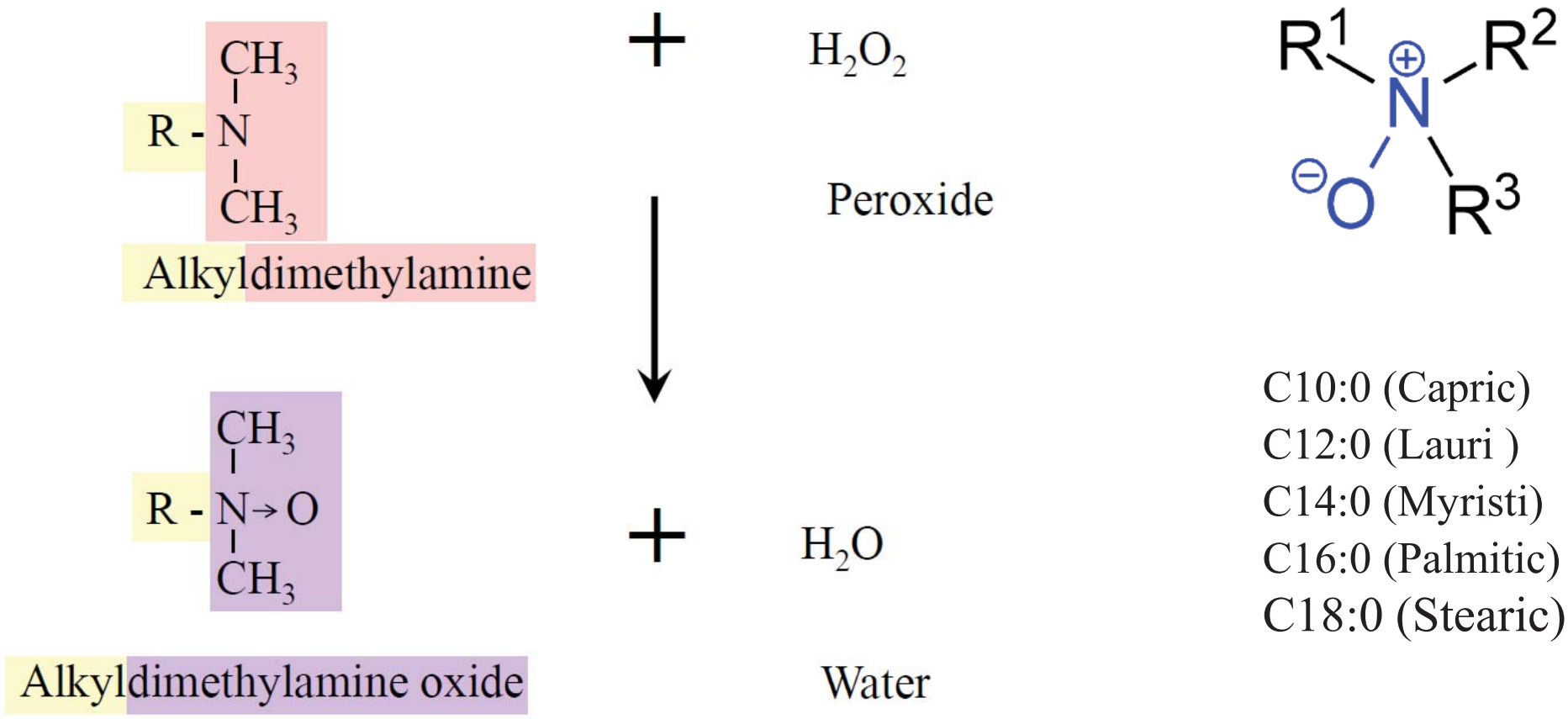
AMINOXIDE DERIVATIVES

WHAT'S AMINEOXIDE ?

Chemical compounds obtained by oxidation of amines like lauryl, myristyl, stearyl and oleyl amines with hydrogen peroxide are called aminoxide.



C10:0 (Capric)
C12:0 (Lauri)
C14:0 (Myristi)
C16:0 (Palmitic)
C18:0 (Stearic)

PROPERTIES OF AMINOXIDE

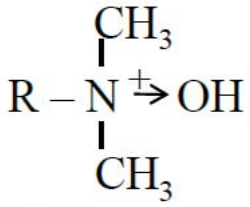
- Stability in strong Alkaline & Acidic Conditions
- Hydrotropic properties
- Wetting properties
- Foam performance in DI & Hard Water
- Viscosity Building properties
  - in SLES system
  - in Bleach system
- Good detergency performances
- Compatible with different surfactants (Anionics, Cationics, Nonionics..)

APPLICATION OF AMINOXIDE

- Industrial & Institutional Cleaning
- Hard-surface cleaners
- Bleach products
- Light & heavy Duty Liquid Detergents
    - Hypochlorite-containing cleaning products
- Carwash
- Personal care products

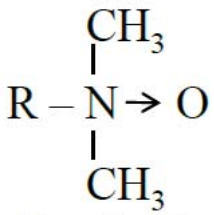
pH RANGES: STRUCTURE-PROPERTY

< pH 7



Cationic

> pH 7



Nonionic

$R = C_8\text{-}C_{18}$

- **Amine oxides are ampholytes**
- **They exist in only 2 forms as a function of pH**
- **Very good hard water tolerancy**
- **Stability in either alkaline or acid solution**

TEQAMINE RANGE by KALE KİMYA

TEQAMINE LOE

- Laurylamine oxide

TEQAMINE CPO

- Cocamidopropylamine oxide

TEQAMINE M

- Myristylamine oxide

TEQAMINE HVO

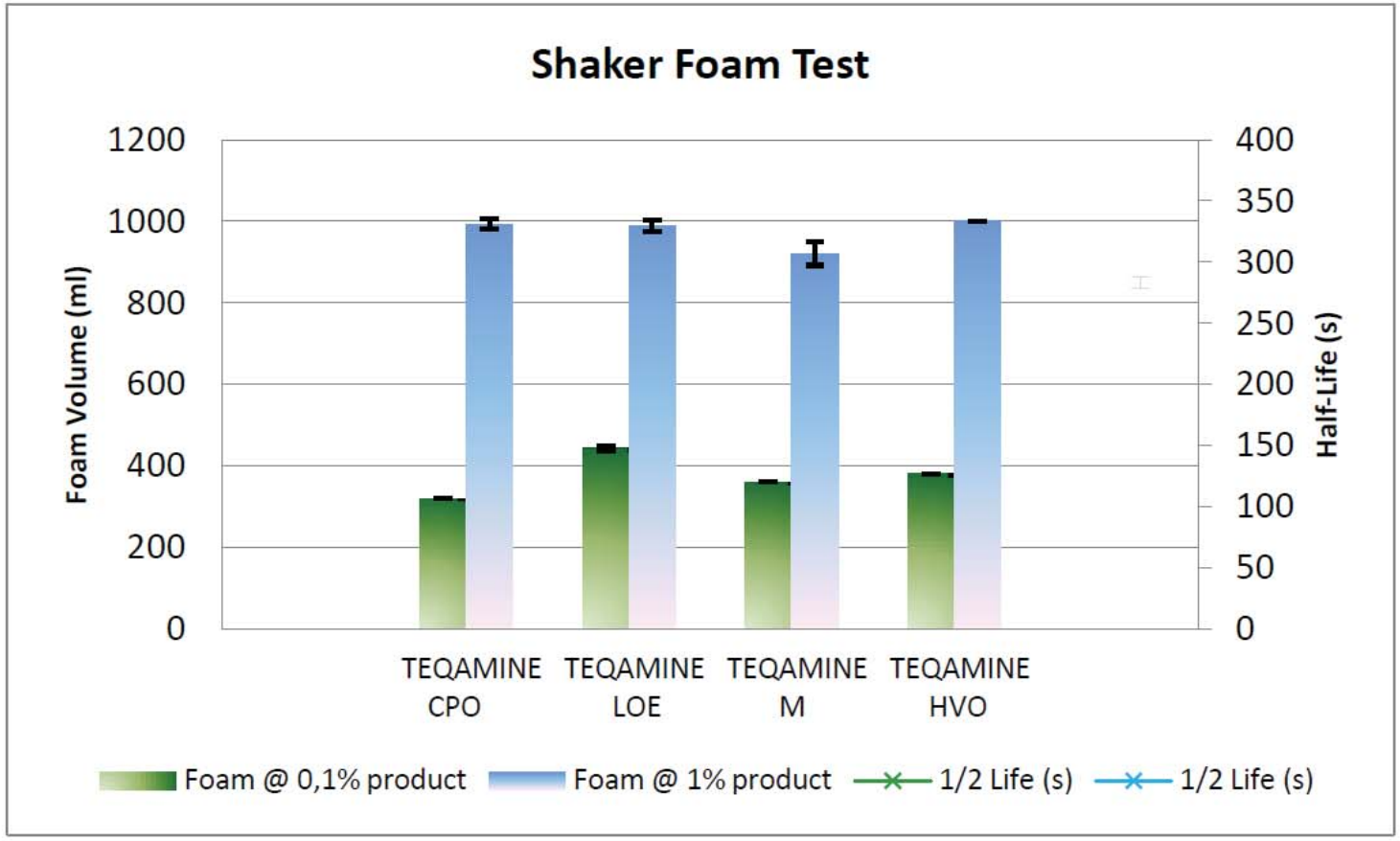
- C12-18 Alkyl dimethyl amine oxide

TEQAMINE PORTFOLIO

PRODUCT	TEQAMINE LOE	TEQAMINE M	TEQAMINE HVO	TEQAMINE CPO
Average chain length	**C12-C14**	**pure C14**	**C12-C18**	**C12-C16**
INCI NAME	Lauramine Oxide	Myristamine Oxide	C12-18 Alkylamine Oxide	Cocamidopropyl amine Oxide
Activity (%)	29-31%	24-26%	29-31%	31-34%
Appearence (@ 25°C)	Clear Liquid	Clear Liquid	Clear Liquid	Clear Liquid
Properties	• Viscosity Builder • Hydrotrope • Foam Booster • Greaser Remover	• Viscosity Builder • Greaser Remover	• Viscosity Builder • Foam Stabiliser • Stable with Hypochloride	• Viscosity Builder • Foam Stabiliser

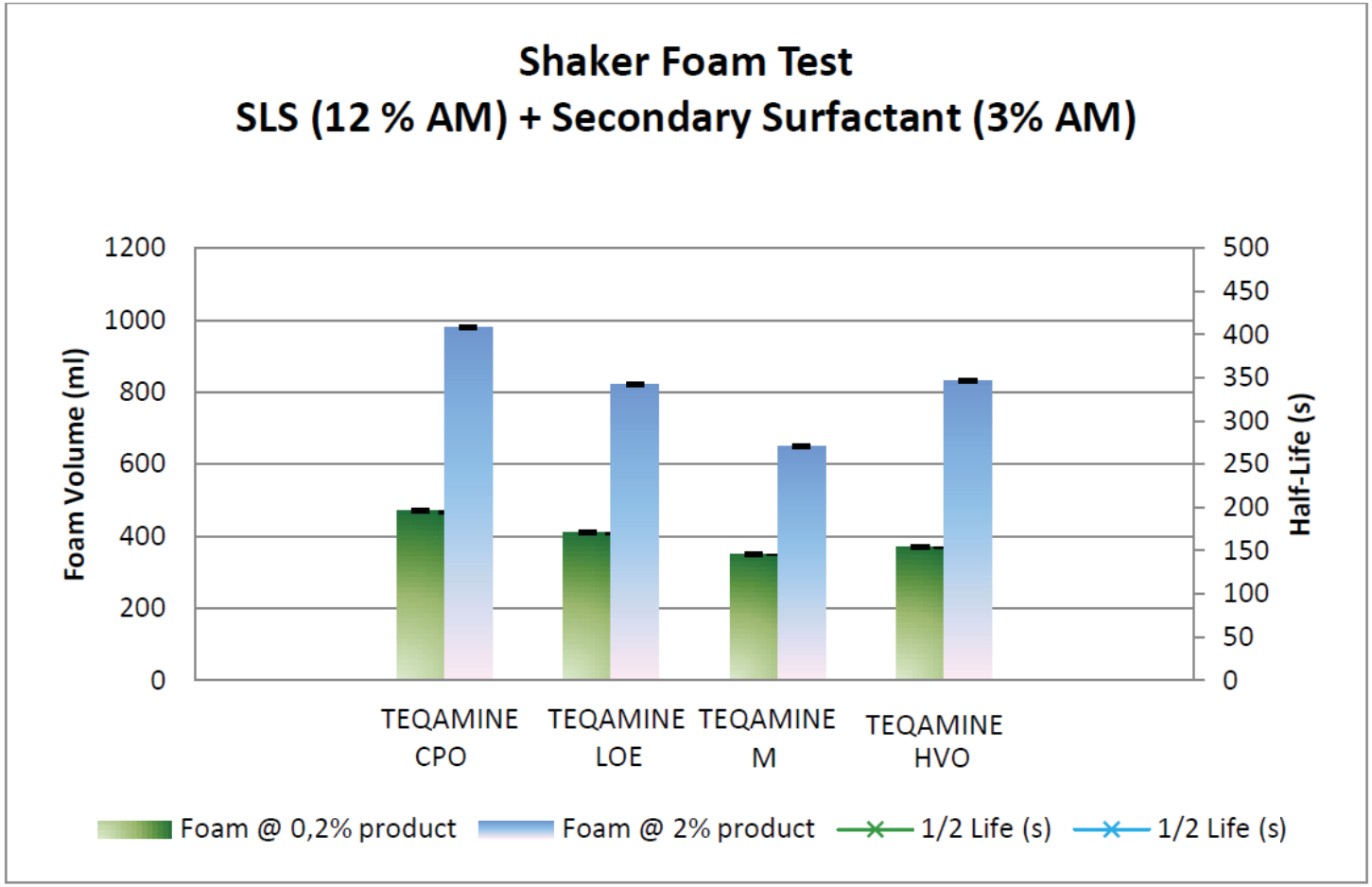
TEQAMINE RANGE FOAMING PERFORMANCE

Foaming Performance **as is**

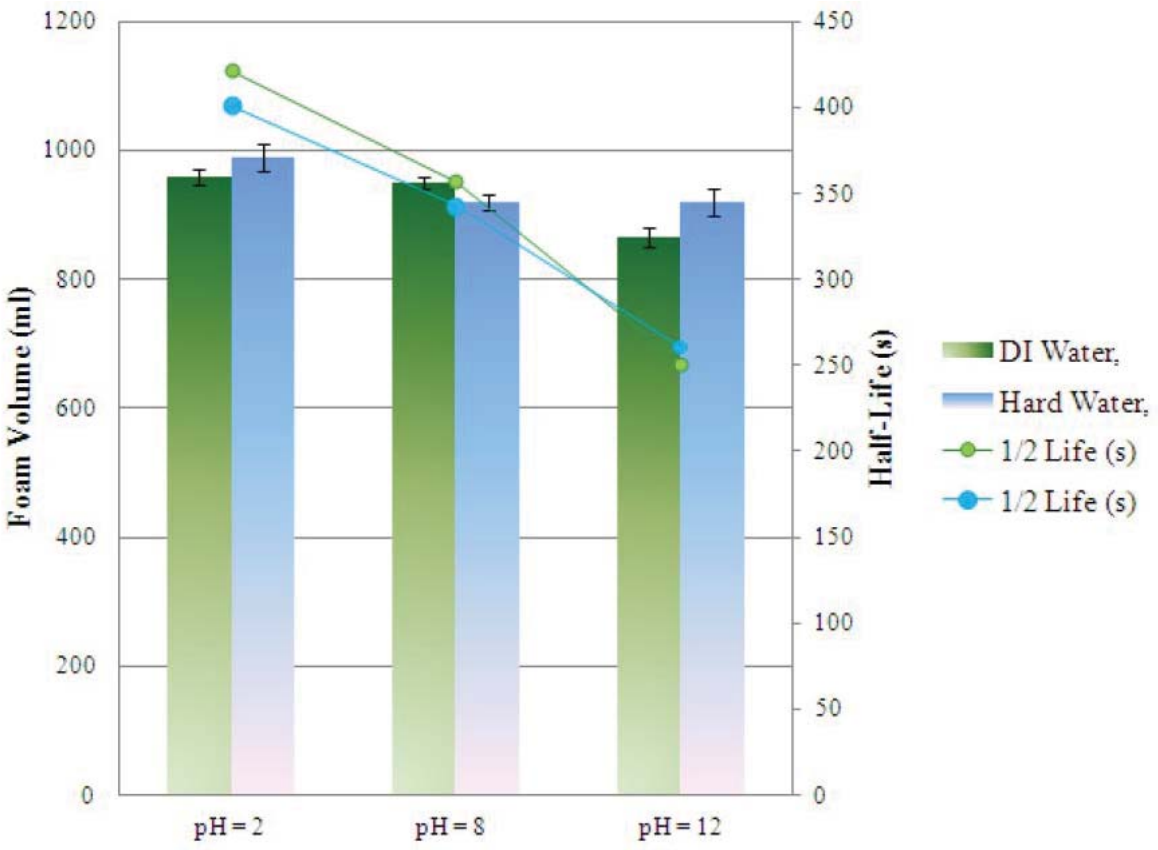


TEQAMINE RANGE FOAMING PERFORMANCE

Foaming Performance **in a formulation**

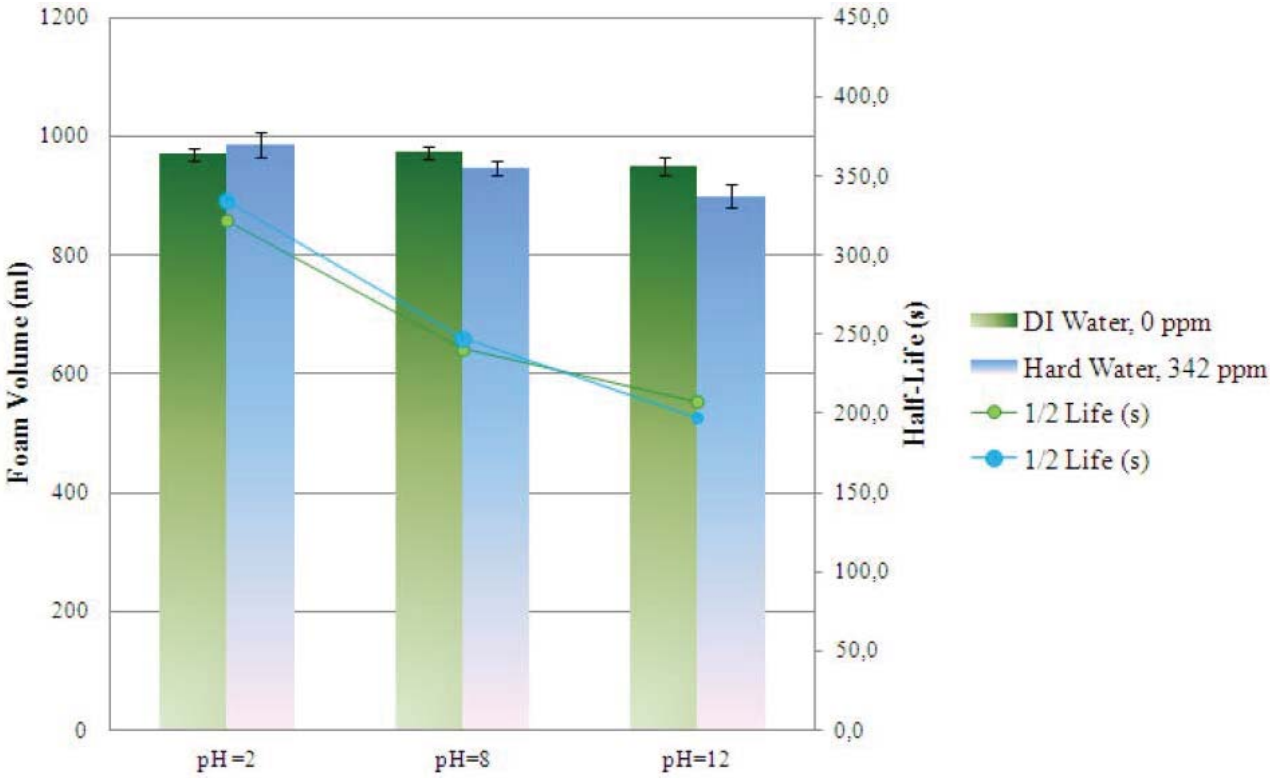


FOAMIN PERFORMANCE– TEQAMINE LOE



- **The flash foam and its stability not be affected despite the hard water.**
- **The flash foam is not affected at pH changes**
- **Very good foam stabilization is provided in an acidic media**

FOAMIN PERFORMANCE– TEQAMINE LOE



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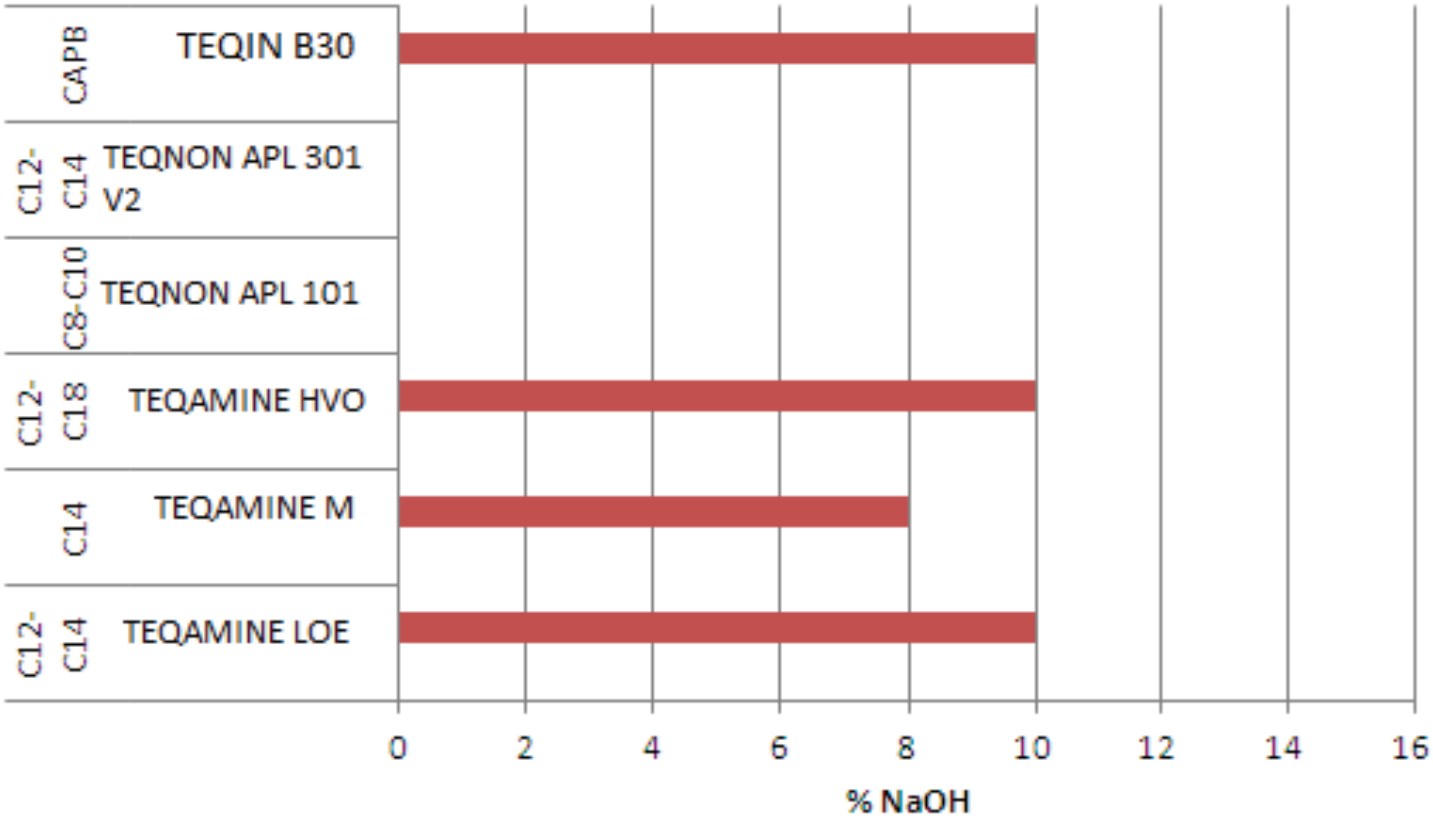
PROPERTIES OF AMINOXIDES

Stability in Alkali media

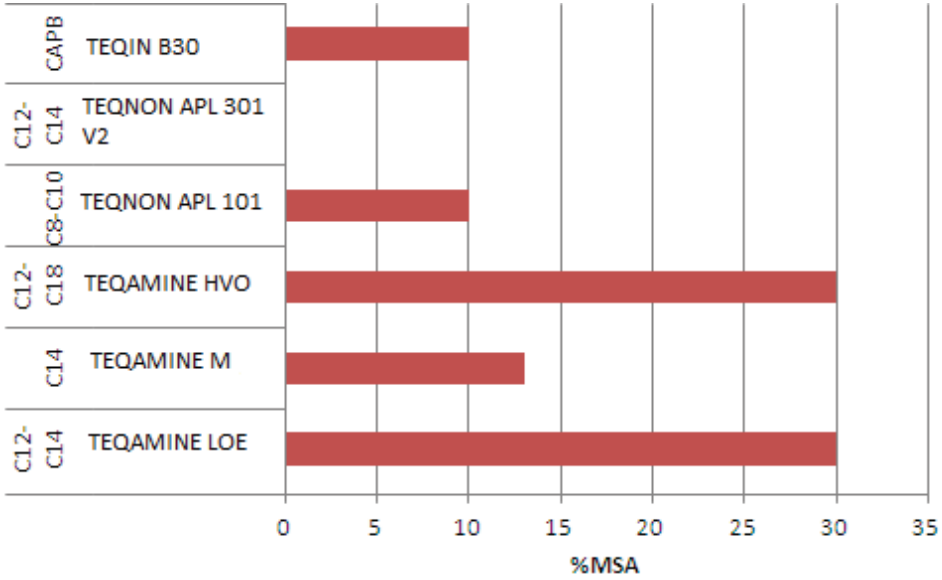
40^0C 1 month Stability

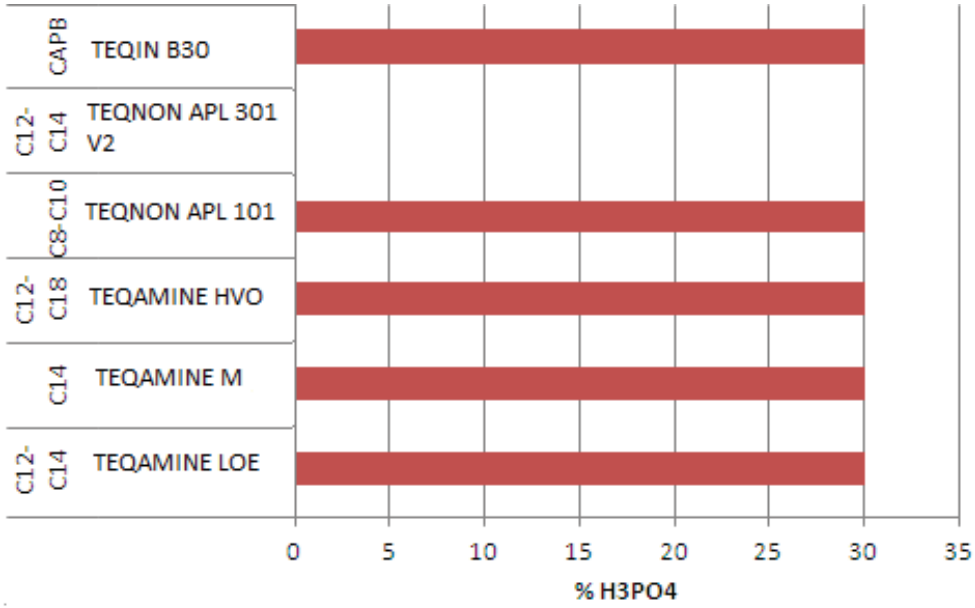


The shorter carbon chain length, the better stability in strong Alkali conditions

PROPERTIES OF AMINOXIDES

Stability in Acidic media





MSA=Methane sulfonic acid

H_3PO_4=Phosphoric acid

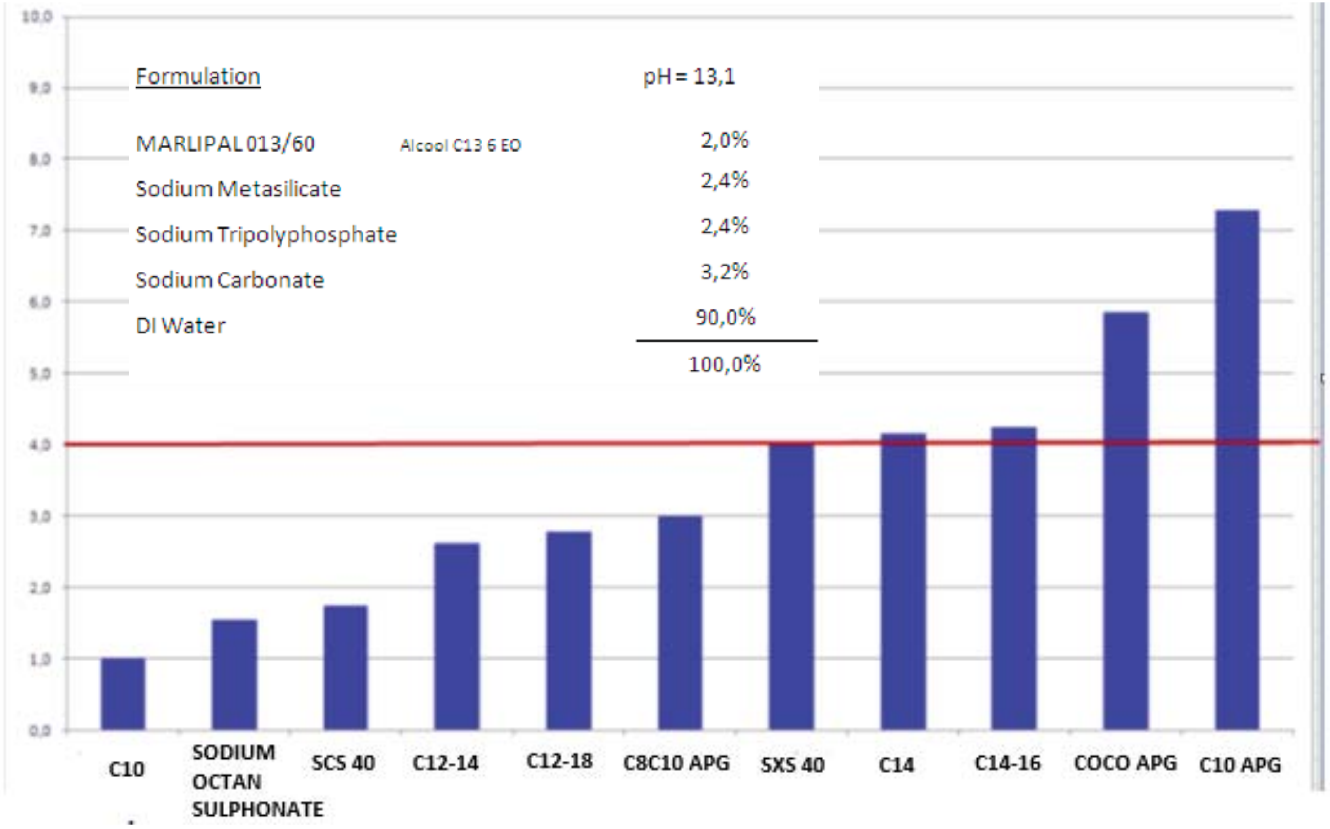
Most aminoxides are stable in strong acidic conditions.

PROPERTIES OF AMINOXIDES

Hydrotropic properties of Aminoxides

The gr value of the active was added in 100 ml formula until it is transparent at 25^0C.

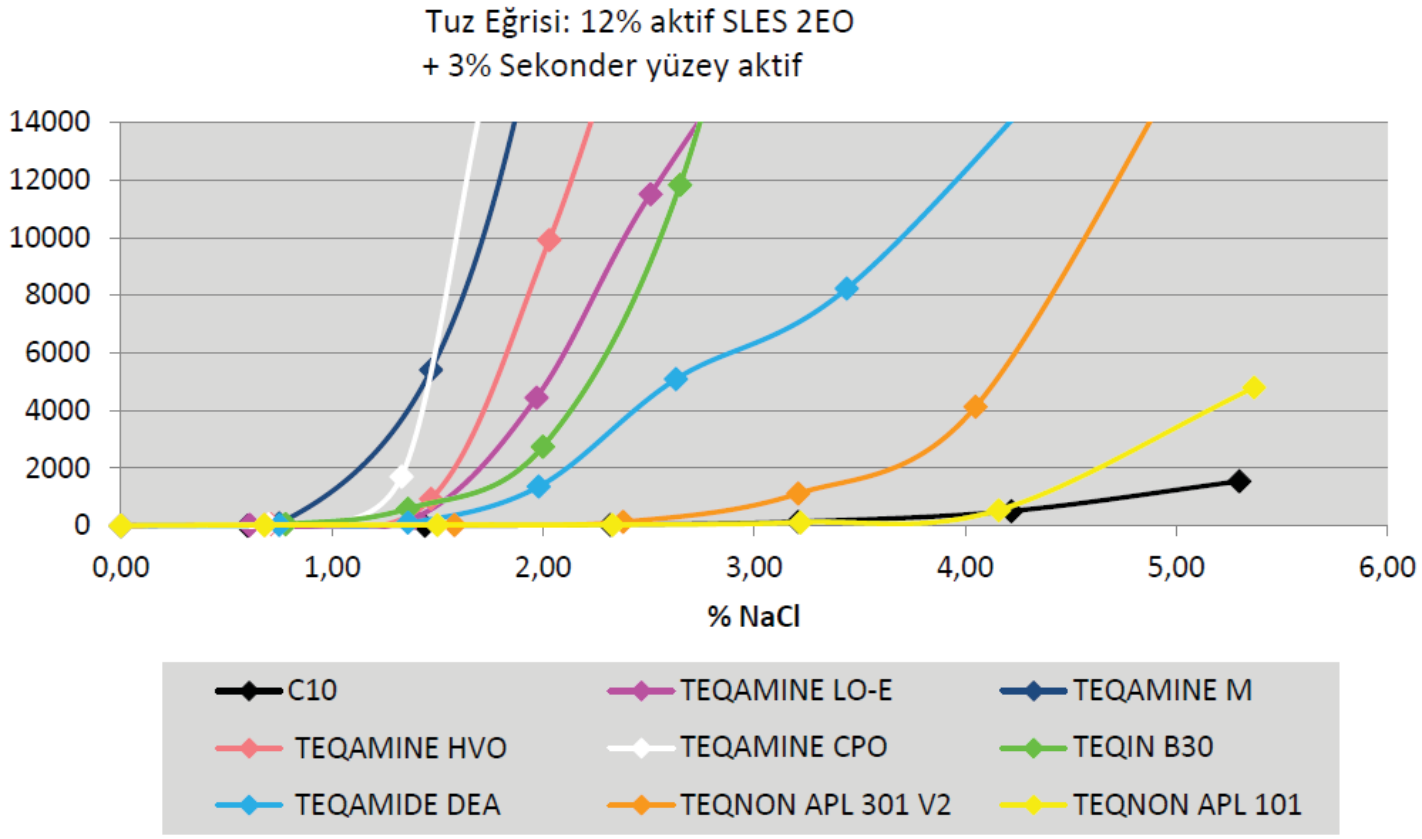
The lowest the best



TEQAMINE LOE (C12-14) and TEQAMIN HVO (C12-18) are better hydrotropes than SXS and APG.

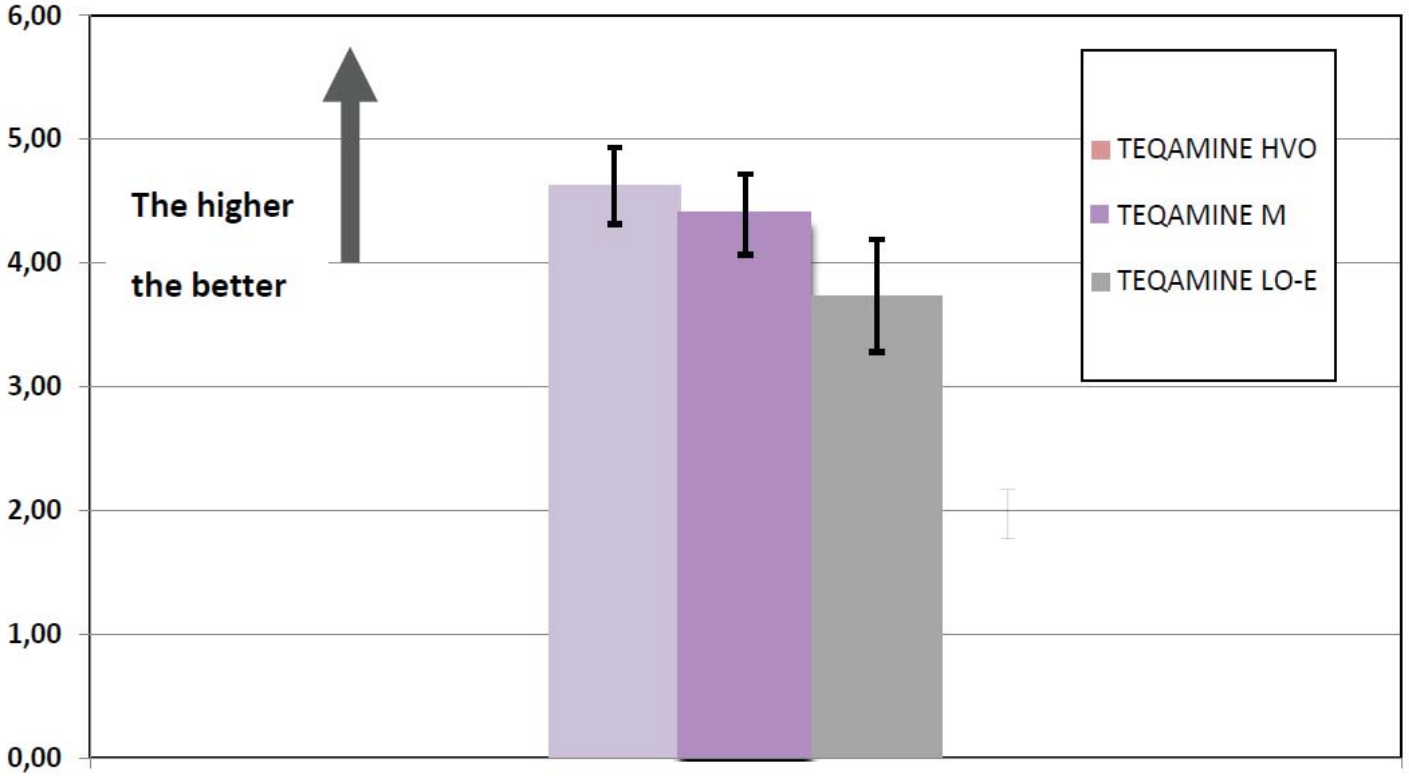
SALT-VISCOSITY DIAGRAM

Salt curve: 12% active SLES 2EO + 3% active secondary surfactant



C14 and C14-16 shine out as the ability to give viscosity with less salt.

OIL / DIRT REMOVER PERFORMANCE



SLES/AO Formulation 3.3/1-Total Active 9%

In oil removal performance diagram as the value increases the product performance increases

What are the parameters to change in order to increase viscosity?

- Surfactants
  - Type
  - Level
  - Ratio between surfactants
  - Presence of co-active (e.g. Soap)
- Perfume (type & level)
- Hypochlorite quality & level
- Water hardness
- Presence of transition metals catalysing the decomposition of $NaOCl/HOCl/Cl_2$

Parameters that Expected from a Thick Liquid Bleach Finished Products

- **If the pH is greater than 12, it can be classified according to regulation.**
- **Finished product pH is less than 10, the product structure will deteriorate and decomposition will be observed.**
- **Chlorite quality and using the different fragrances can make different results.**
- **Chelates as protector ion binders should be used.**
- **The finished product should be transparent and high viscosity.**

THANK YOU