

Imidazoline Based Corrosion Inhibitors

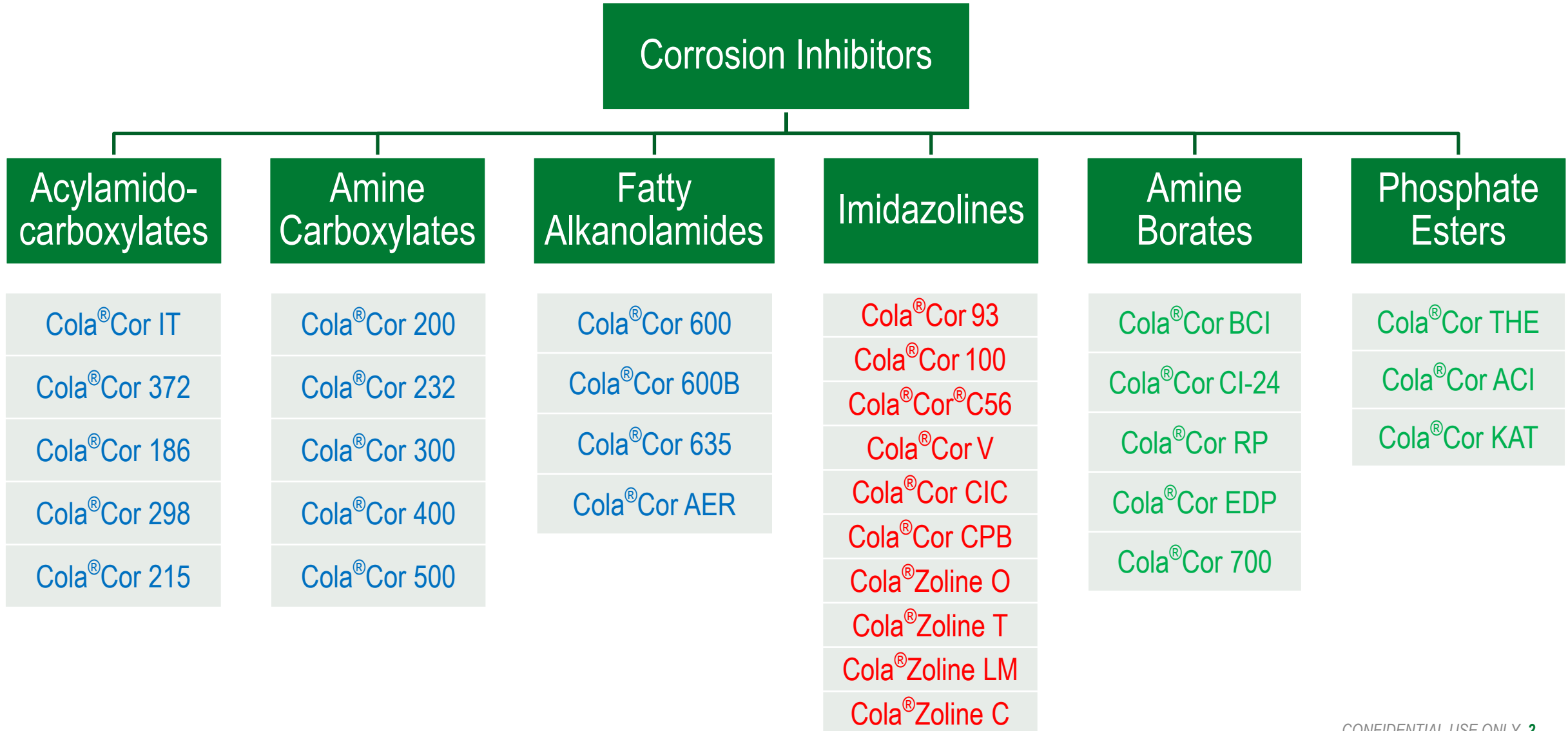
Steven Tang

Business Manager, Industrial Lubricants & Corrosion Inhibitors

April 29, 2020



Product Architecture: Corrosion Inhibitors



Imidazoline Product Family

**Polyamines
(AEEA, DETA, etc.)**

+



Imidazolines



**Imidazoline
Corrosion Inhibitors**

Fatty Acids

(Neutral)

- Salting
- Quaternizing

(Cationic)

- Fatty Acids
 - Oleic acid
 - TOFA
 - Coconut oil
 - Lauric acid
 - Mixed fatty acids

- Cola[®]Zoline O
- Cola[®]Zoline T
- Cola[®]Zoline LM
- Cola[®]Zoline C

...and more

- Cola[®]Cor 93
- Cola[®]Cor 100
- Cola[®]Cor C56
- Cola[®]Cor V
- Cola[®]Cor CIC
- Cola[®]Cor CPB

Chemistry & Performance Attributes

Chemistry

- In neutral, salted, quaternized, or amphoteric forms
- Oil or water soluble
- Surface activity can be enhanced with other chemistries
- Mainly intended for ferrous protection

Key Performance Attributes

- Corrosion protection
- Wetting
- Emulsification
- Detergency
- Thickening
- Moisture displacing
- Anti-static

Cola[®]Zolines C, O, LM, & T

Cola [®] Zoline	C	O	LM	T
Fatty acid	Coconut/Palm Kernel Oil	Oleic	Lauric/myristic	Tall oil
Appearance* @ 25°C	Amber Liquid	Amber Liquid	Amber Liquid	Amber Liquid
% Imidazoline (min)	90	90	90	87
pH (10% dispersion)	10.5 – 12.5	10.5 – 12.0	10.0 – 12.0	10.5 – 12.0

* Material may crystallize upon aging or exposure to low temperatures. Mild heat and agitation will restore to original uniform state.

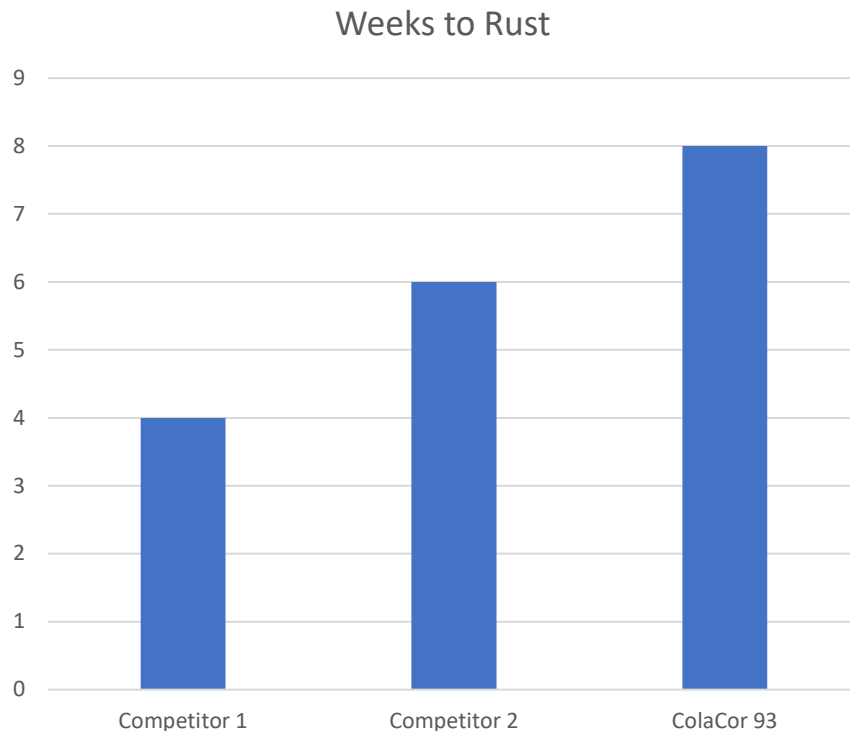
- ❖ In the neutral form & can easily be converted to cationic.
- ❖ Readily soluble in polar solvents and in hydrocarbons but relatively insoluble in water.
- ❖ These functional properties are useful in agricultural emulsions, industrial cleaners, paint/coatings, plastics, and petroleum applications.

Cola[®]Cor 93

- Partial amine salt of a substituted di-carboxylic acid
- Ashless
- Oil soluble
- With long lasting rust protection, even under severe conditions

Cola[®]Cor 93 Offer Robust Corrosion Protection

Humidity Cabinet Test



Corrosion Inhibition - 5% Additive in Pale Oil

- Stack Test
 - No staining for > 3 months in the standardized stack test on both galvanized and carbon steel panels
- Turbine Oil Rust Test (ASTM-D665)
 - Passed at 0.1 wt%

Cola[®]Cor 93

Applications

- General rust preventatives
 - Shelf storage protection
- Rolling oils
- Drawing compounds
- Fuel additives
- Hydraulic oils
- Offshore corrosion protection for equipment

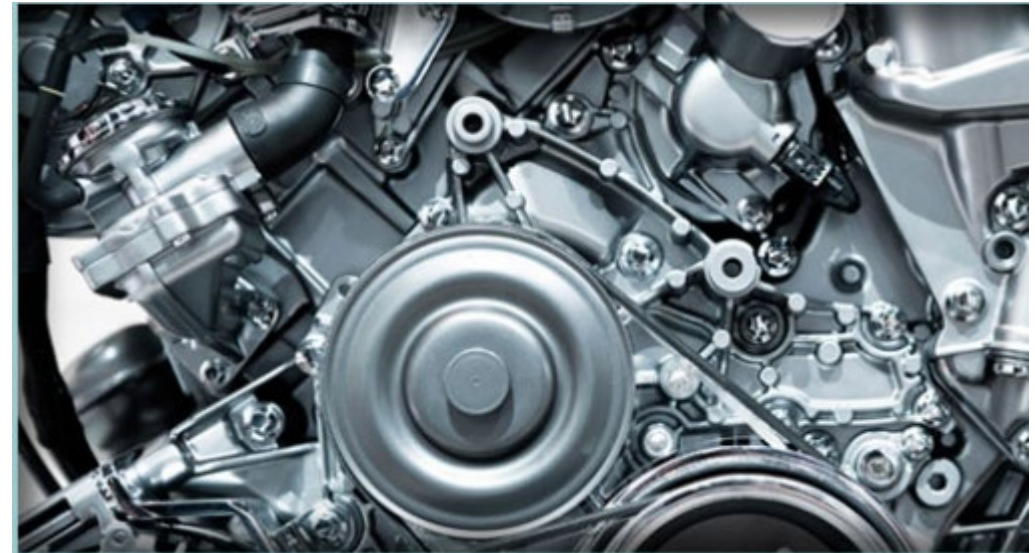


Cola[®]Cor 100

- Based on the short chain imidazoline
- Amphoteric
- Water soluble
- Effective in both acidic and alkaline conditions.
- Excellent tolerance for water hardness and contributes detergency in aqueous systems.
- Flash rusting in cleaning & metallic applications

Applications

- Metal cleaning
- Various metalworking fluids
- Detergent and aerosol applications



Cola[®]Cor V

- Long-chain fatty acid salted long-chain imidazoline
- Oil soluble
- Insoluble in water
- Specifically designed to provide excellent rust inhibition for greases

Applications

- Greases



Cola[®]Cor CIC

- Long-chain imidazolines
- Enhanced surface wetting properties by sulfosuccinates
- Highly effective at low concentrations in greases and oil-based lubricants
- Improves the water resistance of greases
- Stabilize emulsion in soluble oil formulations.

Applications

- Grease
- Soluble oil fluids



Summary – Imidazoline-Based Corrosion Inhibitors

Product Class	Product	Key Features
Imidazoline Corrosion Inhibitors	Cola[®] Cor 93	Robust ferrous protection for cleaning, metalworking, and general rust protection
	Cola[®] Cor 100	Amphoteric; applicable for acidic & alkaline conditions
	Cola[®] Cor C56	Ready-to-use, quaternized imidazoline corrosion inhibitor concentrate; For oilfield equipment corrosion protection
	Cola[®] Cor V	For grease applications
	Cola[®] Cor CIC	
	Cola[®] Cor CPB	
Imidazolines	Cola[®] Zoline O	<ul style="list-style-type: none"> ➤ Precursors with different chain lengths ➤ Based on AEEA
	Cola[®] Zoline T	
	Cola[®] Zoline LM	
	Cola[®] Zoline C	
	Cola[®] Zoline OD1	

Thank You!

colonialchem.com

steven.tang@colonialchem.com

