

 Table 2-1: Final list of surfactant and precursor molecules included in the SLE project

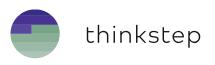
	Generic Surfactant Family	Substance (REACH) Name	CAS Num- ber	Declared unit - Scope of the Data collection	Trio Members	Confidentiality Model	Comments	No. data collec- tion part.
1	PRECUR- SOR	C10-13 Linear al- kyl benzene (LAB)	67774-74- 7	LAB, catalytic al- kylation of ben- zene, 1 ton at plant	SASOL CEPSA Quimica	Only 2 companies involved, therefore the average of LAB production is <u>not to</u> <u>be disclosed</u>	Precursor for HLAS LCI for a mix of DETAL + HF process	2
2	ANIONIC SURFAC- TANT	C10-13 Linear al- kylbenzene sul- phonic acid (HLAS)	85536-14- 7	HLAS, sulphona- tion of LAB, 1 ton at plant	SASOL CEPSA Quimica P&G UNILEVER HUNTSMAN	Vertical average of HLAS production process to be dis- closed.	Neutralization step to Na- LAS is <u>not</u> included	5
3	PRECUR- SOR	C12-14 Fatty alco- hol (oleo)	80206-82- 2	C12-14 fatty alco- hol (oleo), hydro- genation of oil, 1 ton at plant	KAO SASOL P&G BASF	Average <u>not</u> dis- closed	Precursor for oleo AS, AE2S, AE	4
4	PRECUR- SOR	C12-15 Fatty alco- hol (essentially lin- ear, petro)	740817- 83-8	C12-13 fatty alco- hol (petro), oxo process, 1 ton at plant	SHELL SASOL BASF	Average <u>not</u> dis- closed	Precursor for petro AS, AE2S, AE	3



5	ANIONIC SURFAC- TANT	C12-14AS (oleo/petro)	85586-07- 8	C12-14AS (oleo/petro), sul- phonation of C12- 14 fatty alcohol (oleo/petro), 1 ton at plant	KAO P&G Solvay	Vertical average for surfactant produc- tion disclosed	3
6	ANIONIC SURFAC- TANT	C12-14E2S (oleo)	68891-38- 3	C12-14 E2S, Eth- oxylation and sul- phation of fatty al- cohol, 1 ton at plant	Solvay KAO SASOL Huntsman P&G	Vertical average for surfactant produc- tion disclosed	5
7	ANIONIC SURFAC- TANT	C12-13E2S (petro)	161074- 79-9	C12-13 E2S, Eth- oxylation and sul- phation of fatty al- cohol, 1 ton at plant	Solvay KAO SASOL Huntsman P&G	Vertical average for surfactant produc- tion disclosed,	5
8	PRECUR- SOR	Ethylene Oxide	75-21-8	Ethylene oxide, di- rect oxidation of ethylene, 1 ton at plant	SHELL SASOL AKZO NOBEL	Vertical average disclosed.	3
9	NON-IONIC SURFAC- TANT	C12-14 AE3	68439-50- 9	C12-14 AE3 (C12- 14 Alcohol (oleo) Ethoxylate with 3	BASF SASOL	Ethoxylation step average <u>not</u> dis- closed.	3



10	NON-IONIC SURFAC- TANT	C12-14 AE7	68439-50- 9	moles EO per mole), , 1 ton at plant C12-14 AE7 (C12- 14 Alcohol (oleo) Ethoxylate with 7 moles EO per mole), 1 ton at plant	Akzo Nobel BASF SASOL AKZO NOBEL	Vertical average for surfactant produc- tion disclosed Ethoxylation step average <u>not</u> dis- closed. Vertical average for surfactant produc- tion disclosed		3
11	NON-IONIC SURFAC- TANT	C12-15 AE3	68131-39- 5	C12-15 AE3 (C12- 15 Alcohol (petro) Ethoxylate with 3 moles EO per mole), 1 ton at plant	BASF SHELL* SASOL	Ethoxylation step average <u>not</u> dis- closed. Vertical average for surfactant produc- tion disclosed	*Shell collected data via third party ICL	3
12	NON-IONIC SURFAC- TANT	C12-15 AE7	68131-39- 5	C12-15 AE7 (C12- 15 Alcohol (petro) Ethoxylate with 7 moles EO per mole), 1 ton at plant	BASF SHELL* SASOL	Ethoxylation step average <u>not</u> dis- closed. Vertical average for surfactant produc- tion disclosed	*Shell collected data via third party ICL	3
13	PRECUR- SOR	C16-18 fatty alco- hol	67762-27- 0	C16-18 fatty alco- hol (oleo), hydro- genation of oil, 1 ton at plant	PE	Vertical average disclosed.	Based on palm oil and tallow fat	0



14	NON-IONIC SURFAC- TANT	C16-18 AE >20	68439-49- 6	C16-18 AE>20 (C16-18 Alcohol (oleo) Ethoxylate with >20 moles EO per mole), 1 ton at plant	BASF AKZO NOBEL SASOL EVONIK	Vertical average for surfactant produc- tion disclosed	4
15	PRECUR- SOR	Diethanolamine	111-42-2	Diethanolamine, reaction of eth- ylene oxide with ammonia, 1 ton at plant	GaBi Databases	Public data + litera- ture research	0
16	NON-IONIC SURFAC- TANT	Cocamide dieth- anolamine	68603-42- 9	Cocamide diethan- olamine, reaction of coconut oil with diethanolamine, 1 ton at plant	EVONIK HUNTSMAN SASOL	Vertical average for surfactant produc- tion disclosed	3
17	PRECUR- SOR	Dimethylamine	124-40-3	Dimethylamine, re- action of methanol with ammonia, 1 ton at plant	GaBi Databases	Public data + litera- ture research	0
18	PRECUR- SOR	Hydrogen perox- ide	7722-84-1	Hydrogen perox- ide, anthraquinone process, 1 ton at plant	GaBi Databases	Public data + litera- ture research	0



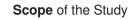
19	PRECUR- SOR	Tertiary amine (C12-14 Dimethyl- amine)	112-18-5	Alkyldimethyla- mine, reaction of fatty alcohol with ammonia, 1 ton at plant	GaBi Databases	Public data + litera- ture research + partly company specific information. Vertical average not disclosed.		0
20	NON-IONIC SURFAC- TANT	C12-14 Amine Ox- ide (C12-C14 Amines, (even numbered) - alkyldimethyl, N- oxides)	308062- 28-4	C12-14 (oleo) Amine oxide, oxi- dation of tertiary amine with hydro- gen peroxide, 1 ton at plant	P&G EVONIK AKZO NOBEL Solvay	Vertical average for surfactant production disclosed.		4
(21 )	PRECUR- SOR	Tallow fatty Alco- hol	61790-37- 2	Production of Tal- low fatty alcohol, 1 ton at plant	PE	Public data + litera- ture research	See product number 13	0
22	PRECUR- SOR	Triethanolamine (TEA)	102-71-6	Triethanolamine (TEA), reaction of ethylene oxide and ammonia, 1 ton at plant	GaBi Databases	Public data + litera- ture research		0
23	PRECUR- SOR	Dimethylsulphate (DMS)	77-78-1	Dimethylsulphate, production from ethers and sulphur	GaBi Databases	Public data + litera- ture research		0



				trioxide, 1 ton at plant				
24	CATIONIC SURFAC- TANT	C16-18 TEA-Quat; Fatty acids, C16- 18 (even num- bered) and C18 unsaturated., re- action products with triethanola- mine, di-methyl sulphate-quater- nized)	CAS-Nr. 157905- 74-3 EG-Nr. 931-203-0 (new de- scription)	C16-18 TEA-Quat (Triethanolamine Ester Quat (oleo)), reactions of fatty acid with <i>Triethan-</i> <i>olamine</i> (TEA) and <i>Dimethylsulphate</i> (DMS), 1 ton at plant	KAO EVONIK STEPAN BASF	Vertical average for surfactant produc- tion disclosed	Source of fatty acid is tallow.	4
25	PRECUR- SOR	Coconut fatty acid methylester		Production of Co- conut FAME, 1 ton at plant	PE	Public data + litera- ture research		0
26	PRECUR- SOR	DMAPA	109-55-7	DMAPA, continu- ous aminolysis, 1 ton at plant	PE	Public data + litera- ture research		0
27	PRECUR- SOR	Chloroacetic acid	79-11-8	Chloroacetic acid, catalyzed chlorina- tion of acetic acid, 1 ton at plant	GaBi Databases	Public data + litera- ture research		0
28	AMPHO- TERIC SUR- FACTANT	C8-18 Alkyl ami- dopropyl betaine	CAS-Nr. none; EG - 931-296-8	C8-18 Alkyl ami- dopropyl betaine, reaction of alkyl	Solvay EVONIK	Vertical average for surfactant produc- tion disclosed.		3



		(1-Propanamin- ium, 3-amino-n- (carboxymethyl)- n,n-dimethyl-, N- C8-18(even num- bered) acyl derivs.), hydrox- ides, inner salts;	(new de- scription)	chain source with DMAPA (N,N-Di- methylaminopropyl acrylamide) and reaction with Chlo- roacetic acid and NaOH, 1 ton at plant	-BASF		
29	PRECUR- SOR	Cumene	98-82-8	Cumene, alkylation of benzene with propene, 1 ton at plant	PE	Public data + litera- ture research	0
30	ANIONIC SURFAC- TANT - HY- DROTROPE	Sodium cumene sulphonate	28348-53- 0	Sodium cumene sulphonate, sul- phonation of cu- mene, 1 ton at plant	HUNTSMAN SASOL STEPAN	Vertical average for surfactant produc- tion disclosed.	3
31	PRECUR- SOR	AEEA (aminoeth- ylethanolamine) - precursor for am- phoacetates	111-41-1	AEEA, hydrogena- tive amination of monoethylene gly- col, 1 ton at plant	PE	Public data + litera- ture research	0
32	AMPHO- TERIC SUR- FACTANT	Sodium Cocoam- phoacetate (Reac- tion products of 1H-Imidazole-1- ethanol, 4,5-dihy- dro-, 2-(C7-C17	68390-66- 9	Amphoacetate, carboxymethyla- tion of fatty imidaz- olines, 1 ton at plant	Solvay EVONIK HUNTSMAN	Vertical average for surfactant produc- tion disclosed.	3





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C17-ur	isatd. alkyl)			
derivat	es and so-			
dium h	ydroxide			
and ch	oroacetic			
acid )				

Figure 2-6 gives a top level illustration of the material processes included in the study for each surfactant/precursor considered (extension of [Stalmans 1995]). The substances evaluated in the study are shown in bold. The substances where primary data was collected are additionally marked in green. In comparison to the previous study in 1995, the following surfactants are not considered in the present study: SAS, Soap and APG