol NPG	126-30-7	Molten, Flakes, 90 % Aqueous Solution		MM 104.15 Bp @ 1013 hPa [°C] 209 Mp 127 – 130 Flp [°C] 107 Vp 0.00024	d 1.07 rVd – ρ 6.43 n_D –	ST – Sol. in Water 830

Data / Values @ 20 °C, 1013 hPa (unless otherwise noted):
MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm^3] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

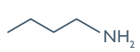
A digital version of 1,3 Butylene Glycol CQ can be downloaded at
https://www.oxea-chemicals.com/en/media/downloads.html

5 POLYOLS APPLICATION AREAS

Products	CAS No.	Function	Plasticizers	(Coating) Resins	Plastics	Lubricants	Cosmetics	Flavours & Fragrances
TCD Alcohol DM	26160-83-8 26896-48-0	Polymer Component / Intermediate, Carrier Molecule	■	■	■			■
1,3-Butylene Glycol Cosmetic Quality	107-88-0	Humectant / Emollient					■	■
1,3-Butylene Glycol Industrial Quality	107-88-0	Polymer Component / Intermediate	■	■		■		
Trimethylolpropane	77-99-6	Polymer Component / Intermediate	■	■				
Neopentylglycol	126-30-7	Polymer Component / Intermediate	■	■		■		

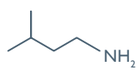
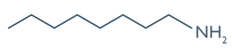
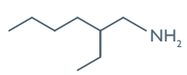
All information on application areas is derived from our experience and customer feedback. Please note that each use of a specific product, the regulatory framework and IP situation still has to be verified by the customer in each individual case.

6 AMINES

OXEA products	Other names / Short form	CAS No.		Physical data	
7.1 Monoalkylamines					
n-Propylamine	1-Aminopropane	107-10-8		MM 59.1 Bp @ 1013 hPa [°C] 47.5 Mp < –60 Flp [°C] < –20 Vp –	d 0.716 ρ 0.4 Sol. in Water miscible
Isopropylamine	2-Aminopropane	75-31-0		MM 59.11 Bp @ 1013 hPa [°C] 32 Mp < –90 Flp [°C] < –25 Vp 631	d 0.6871 ρ 0.47 Sol. in Water – n_D 1.373 ST 68.5 rVd 2.04
n-Butylamine	1-Aminobutane	109-73-9		MM 73.14 Bp @ 1013 hPa [°C] 77 Mp –47 Flp [°C] –7.5 Vp 102	d 0.736 ρ 0.51 Sol. in Water completely soluble n_D 1.401 ST 69.5 rVd 2.5

Data / Values @ 20 °C, 1013 hPa (unless otherwise noted): **MM** = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C]
Flp = Flash Point [°C] **Vp** = Vapor Pressure [hPa] **d** = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] **n_D** = Refractive Index
ST = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

6 AMINES

OXEA products	Other names / Short form	CAS No.		Physical data	
7.1 Monoalkylamines					
3-Methylbutylamine	1-Amino-3-methylbutane Isopentylamine	107-85-7		MM 87.16 Bp @ 1013 hPa [°C] 97.5 Mp −83 Flp [°C] 4 Vp 48	d 0.747 ρ 0.62 Sol. in Water miscible n_D 1.408 ST 63.4 rVd 3.0
n-Octylamine	1-Aminooctane	111-86-4		MM 129.25 Bp @ 1013 hPa [°C] 178 Mp 2 Flp [°C] 58 Vp 0.81	d 0.7808 ρ 1.371 Sol. in Water 0.32 n_D 1.429 ST 44.2 rVd 4.46
2-Ethylhexylamine	3-Aminomethyl Heptane	104-75-6		MM 129.24 Bp @ 1013 hPa [°C] 169.8 Mp < −70 Flp [°C] 45–55 Vp 1.6	d 0.788 ρ 1.12 Sol.in Water 2.5 rVd 4.46

Data/Values @ 20 °C, 1013 hPa (unless otherwise noted): **MM** = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C]
Flp = Flash Point [°C] **Vp** = Vapor Pressure [hPa] **d** = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index
ST = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

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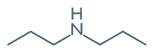
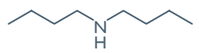
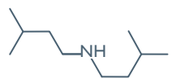
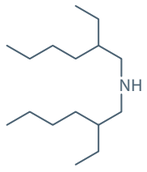
6 AMINES

OXEA products	Other names / Short form	CAS No.		Physical data	
7.2 Dialkylamines					
Di-n-propylamine	Dipropylamine	142-84-7		MM 101.19 Bp @ 1013 hPa [°C] 109.3 Mp –40 Flp [°C] 7 Vp 40	d 0.74 ρ 0.517 @ 25 °C Sol. in Water 46.4 g/l (ang 4.64 %) rVd 3.5
Di-n-butylamine	Dibutylamine	111-92-2		MM 129.24 Bp @ 1013 hPa [°C] 160 Mp –60 Flp [°C] 40.5 Vp 2.2	d 0.759 ρ 0.85 Sol. in Water 3.8 n_D 1.417 ST 50.6 rVd 4.5
Di-isoamylamine	Di-(3-methylbutyl)amine	544-00-3		MM 157.3 Bp @ 1013 hPa [°C] 187–188 Mp –44 Flp [°C] 58 Vp [hPa] @ 25 °C 0.87	d 0.767 ρ – Sol. in Water 0.588 g/l @ 25 °C
Di-2-ethylhexylamine	Di-(2-ethylhexyl)amine	106-20-7		MM 241.5 Bp @ 1013 hPa [°C] 281 Mp < –70 Flp [°C] 130 Vp 0.013	d 0.803 ρ 3.7 Sol. in Water 14 ST 48

Data / Values @ 20 °C, 1013 hPa (unless otherwise noted):

MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

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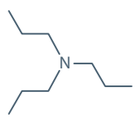
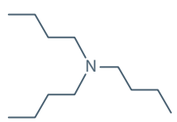
6 AMINES

OXEA products	Other names/ Short form	CAS No.		Physical data			
7.3 Trialkylamines							
Tri-n-propylamine	Tripropylamine	102-69-2		MM	143.27	d	0.7557
				Bp @ 1013 hPa [°C]	156.4	ρ	0.7
				Mp	< –90	Sol. in Water	0.444
				Flp [°C]	33	n_D	1.417
				Vp	17	ST	61.6
						rVd	4.93
Tri-n-butylamine	Tributylamine	102-82-9		MM	185.35	d	0.777
				Bp @ 1013 hPa [°C]	208	ρ	1.393
				Mp	< –90	Sol. in Water	0.08
				Flp [°C]	75	n_D	1.429
				Vp	0.18	ST	55
						rVd	6.4

Data/Values @ 20 °C, 1013 hPa (unless otherwise noted):
MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density **ρ** = Viscosity [mPa*s] **n_D** = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

6 AMINES APPLICATION AREAS

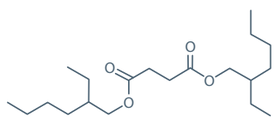
Products	CAS No.	Adhesives & Sealants	Agrochemicals	Biocides	Catalyst/ Process Aid	Chemical Intermediates	Corrosion Inhibitors	Dyes & Pigments	Epoxy Hardeners	Metal Working Fluids	Anti Rust Agent	Fine Chemicals	Flavors & Fragrances	Lubricant Additives	Mining Chemicals	Oil Field Chemicals	Pharma	Plasticizers	Plastics	Resins	Rubber Additives	Surfactants	Water Treatment Chemicals
n-Propylamine	107-10-8		■														■						
Isopropylamine	75-31-0		■														■					■	
n-Butylamine	109-73-9	■	■			■		■									■	■					
3-Methylbutylamine	107-85-7							■									■						
n-Octylamine	111-86-4			■			■							■								■	
2-Ethylhexylamine	104-75-6		■				■	■						■	■	■	■					■	
Di-n-propylamine	142-84-7		■														■						
Di-n-butylamine	111-92-2		■										■	■		■			■		■		■
Di-isoamylamine	544-00-3									■													
Di-2-ethylhexylamine	106-20-7		■					■						■							■		
Tri-n-propylamine	102-69-2				■							■					■						
Tri-n-butylamine	102-82-9				■							■					■						

All information on application areas is derived from our experience and customer feedback. Please note that each use of a specific product, the regulatory framework and IP situation still has to be verified by the customer in each individual case.

7 SPECIALTY ESTERS

Physical data

OXEA products	CAS No.
OXBLUE DOSX	2915-57-3



MM	342.5
d	0.933
Flp [°C] COC	>160

ρ	
20 °C [mm²/s]	13.4
40 °C [mm²/s]	6.8
100 °C [mm²/s]	2.0
Viscosity	12.4

Test results for use as Plasticizers in PVC

Color	≤ 20
Volatiles [wt %]	2.25
Bp	298
Mp	-73

Shore A Hardness	
ASTM D1706, 50 phr	75
100 % Modulus [mPa]	
ASTM D638, 50phr	18
Low temperature flexibility [°C]	
ASTM D1043, 50phr	–47
Elevated temp volatility [wt %]	
100 °C. 7 days, loss, 50phr	19.2

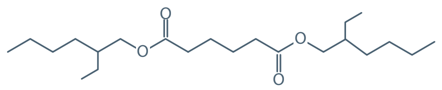
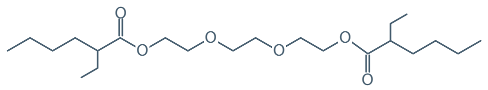
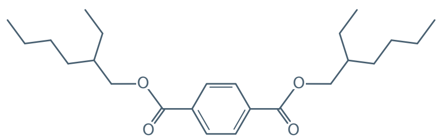
Relative extraction resistance	
ASTM D1239, 50phr	
soapy water extraction [wt %]	0.6
oil extraction [wt %]	5
hexane extraction [wt %]	13

Fogging number	
3 hours, 100 °C, 67phr	32
VOC data (Boiling point) [°C]	298

Data / Values @ 20 °C, 1013 hPa (unless otherwise noted):
MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g / cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN / m] **Sol. in Water** = Solubility in Water [g / l]

7 SPECIALTY ESTERS

Physical data

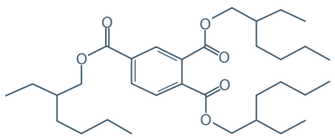
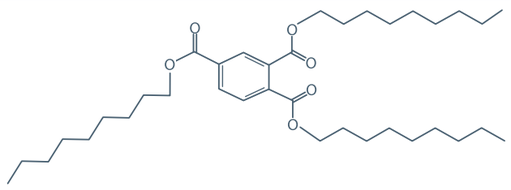
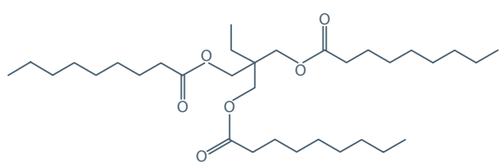
OXEA products	CAS No.	Structure	Physical data	Viscosity ρ	Further data	Test results for use as Plasticizers in PVC: Hardness / Modulus / Flexibility / Volatility	Relative extraction resistance	Fogging / VOC
OXSOFT DOA	103-23-1		MM 370.57 d 0.925 Flp [°C] COC 196	ρ 20 °C [mm²/s] 15.1 40 °C [mm²/s] 7.8 100 °C [mm²/s] 2.3< Vp 0.01 Viscosity 13.7 rVd 12.8	n_D 1.447 Color ≤ 25 Volatiles [wt %] 2.41	**Shore A Hardness** ASTM D1706, 50 phr 76 **100 % Modulus [mPa]** ASTM D638, 50phr 7.2 **Low temperature flexibility [°C]** ASTM D1043, 50phr −52 **Elevated temp volatility [wt %]** 100 °C. 7 days, loss, 50phr 26.5	**Relative extraction resistance** ASTM D1239, 50phr soapy water extraction [wt %] 0.9 oil extraction [wt %] 18 hexane extraction [wt %] 29	**Fogging number** 3 hours, 100 °C, 67phr 76 **VOC data (Boiling point) [°C]** 417
OXSOFT 3G8	94-28-0		MM 403 d 0.97 Flp [°C] COC 196	ρ 20 °C [mm²/s] 16.3 40 °C [mm²/s] 8.8 100 °C [mm²/s] 2.4	n_D 1.444 Color ≤ 30 Volatiles [wt %] 0.53 Viscosity 16.4 ST 45.8 Sol. in Water 1.53	**Shore A Hardness** ASTM D1706, 50 phr 81 **100 % Modulus [mPa]** ASTM D638, 50phr 16.2 **Low temperature flexibility [°C]** ASTM D1043, 50phr −58.5 **Elevated temp volatility [wt %]** 100 °C. 7 days, loss, 50phr 6.5	**Relative extraction resistance** ASTM D1239, 50phr soapy water extraction [wt %] 3 oil extraction [wt %] 11 hexane extraction [wt %] 20	**Fogging number** 3 hours, 100 °C, 67phr 34 **VOC data (Boiling point) [°C]** 340
OXSOFT GPO	6422-86-2		MM 391 d 0.983 Flp [°C] COC 383	ρ 20 °C [mm²/s] 64.1 40 °C[mm²/s] n. a. 100 °C [mm²/s] 5	n_D 1.487 Color ≤ 20 Volatiles [wt %] n. a. Bp 383 Mp −48 rVd 13.5	**Shore A Hardness** ASTM D1706, 50 phr 81 **100 % Modulus [mPa]** ASTM D638, 50phr 11 **Low temperature flexibility [°C]** ASTM D1043, 50phr −26 **Elevated temp volatility [wt %]** 100 °C. 7 days, loss, 50phr n. a.	**Relative extraction resistance** ASTM D1239, 50phr soapy water extraction [wt %] 0.4 oil extraction [wt %] 10 hexane extraction [wt %] 26	**Fogging number** 3 hours, 100 °C, 67phr n. a. **VOC data (Boiling point) [°C]** 400
OXSOFT DUO 1			MM n. a. d 0.98 Flp [°C] COC > 199	ρ 20 °C [mm²/s] 50 40 °C [mm²/s] n. a. 100 °C [mm²/s] n. a.	n_D 1.47 Color ≤ 30 Volatiles [wt %] 0.2 Viscosity 50	**Shore A Hardness** ASTM D1706, 50 phr 83 **100 % Modulus [mPa]** ASTM D638, 50phr 19 **Low temperature flexibility [°C]** ASTM D1043, 50phr −37 **Elevated temp volatility [wt %]** 100 °C. 7 days, loss, 50phr 4.4	**Relative extraction resistance** ASTM D1239, 50phr soapy water extraction [wt %] 1.2 oil extraction [wt %] 3 hexane extraction [wt %] 17	**Fogging number** 3 hours, 100 °C, 67phr 70 **VOC data (Boiling point) [°C]** n. a.
OXSOFT DUO 2			MM n. a. d 0.99 Flp [°C] COC > 199	ρ 20 °C [mm²/s] 150 40 °C [mm²/s] n. a. 100 °C [mm²/s] n. a.	n_D 1.48 Color ≤ 30 Volatiles [wt %] 0.23	**Shore A Hardness** ASTM D1706, 50 phr 84 **100 % Modulus [mPa]** ASTM D638, 50phr 19 **Low temperature flexibility [°C]** ASTM D1043, 50phr −24 **Elevated temp volatility [wt %]** 100 °C. 7 days, loss, 50phr 1.9	**Relative extraction resistance** ASTM D1239, 50phr soapy water extraction [wt %] 0.4 oil extraction [wt %] 1.2 hexane extraction [wt %] 15	**Fogging number** 3 hours, 100 °C, 67phr 84 **VOC data (Boiling point) [°C]** n. a.

Data/Values @ 20 °C, 1013 hPa (unless otherwise noted):
MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
d = Density [g/cm³] **rVd** = rel. Vapor Density ρ = Viscosity [mPa*s] n_D = Refractive Index **ST** = Surface Tension [mN/m] **Sol. in Water** = Solubility in Water [g/l]

7 SPECIALTY ESTERS

Physical data

Test results for use as Plasticizers in PVC

OXEA products	CAS No.		Physical data		Test results for use as Plasticizers in PVC					
OXSOFT TOTM (St)	3319-31-1		MM 547 d 0.9885 Flp [°C] COC 224 °C ρ 20 °C [mm²/s] 335 40 °C [mm²/s] 90 100 °C [mm²/s] 9.6	n_D 1.485 Color ≤ 30 Volatiles [wt %] 0.14 Bp 655 Mp −43	**Shore A Hardness** ASTM D1706, 50 phr 88 **100 % Modulus [mPa]** ASTM D638, 50phr 12.8 **Low temperature flexibility [°C]** ASTM D1043, 50phr −20 **Elevated temp volatility [wt %]** 100 °C. 7 days, loss, 50phr 1.1	**Relative extraction resistance** ASTM D1239, 50phr soapy water extraction [wt %] 0.1 oil extraction [wt %] 10 hexane extraction [wt %] 26	**Fogging number** 3 hours, 100 °C, 67phr 97 **VOC data (Boiling point) [°C]** 355	
OXSOFT L9TM	35415-27-1		MM 589 d 0.972 Flp [°C] COC 190–210 °C ρ 20 °C [mm²/s] 137	n_D 1.483 Color </= 70 Volatiles [wt %] not available Bp not available Mp not available rVd not available Sol. in Water not available Vp < 0.1						
OXFILM 351			MM 403 d 0.966 Flp [°C] COC 196 ρ 20 °C [mm² / s] 16.3 40 °C [mm² / s] 8.8 100 °C [mm² / s] 2.4	n_D 1.444 Color ≤ 30 Volatiles [wt %] 0.53 Bp 340–351 Mp −70 ST 45.8 Vp < 0.001						
OXLUBE L9-TMP	126-57-8		MM 555 d 0.9401 Flp [°C] COC 224 ρ 20 °C [mm² / s] 46.9 40 °C [mm² / s] 21 100 °C [mm² / s] 4.6	Color ≤ 100 Noack volatility, weight loss [wt %] 1.73 Bp 532 Mp −45 Oxidation stability, RPVOT [minutes] 79 Biodegradeability OECD 301B [%] 95						

Data/Values @ 20 °C, 1013 hPa (unless otherwise noted):
MM = Molecular Mass **Bp** = Boiling Point [°C] **Mp** = Melting Point [°C] **Flp** = Flash Point [°C] **Vp** = Vapor Pressure [hPa]
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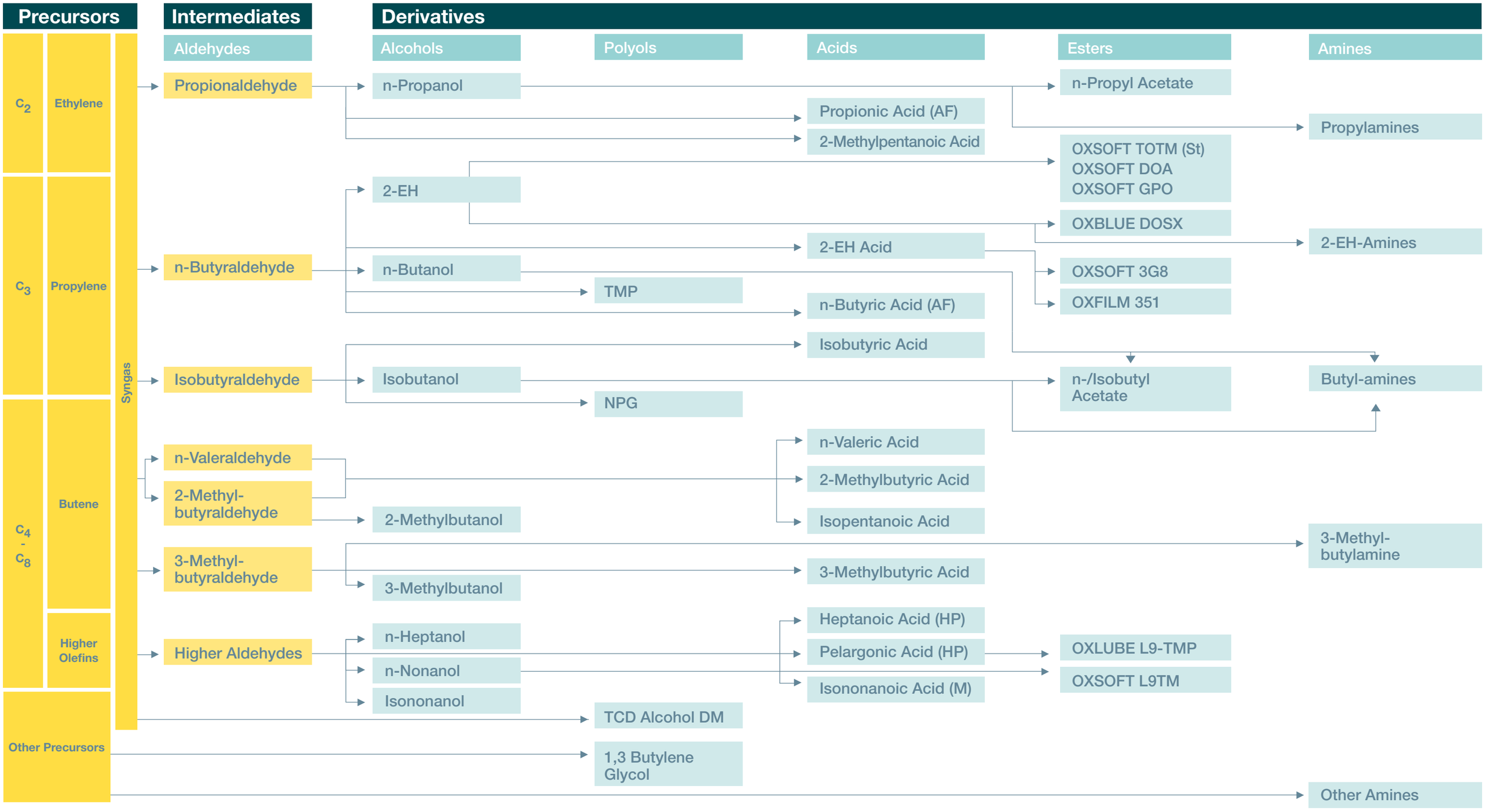
7 SPECIALTY ESTERS APPLICATION AREAS

Products	CAS No.	Plasticizer	Lubricant	Coalescing Agent	Wire & Cable Insulation: Building Wire	Wire & Cable Insulation: Other Wire & Cable	Construction: Caulks and Sealants	Construction: Adhesives	Construction: Urethane Sealants	Construction: Wall Paper	Construction: Hoses	Construction: Roofing	Construction: Swimming Pool Liners	Flooring & Carpets: Vinyl Tile	Flooring & Carpets: Resilient Flooring	Flooring & Carpets: Carpets	Automotive: Artificial Leather	Automotive: Auto Mats	Automotive: Wiring	Household / miscellaneous: Furniture	Household / miscellaneous: Garden Hoses	Household / miscellaneous: Table Cloths	Household / miscellaneous: Shower Curtains	Household / miscellaneous: Floor Mats	Household / miscellaneous: Food Cling Wraps	Household / miscellaneous: Toys	Household / miscellaneous: Inks	Medical: Blood Bags	Medical: Tubes	Medical: Nutrition
OXBLUE DOSX	2915-57-3	■		■			■		■						■									■	■					
OXSOFT DOA	103-23-1	■	■			■								■	■			■			■				■		■			
OXSOFT 3G8	94-28-0	■				■	■		■	■					■															
OXSOFT GPO	6422-86-2	■				■			■		■		■	■	■	■		■		■	■	■	■	■		■		■		
OXSOFT DUO 1		■			■			■		■		■	■	■	■	■	■	■	■	■				■			■			
OXSOFT DUO 2		■			■			■		■		■	■	■	■	■	■	■	■					■			■			
OXSOFT TOTM (St)	3319-31-1	■	■		■	■					■								■									■	■	■
OXSOFT L9TM	35415-27-1	■	■		■	■			■										■											
OXFILM 351				■																							■			
OXLUBE L9-TMP	126-57-8		■																											

All information on application areas is derived from our experience and customer feedback. Please note that each use of a specific product, the regulatory framework and IP situation still has to be verified by the customer in each individual case.

ALPHABETICAL PRODUCT INDEX

PRODUCTION PLATFORM



DIVERSIFIED PRODUCT PORTFOLIO

Applicable to a wide range of end-uses

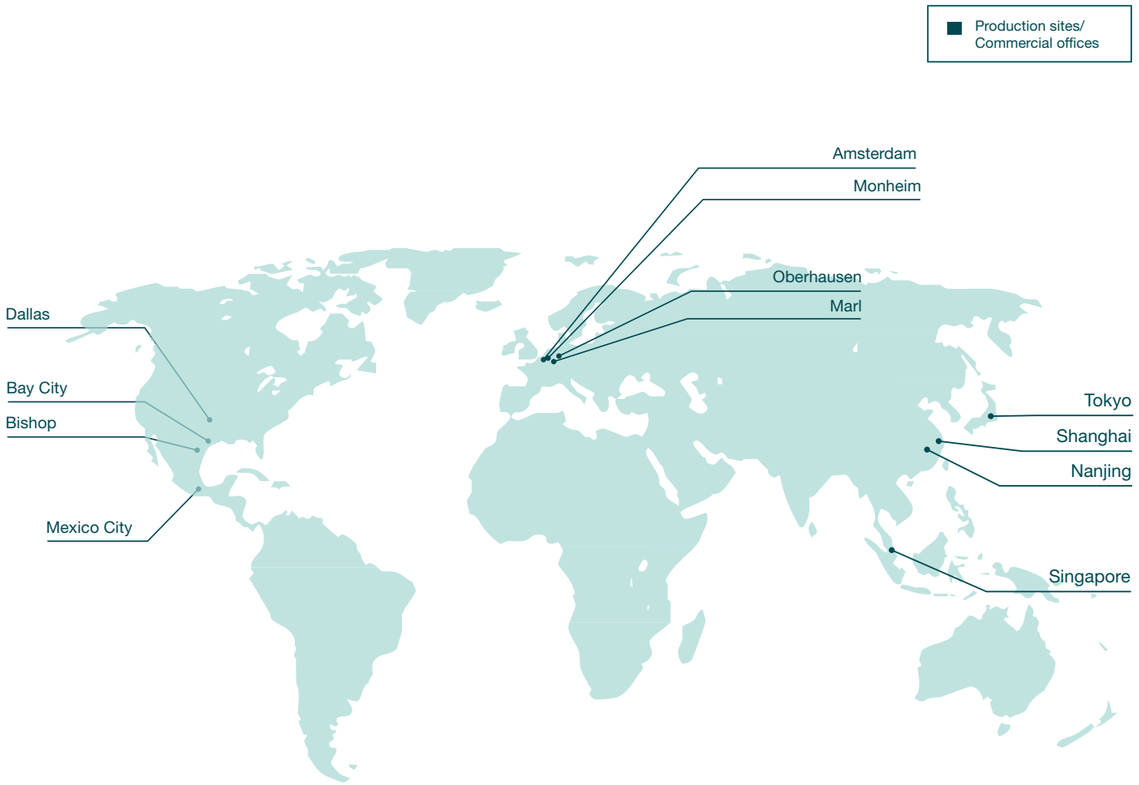
Oxo-Intermediates

Oxo-Derivatives

Aldehydes / Alcohols / Esters	Carboxylic Acids	Polyols	Amines	Higher Aldehydes	Higher Alcohols & Specialty Derivatives	Specialty Esters
· Propionaldehyde · n-Butyraldehyde · Isobutyraldehyde · n-Butanol · Isobutanol · n-Propanol · n-Propyl Acetate · n-Butyl Acetate · Isobutyl Acetate · 2-Ethylhexanol	· n-Butyric Acid (AF) · Isobutyric Acid · Valeric Acid (HP) · 2-Methylbutyric Acid · 3-Methylbutyric Acid · Heptanoic Acid (HP) · 2-Ethylhexanoic Acid · Pelargonic Acid (HP) · Isononanoic Acid · Propionic Acid (AF) · Isopentanoic Acid	· 1,3 Butylene Glycol · TCD Alcohol DM · Neopentylglycol · TMP	· Propylamines · Butylamines · 2-Ethylhexylamines · n-Octylamine · 3-Methylbutylamine · Dimethylbutylamine	· n-Undecanal · n-Nonanal · 2 Ethylhexanal · n/i-C13/C15-Aldehyde · Isovaleraldehyde · Isononanal · n-Valeraldehyde	· 2-Methylbutanol · 3-Methylbutanol · n-Heptanol · n-Nonanol · 3,5,5-Trimethylhexanol (Isononanol) · TCD Alcohol M	· OXBLUE DOSX · OXLUBE L9-TMP · OXSOFT DOA · OXSOFT 3G8 · OXSOFT GPO · OXSOFT DUO 1 · OXSOFT DUO 2 · OXSOFT TOTM (St) · OXSOFT L9TM · OXFILM 351
· Lacquers & Paints · Lubricants · Printing Inks · Flavours & Fragrances	· Lubricants · Siccatives · Flavors & Fragrances · Polymer-Stabilizers	· High Solids Coatings · Powder Coatings · Cosmetics · Lubricants · Polymer Additives	· Agrochemicals · Rubber Chemicals · Polymer Additives · Surfactants · Dye Intermediates	· Chemical Intermediates · Flavours & Fragrances	· Performance Chemicals · Agrochemicals · Flavours & Fragrances	· Plasticizer · Lubricants · Coalescing Agent
· Automotive & Transportation · Industrial Goods · Construction & Real Estate · Consumer & Retail · Pharmaceuticals · Cosmetics · Print Media	· Consumer & Retail · Industrial Goods · Cosmetics · Agriculture · Packaging	· Construction & Real Estate · Automotive & Transportation · Electronics Industry · Cosmetics	· Agriculture · Automotive & Transportation · Consumer & Retail · Construction & Real Estate · Pharmaceuticals · Print Media	· Consumer & Retail · Industrial Goods · Packaging · Pharmaceuticals	· Automotive & Transportation · Consumer & Retail · Healthcare & Medical · Construction & Real Estate · Cosmetics · Pharmaceuticals	· Food Packaging · Medical devices · Construction · Automotive

OXEA Products **Key Applications** **End markets**

OXEA WORLDWIDE



FACTS AND FIGURES

Founded	March 1, 2007 as a buy-out from two global chemical companies (Celanese and Evonik)
Owner	Oman Oil Company
Employees	approx. 1,400
Annual Sales	approx. € 1.5 billion
Plants	Europe: Oberhausen, Marl, Amsterdam USA: Bay City, Bishop China: Nanjing
Offices	Europe: Monheim Americas: Dallas, Mexico City Asia: Tokyo, Singapore, Shanghai
Products	Global supplier of Aldehydes, Oxo Alcohols, Esters, Carboxylic Acids, Specialty Esters, Polyols, Specialty Derivatives and Amines
Applications	Ingredients for paints & coatings, adhesives, flavors & fragrances, cosmetics, lubricants, pharmaceuticals and plastics
Sales Force	Experienced global sales team providing service to customers in Europe, the Americas and Asia
Management	Dr. Oliver Borgmeier Chief Operating Officer, Executive Vice President Global Operations Stefan Schmidt Chief Financial Officer, Executive Vice President Finance & IT

Learn more about OXEA: www.oxea-chemicals.com

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