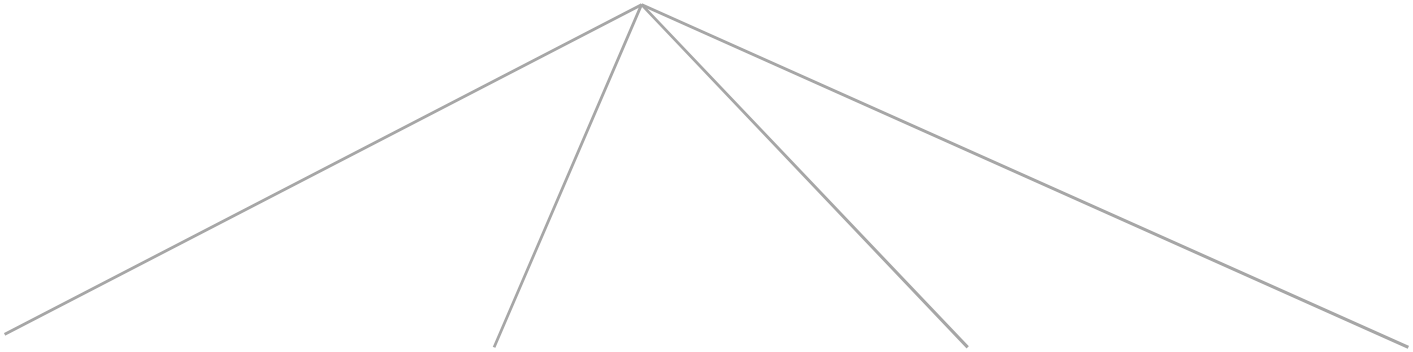
Carboxylic acids for the formulation of watersoluble corrosion inhibitors for coolants



Additive TC 50

Triazine-tri-carboxylic acid
50% active matter
In flakes

AC 128

Alkyl-aryl sulfonamido-carboxylic acid
75% active matter
In flakes

AC 6105

Blend of polycarboxylic acids
98% active matter
powder

AC 16101-M1

Blend of long chain dimer acids.
98% active matter
powder

Additive TC 85

Triazine-tri-carboxylic acid
85% active matter
In flakes

AC 11

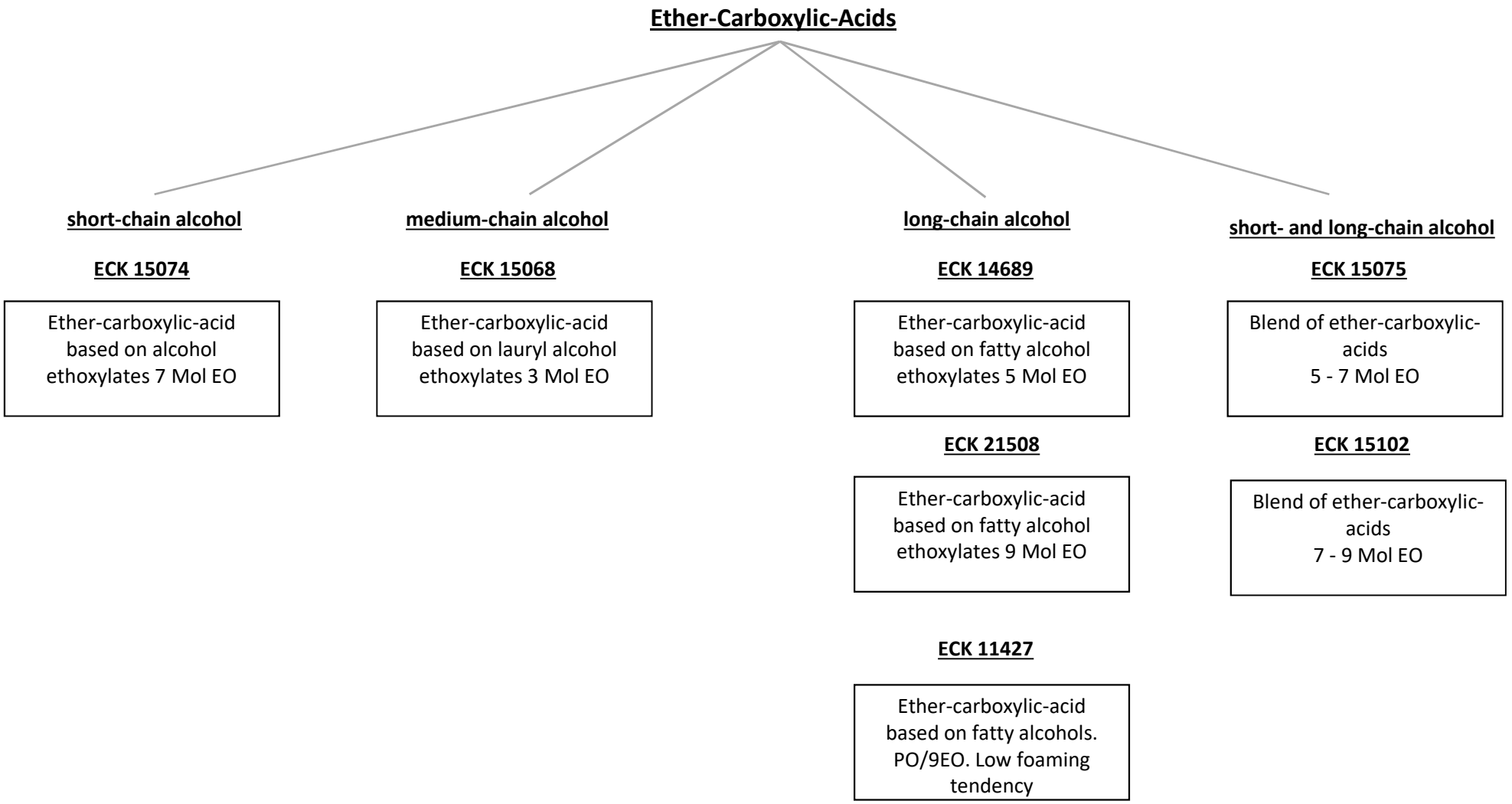
Undecanedioic acid
98% active matter
powder

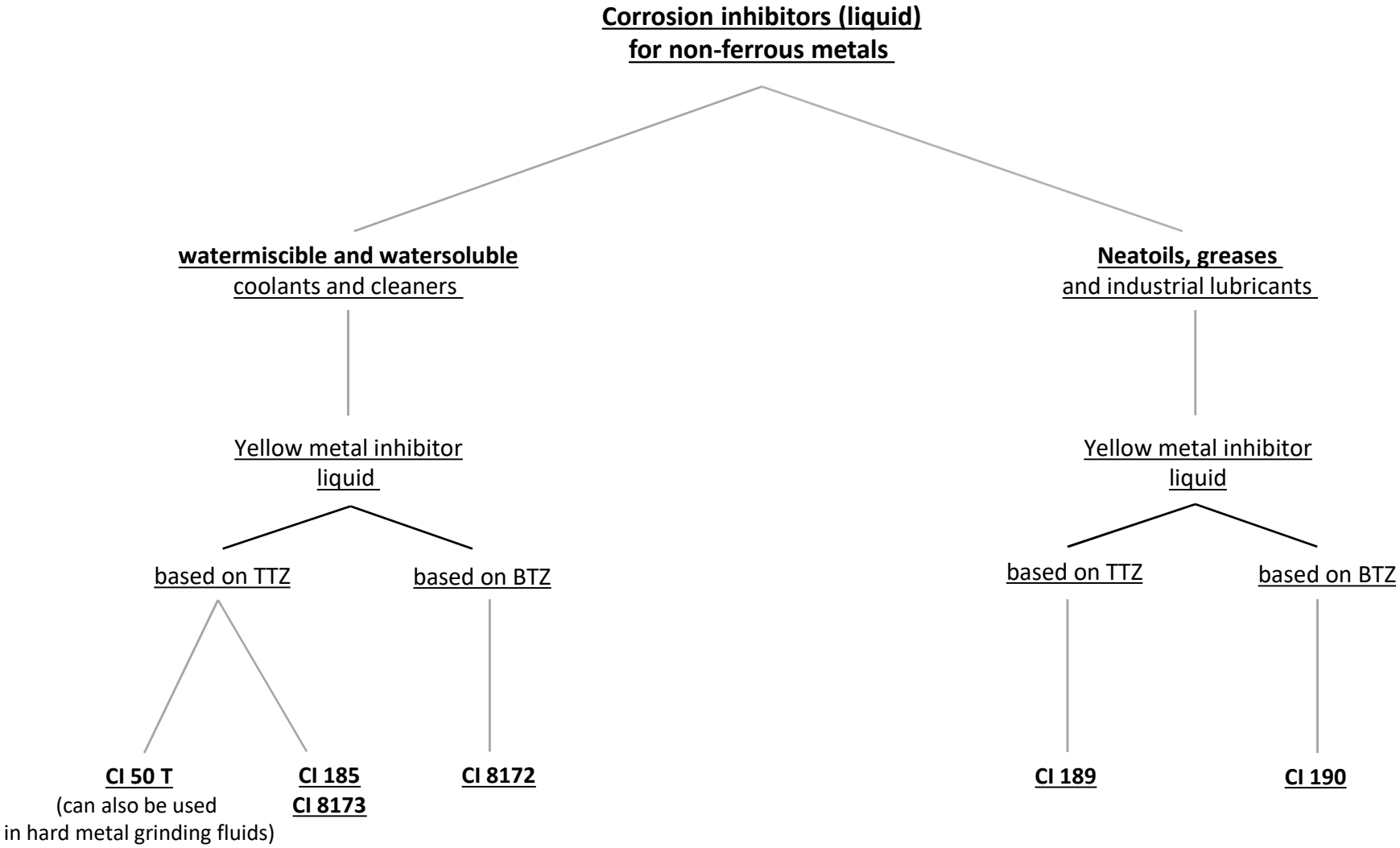
AC 12

Dodecanedioic acid
98% active matter
powder

All corrosion inhibitors are free of nitrites

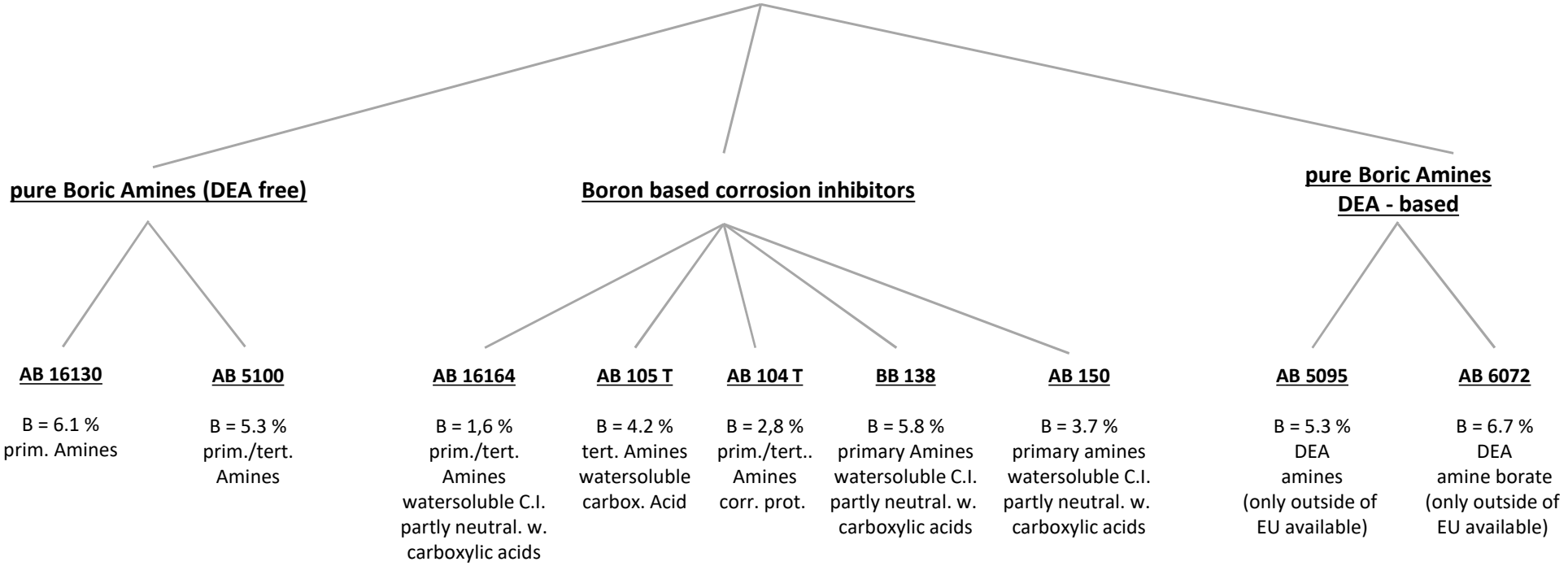
ADDITIV CHEMIE LUERS


Ether-Carboxylic-Acids
short-chain alcohol
ECK 15074
Ether-carboxylic-acid based on alcohol ethoxylates 7 Mol EO
medium-chain alcohol
ECK 15068
Ether-carboxylic-acid based on lauryl alcohol ethoxylates 3 Mol EO
long-chain alcohol
ECK 14689
Ether-carboxylic-acid based on fatty alcohol ethoxylates 5 Mol EO
ECK 21508
Ether-carboxylic-acid based on fatty alcohol ethoxylates 9 Mol EO
ECK 11427
Ether-carboxylic-acid based on fatty alcohols. PO/9EO. Low foaming tendency
short- and long-chain alcohol
ECK 15075
Blend of ether-carboxylic-acids 5 - 7 Mol EO
ECK 15102
Blend of ether-carboxylic-acids 7 - 9 Mol EO

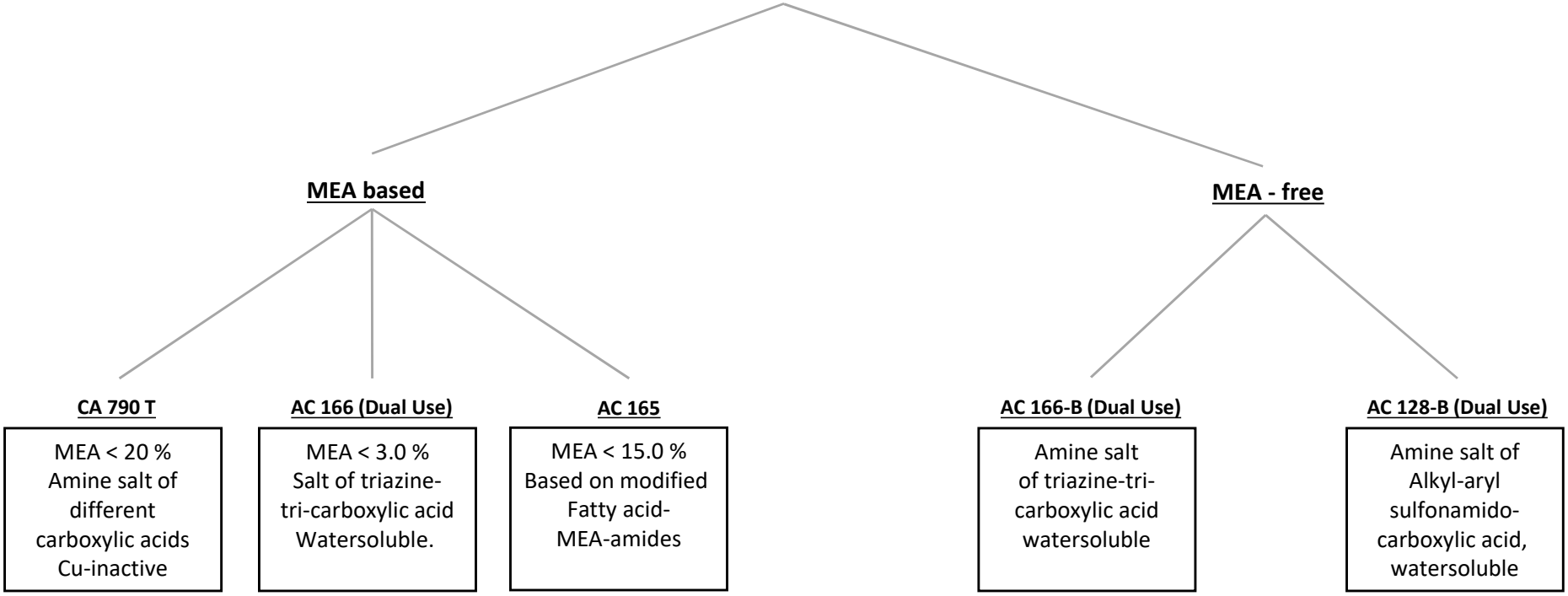

Corrosion inhibitors (liquid)
for non-ferrous metals
watermiscible and watersoluble
coolants and cleaners
Neatoils, greases
and industrial lubricants
Yellow metal inhibitor
liquid
Yellow metal inhibitor
liquid
based on TTZ
based on BTZ
based on TTZ
based on BTZ
CI 50 T
(can also be used
in hard metal grinding fluids)
CI 185
CI 8173
CI 8172
CI 189
CI 190

Corrosion inhibitors - amine and boron based

for watermiscible and watersoluble coolants



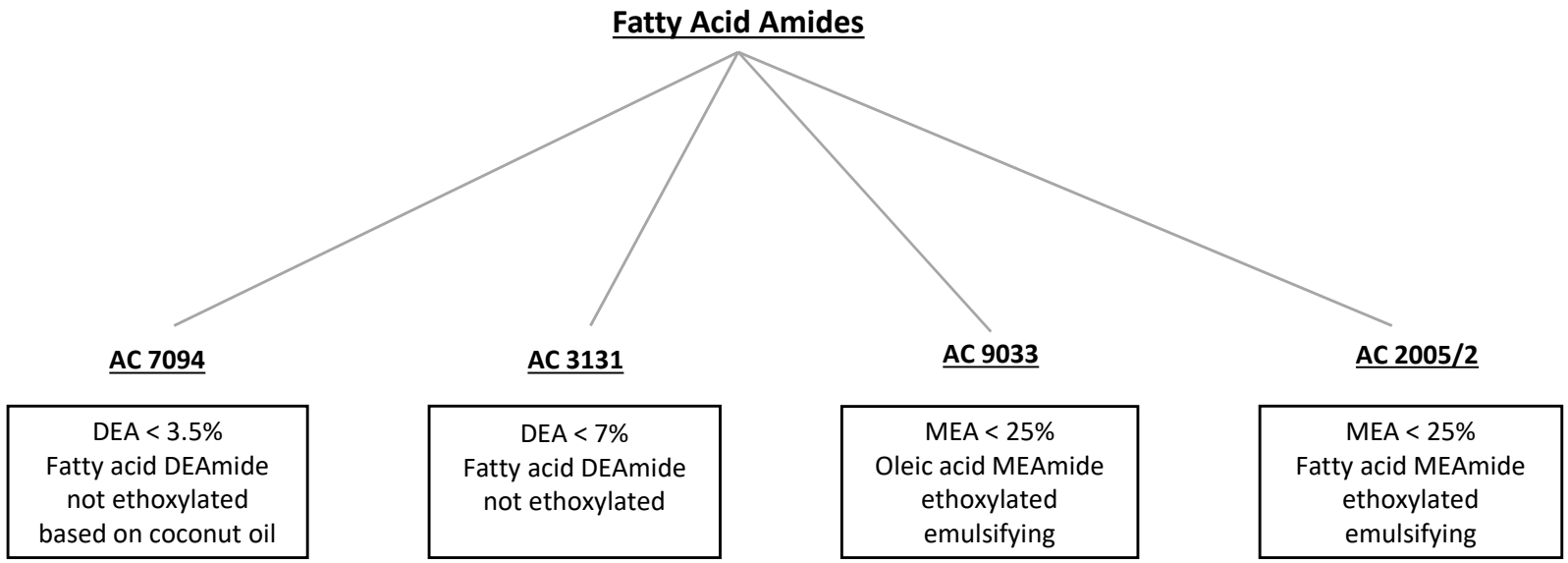
Amine-based, boron-free corrosion inhibitors
for watermiscible and watersoluble coolants



for synthetic, watersoluble and watermiscible metalworking coolants

All products are free of nitrites and secondary amines

ADDITIV CHEMIE LUERS


Fatty Acid Amides
AC 7094
DEA < 3.5%
Fatty acid DEAmide
not ethoxylated
based on coconut oil
AC 3131
DEA < 7%
Fatty acid DEAmide
not ethoxylated
AC 9033
MEA < 25%
Oleic acid MEAmide
ethoxylated
emulsifying
AC 2005/2
MEA < 25%
Fatty acid MEAmide
ethoxylated
emulsifying

Corrosion inhibitors for watersoluble coolants and cleaners based on phosphoric acid esters

PE 740
acidic
P-acid ester
6% Phosphorous

Amine based, partially and fully neutralised

PA 710
MEA
Cu-inactive
TTZ-free
neutralised

PA 715
MIPA
Cu-inactive
neutralised

Amine free, partially neutralised

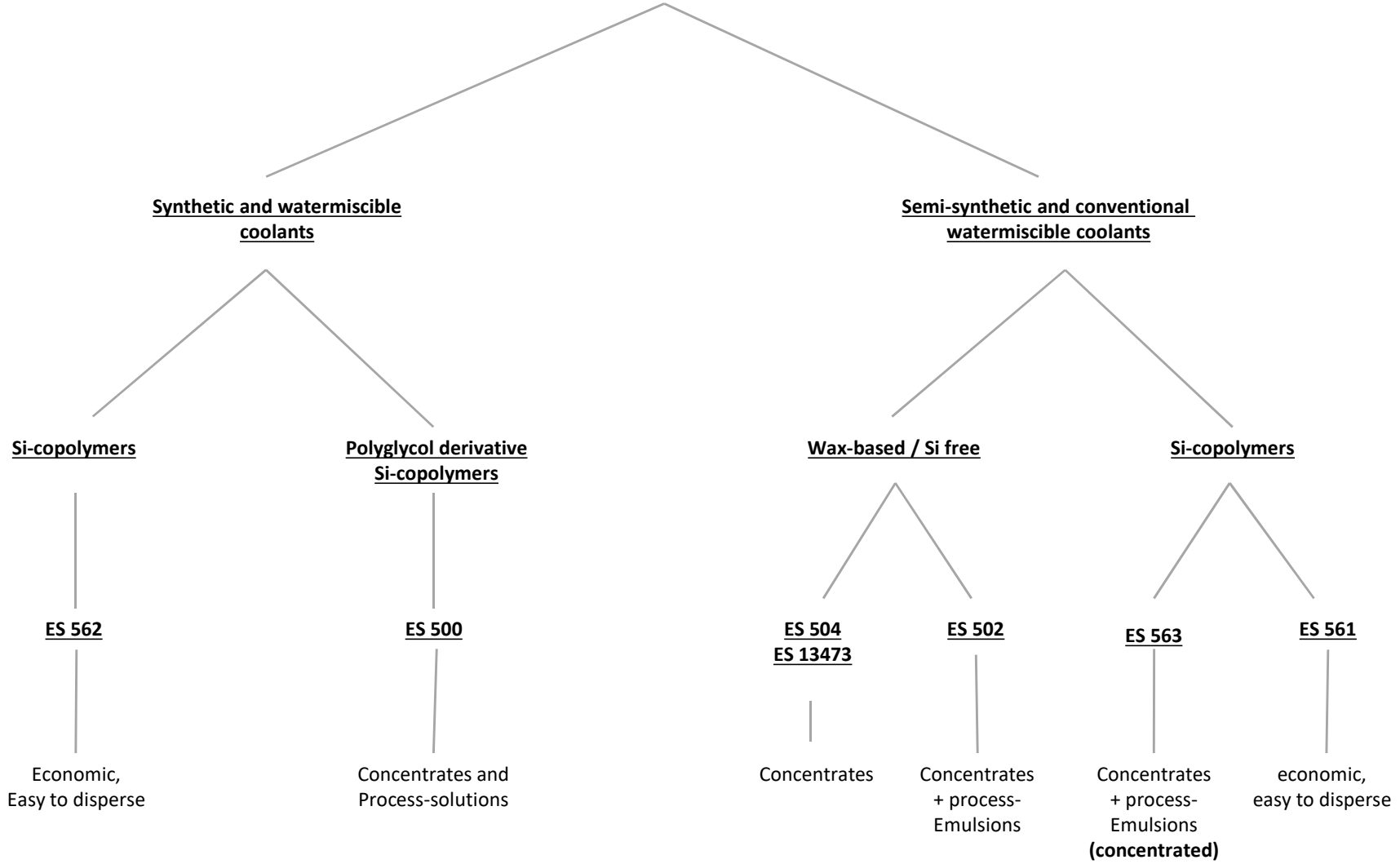
PN 720
NaOH
partially neutralised
pH 5.0

PN 720 P
NaOH
hard water stable
part. neutralised

PN 722
NaOH
partially neutralised
pH 2.6

as amine free products
for the formulation of
watersoluble grinding fluids
no Cobalt leaching

Defoamers for watermiscible and synthetic coolants and cleaners



All defoamers are free of silicone, i.e. free of polydimethylsiloxane

ADDITIV CHEMIE LUERS

Sodium Sulfonates (natural and synthetic)

Synthetic Sodium Sulfonates		NA 420	NA 435	NA 440	SNS 457 N	SNS 467 N	NA 463 N	NA 480 T	SNS 497	SNS 527	NA 490 N	SNS 520	NA 530 N
average Mol. weight		420	420	440	443	445	445	445	506	536	490	530	545
Density 15°C	g/ml	1.02	1.02	1.01	1.03	1.02	1.01	1.02	0.99	0.98	1.00	0.99	1
Active Matter	wt.%	61	61	61	61	61	61	61	61	61	61	61	61
Mineral Oil Content	wt.%	35	35	35	36	35	34.5	34	34	34	34	34	34
Water Content	wt.%	3.5	3.5	3.5	4.0	3.0	3.5	4.0	4.0	3.0	2,0	2,0	2,0
Inorganic Salts	wt.%	0.4	0.4	0.4	0.3	0.4	0.35	0.4	0.35	0.3	0,7	0,7	0,7
											NO CLP labeling		

Natural Sodium Sulfonates		DL 416	DM 466	DH 496	DH 526
average Mol. weight		440	450	490	530
Density 15°C	g/ml	1.02	1.02	1.00	1.01
Active Matter	wt.%	61	61	61	61
Mineral Oil Content	wt.%	35	34	33	33
Water Content	wt.%	4.0	4.0	4.0	4.0
Inorganic Salts	wt.%	0.4	0.4	0.4	0.4

Labeling of sulfonates
(excl. NA 490 N, SNS 520, NA 530 N)

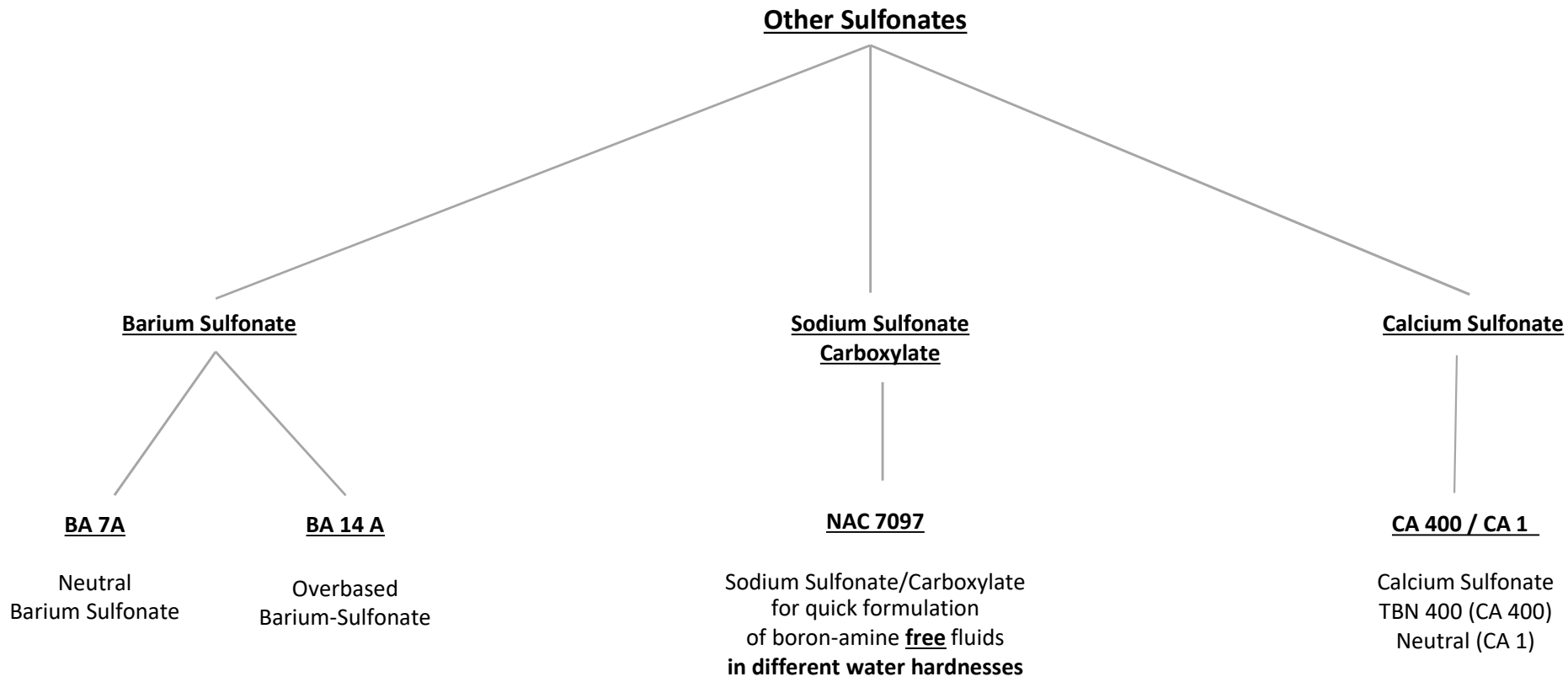
GHS 07
H 319

Mineral oil free Sodium Sulfonat		NA 435 F	NA 450 F	NA 490 F
average Mol. weight		430	435	490
Density 15°C	g/ml	1.03	1.01	0.98
Active Matter	wt.%	62	62	62
Ester Content	wt.%	33	34	33
Water Content	wt.%	3.5	3.0	2.0
Inorganic Salts	wt.%	0.4	0.4	0.2

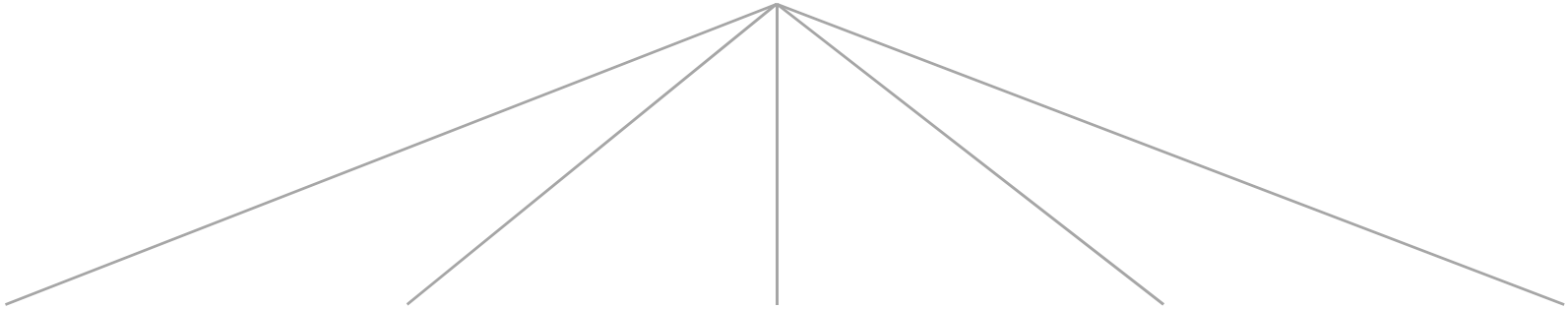
Application:

Metalworking fluids, cleaners, textile oils, corrosion preventatives, drawing compounds, soluble oils, printing inks, paints etc
Emulsification properties improve with lower MW. Demulsification and corrosion protection improve with increasing MW.

ADDITIV CHEMIE LUERS


Other Sulfonates
Barium Sulfonate
Sodium Sulfonate Carboxylate
Calcium Sulfonate
BA 7A
Neutral Barium Sulfonate
BA 14 A
Overbased Barium-Sulfonate
NAC 7097
Sodium Sulfonate/Carboxylate for quick formulation of boron-amine free fluids in different water hardnesses
CA 400 / CA 1
Calcium Sulfonate TBN 400 (CA 400) Neutral (CA 1)

Sulfonate-containing, boron-**free** emulsifier packages for **milky** (conventional) coolants



EM 609

economic emulsifier-package, easy to modify
treatrate 20-22 wt. %
Naphthenic base oils

EM 4098

Excellent corrosion protection
treat rate 20-25 wt. %
hardwater stable
Suitable for HFA-E

EM 3154

High performance milky emulsifier package
many base oils
treat rate ~20 wt.%
excellent corrosion inhibition

EM 3015

Economic milky package for many paraffinic base oils
treat rate 15-20 wt.%

EM 20044

Economic milky package for many paraffinic base oils
treat rate 10-15 wt.%
(contains DEA,
DEA free version on request)

Easy formulation with:

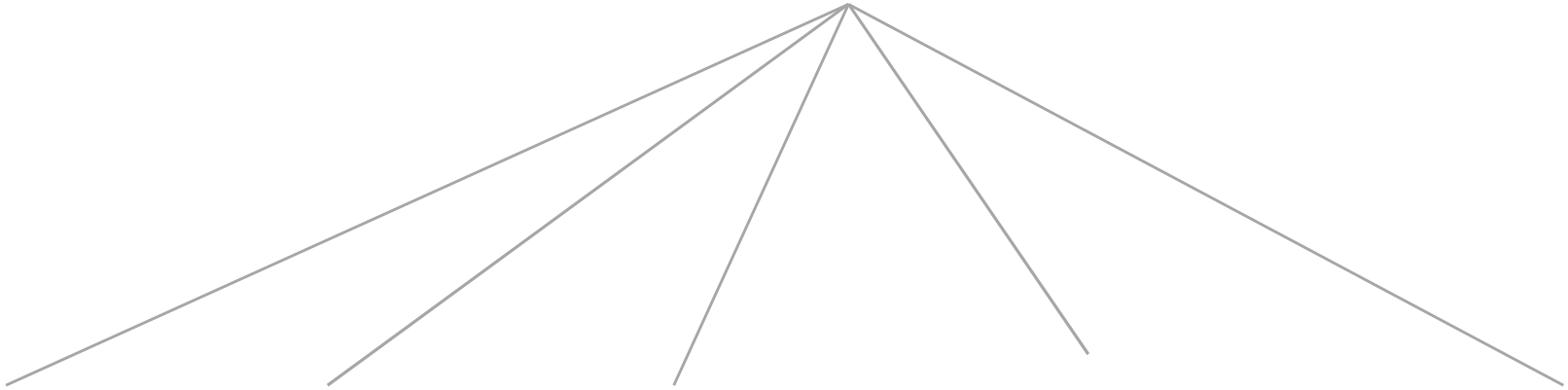
EP / AW support agents
Biocides
Yellow metal inhibition
Defoamers

All products will be adjusted to the respective baseoil

All emulsifier packages are free of nitrites, phenols, secondary amines and formaldehyde-releasers

ADDITIV CHEMIE LUERS

Sulfonate- **based**, boron- **free** emulsifier packages for semi-synthetic coolants



EM 650

for **boron free, amine-free** and **preservation agent-free** watermiscible coolants with Phenoxyethanol / -propanol well suited for low pH values **for machining of steel and aluminium**

- good corrosion-protection
- Low foaming

EM 651

for **boron free, amine-free** and **preservation agent-free** watermiscible coolants with Phenoxyethanol / -propanol well suited for low pH values **for machining of steel and aluminium**

- good corrosion-protection
- Low foaming

EM 8188

for **boron-amine- free**, for aluminium processing, low foaming, hardwater stable concentrate 40-50% min. oil

EM 7244

for **boron-amine- free**, semi-synthetic coolants, cutting of aircraft aluminium, low foaming, Concentrate ~ 28% mineral oil

EM 10245

for **boron-free amine containing mineral oil based** semi-synthetic coolants 30-70% min. oil in concentr.

EM 4111 PE N

for **boron-free amine-free mineral oil-free**, **ester based,** semi-synthetic coolants, with Phenoxypropanol excellent corrosion inhibition

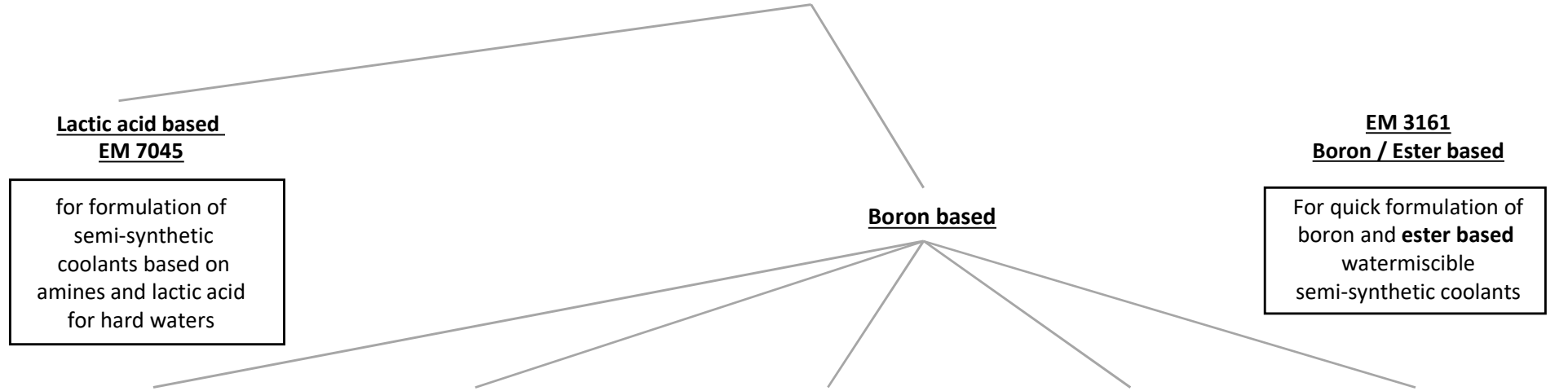
EM 11300

for **boron-free amine containing mineral oil free, ester based** semi-synthetic coolants 30-50% ester in concentrate

All emulsifier packages are free of nitrites, phenols, secondary amines and formaldehyde-releasers

ADDITIV CHEMIE LUERS

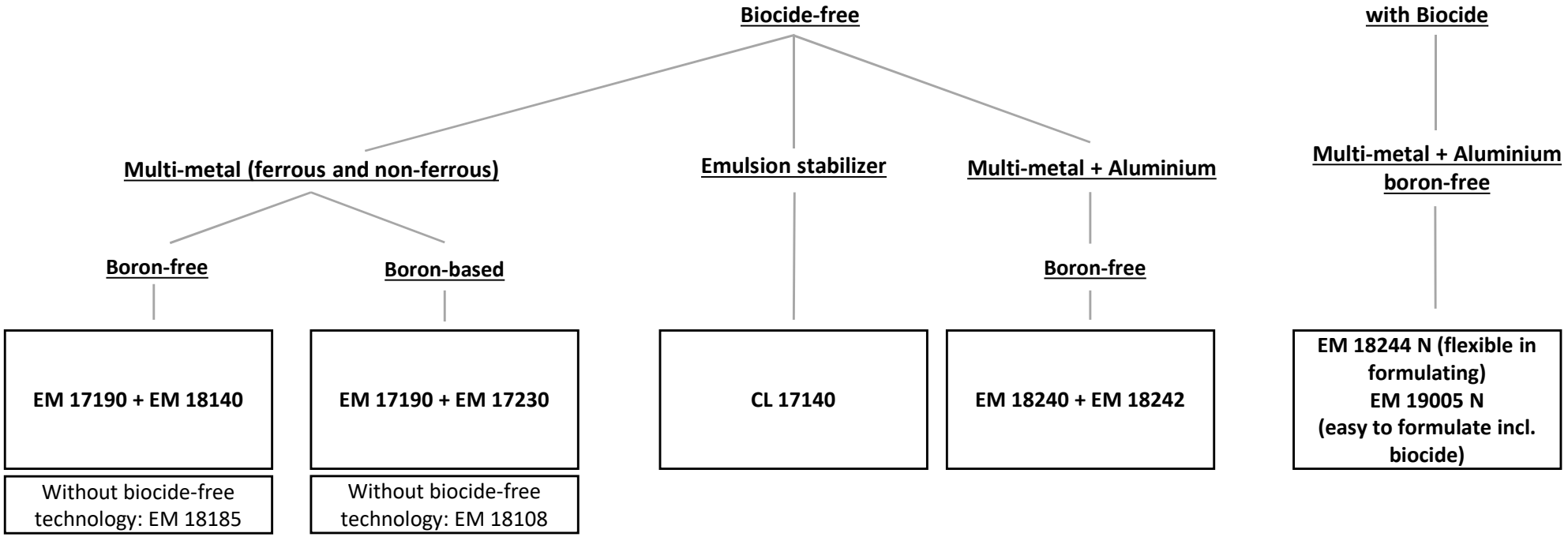
Emulsifier packages for watermiscible and semi-synthetic and milky coolants
Boron or lactic acid based (biostable)



All emulsifier packages are free of nitrites, phenols and formaldehyde-releasers

ADDITIV CHEMIE LUERS

New package technology: Semi-synthetic fluids (high pH-value, multi-metal)

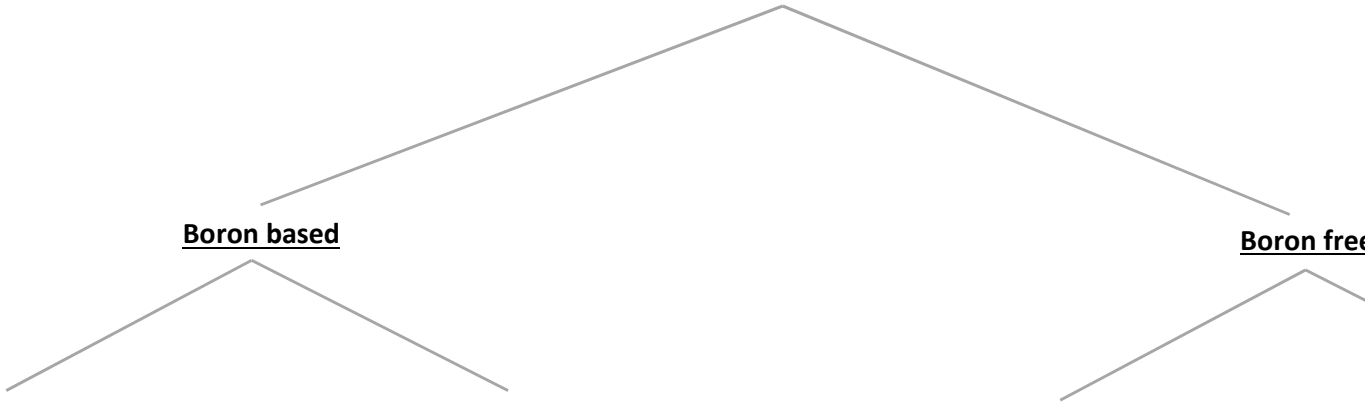


- New biocide-free technology (proven technology)
- Compatible with soft and hard water (0 ppm – 1000 ppm)
- Multi-metal technology and AL technology with a high pH
- Emulsions have a pH-value of ca. 9,4 - 9,6
- Appearance: Translucent up to milky depending on the water hardness
- Low CLP-labelling of finished products
- Low foaming

All emulsifier packages are free of nitrites, phenols, secondary amines and formaldehyde-releasers

ADDITIV CHEMIE LUERS

Packages for synthetic fluids



AB 17102	AB 20043	AC 6140 (Dual Use)	AC 17107
Boron based additive package low foaming incl. biocide for grinding fluids excellent corrosion protection Treat rate 50% in water transparent solutions	Economic Boron based additive package low foaming for grinding fluids Treat rate 30-50% in water transparent solutions	Boron-free corrosion inhibitor low foaming for grinding fluids excellent corrosion protection Treat rate 40-60% in water transparent solutions	Boron-free package low foaming, for grinding fluids excellent corrosion protection, biocide, defoamer incl. Treat rate 50% in water transparent solutions

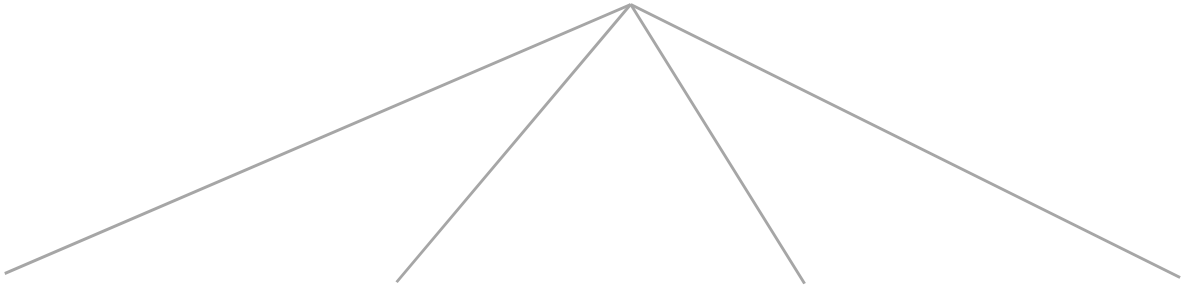
All packages/corrosion inhibitors can be blended with the following additives

- Watersoluble EP additives: **EP 3056 W (P, S)**, **AW 18074 (S)**
- AW additives: **PA 710** (phosphoric acid ester)
- Yellow metal inhibitor: **CI 8172**
- Lubricity improvers like glycols / NEW Polyalkylene gylcol: **AWS 19201** (low foaming, EO/PO)
- Biocides (if not in the package)

All emulsifier packages are free of nitrites, phenols, secondary amines and formaldehyde-releasers

ADDITIV CHEMIE LUERS

Non-ionic emulsifiers



Fatty alcohol PO/EO

AE 300

Long chain fatty alcohol
Propoxy-/ethoxylated
3 Mol

AE 700

Long chain fatty alcohol
Propoxy-/ethoxylated
7 Mol

Fatty alcohol EO

EM 643

Long chain fatty alcohol
ethoxylated
2 Mol EO

EM 643 M

Long chain fatty alcohol
ethoxylated
5 Mol EO

Fatty acid

Estisurf 600

Long chain vegetable
fatty acids, ethoxylated

Castor oil

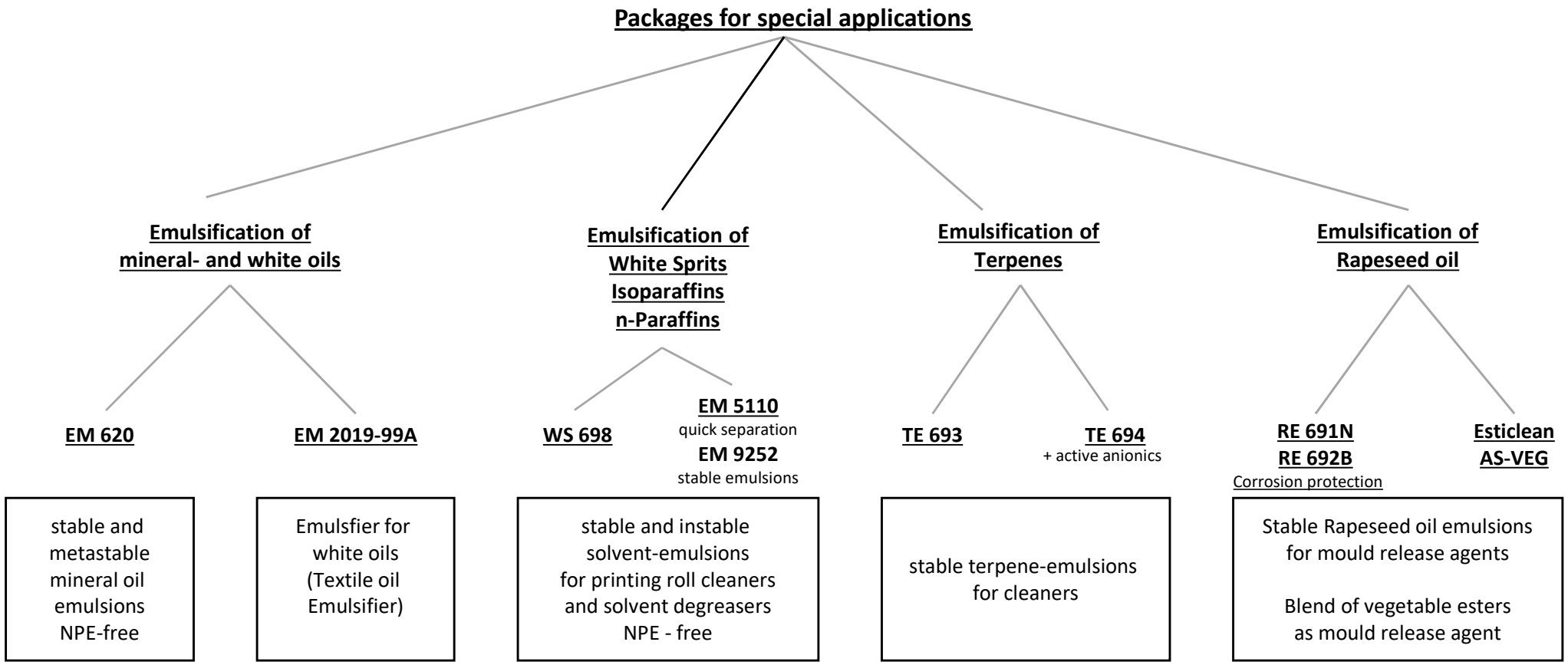
EM 15065

ethoxylated castor oil,
esterified with fatty acid

EM 15111

Ethoxylated castor oil,
esterified with fatty acid

ADDITIV CHEMIE LUERS


Packages for special applications
Emulsification of mineral- and white oils
Emulsification of White Sprits Isoparaffins n-Paraffins
Emulsification of Terpenes
Emulsification of Rapeseed oil
EM 620
EM 2019-99A
WS 698
EM 5110
quick separation
EM 9252
stable emulsions
TE 693
TE 694
+ active anionics
RE 691N
RE 692B
Corrosion protection
Esticlean AS-VEG
stable and metastable mineral oil emulsions NPE-free
Emulsfier for white oils (Textile oil Emulsifier)
stable and instable solvent-emulsions for printing roll cleaners and solvent degreasers NPE - free
stable terpene-emulsions for cleaners
Stable Rapeseed oil emulsions for mould release agents
Blend of vegetable esters as mould release agent

Arkema EP-Additives

Characteristics	TPS 20 Di-Alkyl-Trisulfide	TPS 32 Di-Alkyl-Pentasulfide	TPS 44 Di-Alkyl-Polysulfide
Colour (Gardner)	≤5	≤10	yellow
Appearance	clear, transparent	clear, transparent	clear, transparent
Odour	weak	very weak	weak
Flash point (°C)	>121	>121	>80
Sulfur content (wt.%)	20-23	29-32	42-46
Breakdown temperature (°C)	199 ±2	174 ±4	219 ±3
Copper corrosion	<1b	corrosive	<1b
Vapour pressure 10°C (hPa)	0.03	0.03	0.10
Density (g/cm³)	0.95	1.01	1.01
Molecular weight (g/mol)	434	498	210
Pour point (°C)	-20	-20	10
Melting Point (°C)			3
Boiling Point (°C)			178
Viscosity 20°C (mPa·s)		603	4
Viskosität 40°C (mm²/s)	53	164	
Drum weight (kg)	195	200	200
soluble in	Benzene, Toluene, White Spirit, Mineral Oil	Benzene, Toluene, White Spirit, Mineral Oil	Benzene, Toluene, White Spirit, Mineral Oil
insoluble in	Water, light Alcohols	Water, light Alcohols	Water, light Alcohols

ADDITIV CHEMIE LUERS

ARKEMA EP-Additives

		Base Oil	TPS 20	TPS 32	TPS 44
4 ball extreme pressure test ASTM D 2783	Welding load (kg)	126	315	500	400
	Last non seizure load (kg)	20	100	63	63
	Load Wear Index	15	55	72	64
4 ball wear test IP 239	Wear diameter (mm)	1,33	0,83	1,07	0,85
Reichert test	Wear scar (mm^2)	31	4,0	9,7	

(5% by weight in a ISO VG32 paraffinic base oil)

EP-Additive Packages (1/2)

	EP 7038 N	EP 7041	EP 340 N	EP 9180	AW 14599	EP 6095	EP 362	EP 380 N	EP 3056W	AW 18074
Watermiscible								●	●	●
Non watermiscible	●	●	●	●	●	●	●	●		
Sulfonate			●	●		●				
Sulphur	●	●	●	●	●	●	●	●	●	●
Phosphorous					●		●	●	●	
Zinc							●			
Mineral oil			●	●	●	●				
Ester	●	●	●	●	●	●	●	●	●	●
Yellow metal activity, 3 h, 100°C	4	1b	4	1a	1a	4	1	4	1	1
Application	active sulphur carrier in metal working fluids	inactive sulphur carrier in metal working fluids	universal EP additive package for cutting oils 3-5% light duty 6-9% med. duty 15-18% heavy duty, active sulphur	similar EP 340 yellow metal inactive	antiwear package for the treatment of AL and brass, inactive sulphur	drilling, threading, cutting, milling, active sulphur	universal EP-additive package for partial substitution of chlorinated paraffins, yellow metal inactive	universal EP-additive package for partial substitution of chlorinated paraffins zinc-free low ash giving	watersoluble sulphur-phosphorus AW/EP additive for fully synthetic products	watersoluble Sulphur-AW/EP additive for fully synthetic products

All products are chlorine free

ADDITIV CHEMIE LUERS

EP-Additive Packages (2/2)

	AW 14611	EP 15000	EP 15200	EP 16006	EP 15090	EP 15099	AW 18010
Watermiscible							●
Non watermiscible	●	●	●	●	●	●	
Sulfonate						●	
Sulphur		●	●	●	●	●	
Phosphorous							●
Zinc							
Mineral oil		●	●	●	●	●	
Ester	●			●	●	●	●
Yellow metal activity, 3 h, 100°C	4	1a	1a	4	4	4	4
Application	Antiwear package for drawing and stamping oils for Aluminium	Package for cold forming oils (circular lubrication), inactive sullphur, yellow metal inactive	Economic Package for cold forming oils (circular lubrication), inactive sulphur, yellow metal inactive	Package for the formulation of cold forming oils. Can be used for mass processing of nuts and screws	Package for the formulation of precision cutting, fine blanking and forming oils	Package for for the formulation of grinding and chipping fluids mainly for titanium.	Package for the formulation of aqueous metalworking fluids for the production of profiles from steel and galvanized steel

All products are chlorine free

ADDITIV CHEMIE LUERS

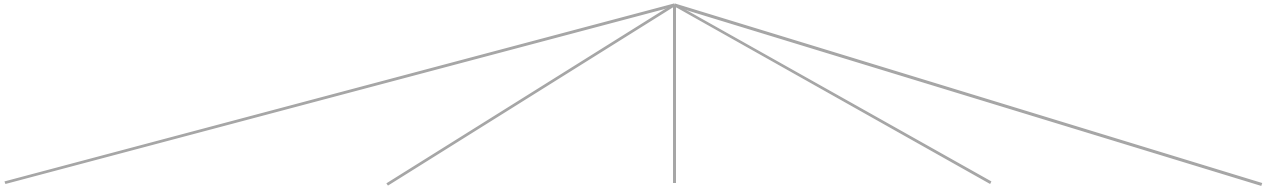
Oil soluble and watermiscible phosphoric acid esters

ethoxylated

PE 755
(5 EO)
P-Ester of an ethoxylated
fatty alcohol

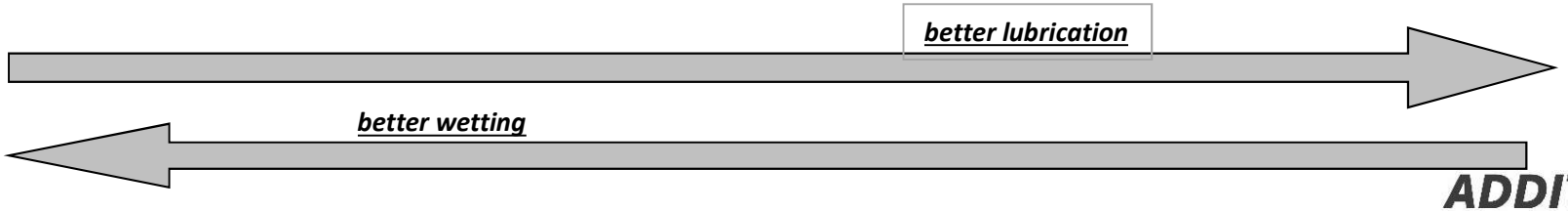
EP/AW-Additive
for oil soluble **and**
watermiscible
metalworking coolants
Acid no.: 144 mgKOH/g
Phosphorous: 4.8 wt.%

Synthetic Monoesters



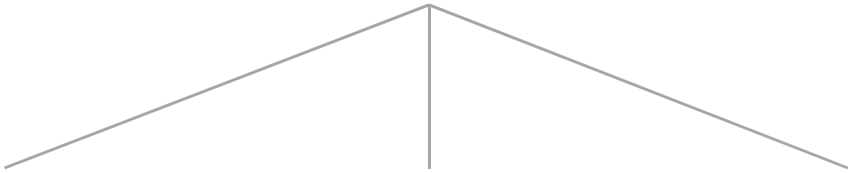
Estilube L 245	Estilube L 210	Estilube L 290	Estilube L 300	Estilube L 360
Synthetic monoester excellent hydrolytic stability high flashpoint excellent wetting properties compatible with rubbers	Fatty acid-Cocoate good hydrolytic-stability good wetting properties	Methylester good wetting low Iodine no.	Fatty acid-Cocoate low evaporation-tendency good oxidation stability compatible with sealants	Synthetic - oleate - stearate - palmitate economic

Visc. 20°C:	3.0	5.0	-	-	-	(mm^2/s)
40°C:	-	2.9	4.0	4.9	8.9	(mm^2/s)
Flashp. °C:	130	138	180	170	191	(°C)
Acid no.:	0.1	0.5	0.5	0.1	0.5	(mg KOH/g)
Iodine. no.:	<1	<1	55	<1	65	($g\ I^2/100g$)



ADDITIV CHEMIE LUERS

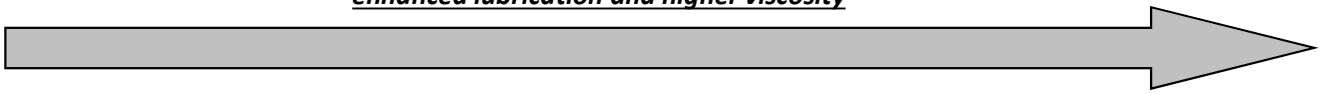
Pentaerythritol Esters



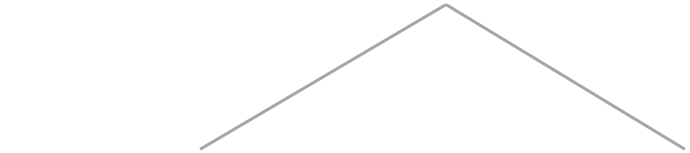
Estilube P688	**Estilube PTO**	**Estilube P 1600N**
natural saturated Fatty acids high flashpoint, low evaporation tendency, oxidation stability	natural fatty acids, good lubrication properties	natural and synthetic fatty acids, high viscosity, excellent lubrication properties

Viscosity :	28.7	66.2	1400	(mm^2/s) 40°C
Flashpoint:	290	290	270	(°C) typ
Acid no.:	0.05	0.4	0.8	(mg KOH/g)
Iodine no.:	2	87	30	(g I^2/100g)

enhanced lubrication and higher viscosity



Watermiscible Esters



TE 2000

Treat rate 5-25wt.%
Acid no.: 6
Iodine no.: 18
Visc. 40°C mm²/s: 293
watersoluble
transparent

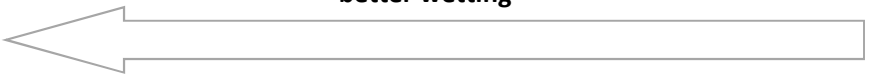
CE 960 NN

Treat rate 5-15wt.%
Acid no.: 0.7
Iodine no.: 40
visc.40°Cmm²/s: 340
watersoluble,
transparent

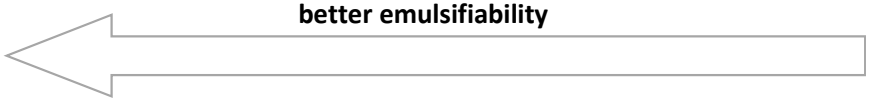
directly watermiscible, when neutralised
addition of water increases viscosity

enhanced lubrication

better wetting

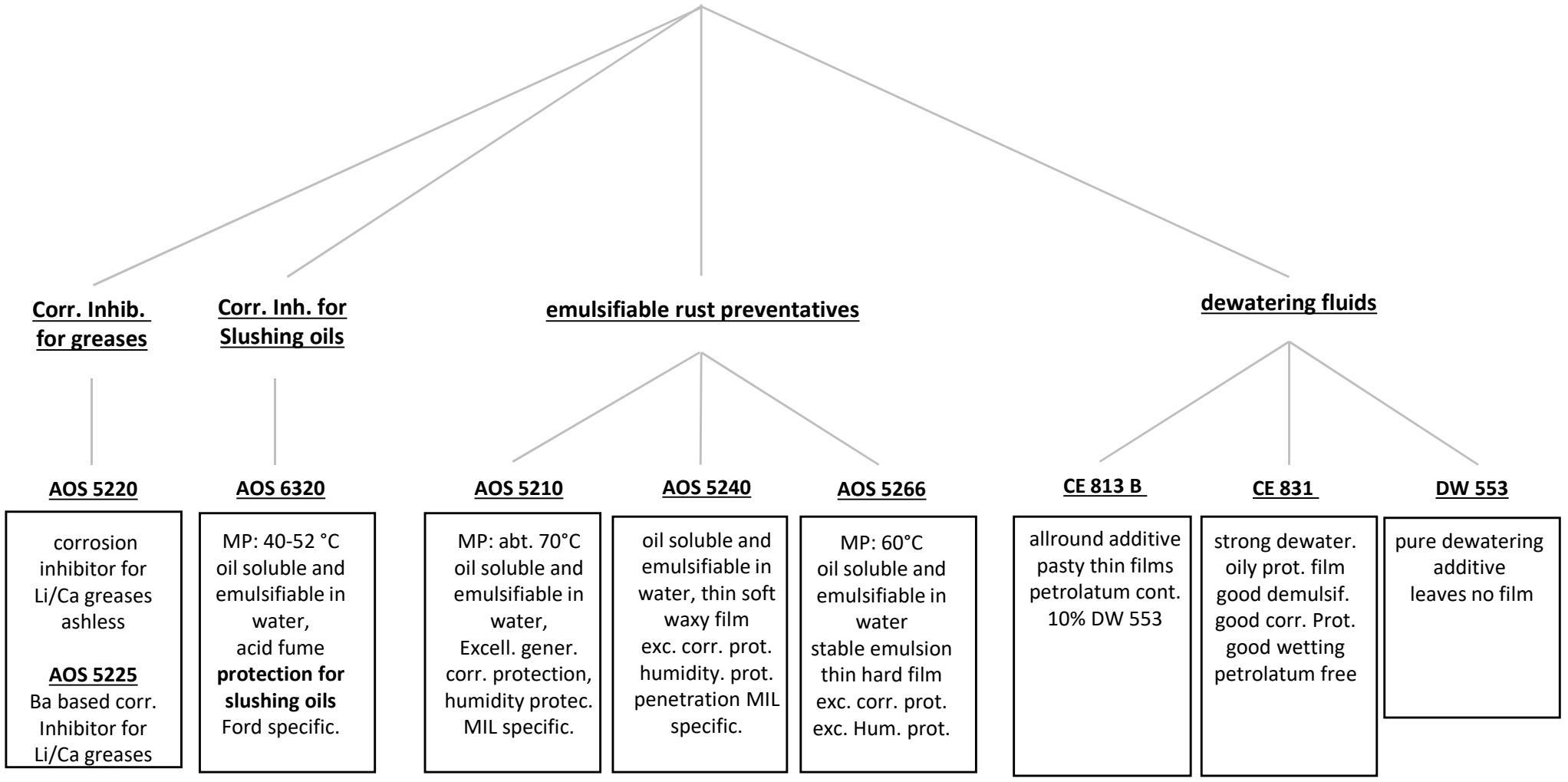


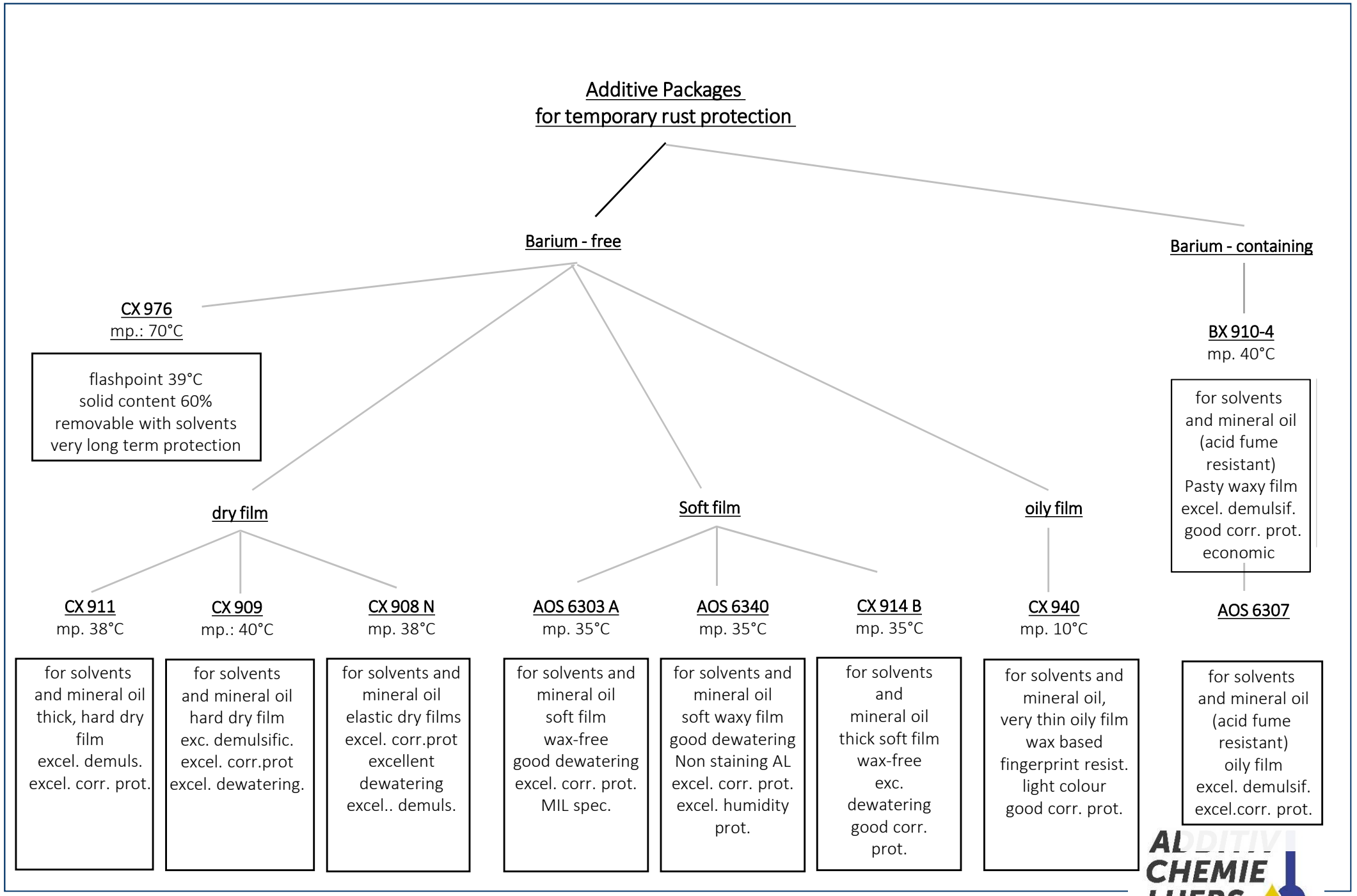
better emulsifiability

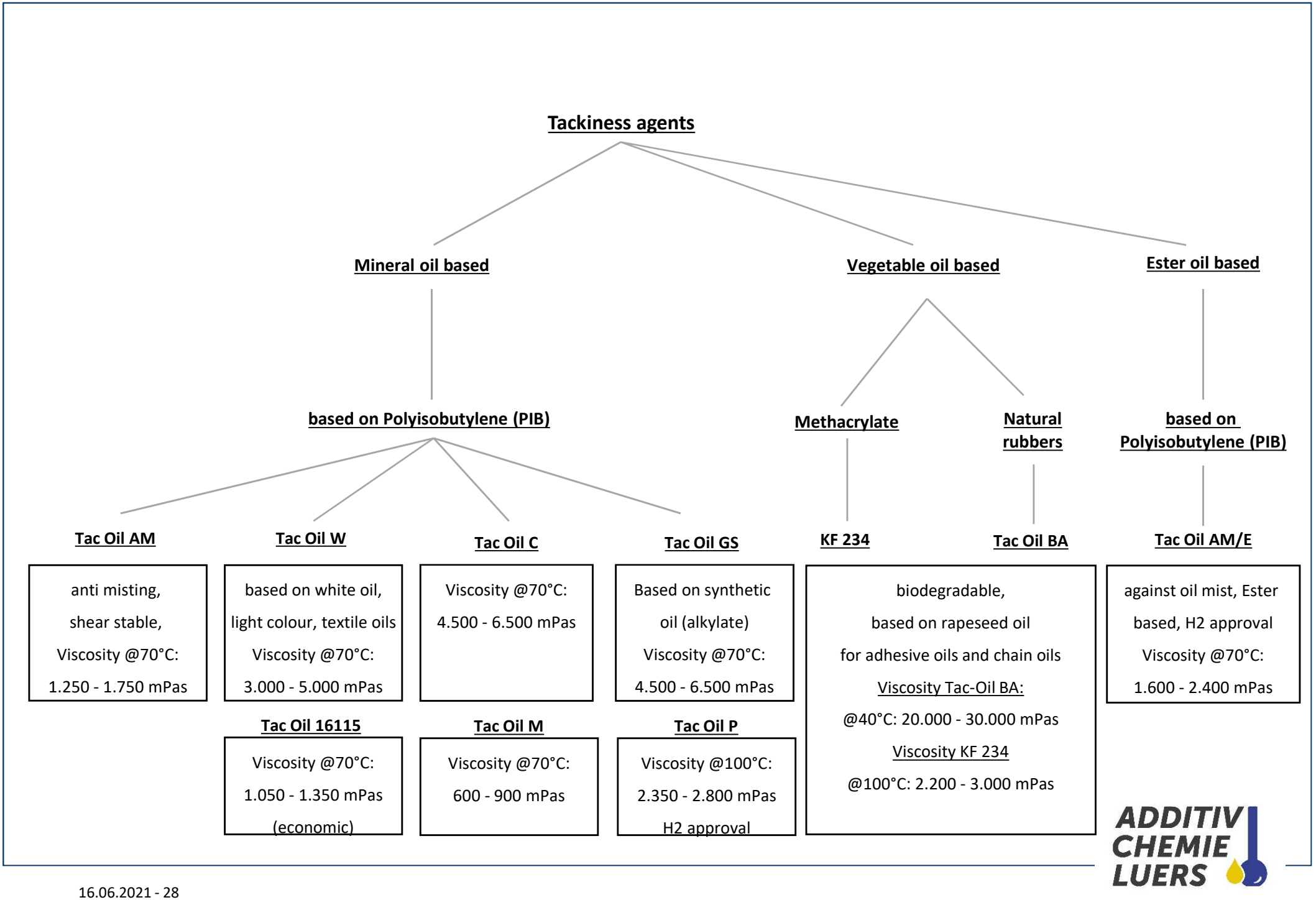


ADDITIV CHEMIE LUERS

Rust preventatives and dewatering additives emulsifiable and oil based




Additive Packages
for temporary rust protection
Barium - free
Barium - containing
CX 976
mp.: 70°C
flashpoint 39°C
solid content 60%
removable with solvents
very long term protection
BX 910-4
mp. 40°C
for solvents
and mineral oil
(acid fume
resistant)
Pasty waxy film
excel. demulsif.
good corr. prot.
economic
AOS 6307
dry film
Soft film
oily film
CX 911
mp. 38°C
CX 909
mp.: 40°C
CX 908 N
mp. 38°C
AOS 6303 A
mp. 35°C
AOS 6340
mp. 35°C
CX 914 B
mp. 35°C
CX 940
mp. 10°C
for solvents
and mineral oil
thick, hard dry
film
excel. demuls.
excel. corr. prot.
for solvents
and mineral oil
hard dry film
exc. demulsific.
excel. corr.prot
excel. dewatering.
for solvents and
mineral oil
elastic dry films
excel. corr.prot
excellent
dewatering
excel.. demuls.
for solvents and
mineral oil
soft film
wax-free
good dewatering
excel. corr. prot.
MIL spec.
for solvents and
mineral oil
soft waxy film
good dewatering
Non staining AL
excel. corr. prot.
excel. humidity
prot.
for solvents
and
mineral oil
thick soft film
wax-free
exc.
dewatering
good corr.
prot.
for solvents and
mineral oil,
very thin oily film
wax based
fingerprint resist.
light colour
good corr. prot.
for solvents
and mineral oil
(acid fume
resistant)
oily film
excel. demulsif.
excel.corr. prot.


Tackiness agents
Mineral oil based
Vegetable oil based
Ester oil based
based on Polyisobutylene (PIB)
Methacrylate
Natural rubbers
based on Polyisobutylene (PIB)
Tac Oil AM
Tac Oil W
Tac Oil C
Tac Oil GS
KF 234
Tac Oil BA
Tac Oil AM/E
anti misting, shear stable, Viscosity @70°C: 1.250 - 1.750 mPas
based on white oil, light colour, textile oils Viscosity @70°C: 3.000 - 5.000 mPas
Viscosity @70°C: 4.500 - 6.500 mPas
Based on synthetic oil (alkylate) Viscosity @70°C: 4.500 - 6.500 mPas
biodegradable, based on rapeseed oil for adhesive oils and chain oils Viscosity Tac-Oil BA: @40°C: 20.000 - 30.000 mPas Viscosity KF 234 @100°C: 2.200 - 3.000 mPas
against oil mist, Ester based, H2 approval Viscosity @70°C: 1.600 - 2.400 mPas
Tac Oil 16115
Viscosity @70°C: 1.050 - 1.350 mPas (economic)
Tac Oil M
Viscosity @70°C: 600 - 900 mPas
Tac Oil P
Viscosity @100°C: 2.350 - 2.800 mPas H2 approval