ENERGY & RESOURCES

Corrosion Inhibitors

Effective solutions for maximize protection and minimize corrosion.

INDORAMA VENTURES

Indispensable Chemistry

Corrosion Inhibitors

Corrosion is an inherent problem in the oil production process, damaging equipment, pipes and compromising operator safety. In order to prevent this, film forming corrosion inhibitors are highly used, retarding the corrosion rates and ensuring a safer extraction process.

Primary Corrosion Inhibitors are the main active agents used to prevent and mitigate corrosion of metal surfaces in contact with corrosive environments and are represented in our portfolio by **SURFONIC® OFC Series.**

Secondary Corrosion Inhibitors are used in synergy with primary inhibitors to enhance overall corrosion protection. Our portfolio of secondary Corrosion Inhibitors are represented by **ULTROIL® CI Series.**

SWEET
Corrosion originated by CO_2 in reservoir or injected

SOUR
Corrosion originated by sulfate-reducing bacteria

OXYGEN
Corrosion originated by O_2 dissolved in water

SURFONIC® OFC 100

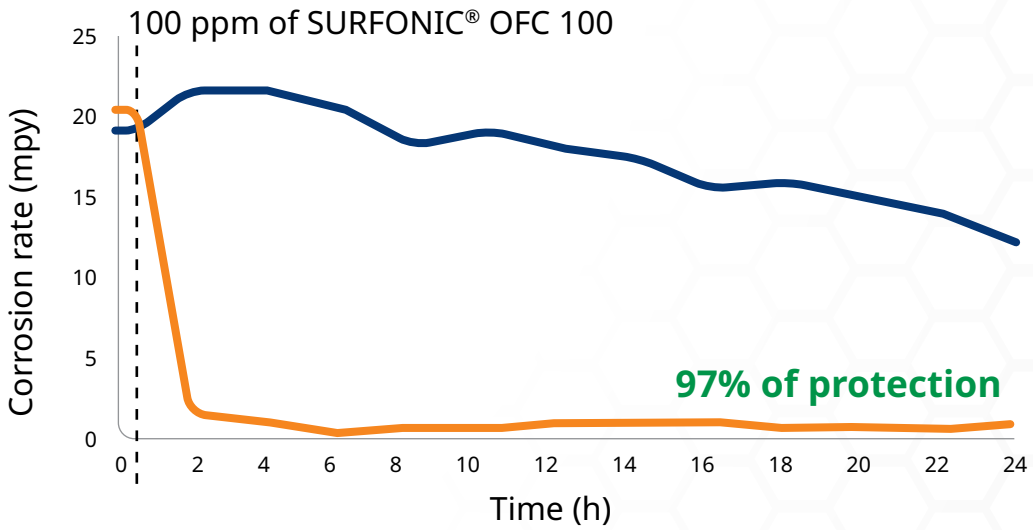
A unique primary corrosion inhibitor imidazoline based

Imidazolines have been a staple in industrial applications for decades, primarily due to their performance in high pressure and high-temperature (HPHT) conditions and oil solubility. Moreover, imidazoline chemistry is essential for producing one of the most widely used types of film-forming organic corrosion inhibitors in the oil and gas industry.

FEATURES & BENEFITS

- High active content
- High temperature
- Suitable for Sweet (CO_2), Sour (H_2S) and Oxygen (O_2) corrosion
- Concise film forming, protecting the metal surface

PRODUCT PERFORMANCE (Sweet CO_2) - BUBBLE TEST



Test conditions:

- Temperature 60 °C
- Carbon Steel CO1018
- 1000ppm NaCl Brine
- 1:1 Brine/Kerosene
- No enhancer added

Formulation:

- Water (80%);
- Acetic Acid (3%);
- SURFONIC® OFC 100 (17%)

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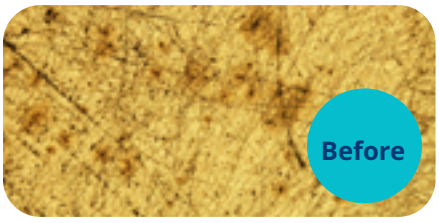
SURFONIC® OFC 100



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SURFONIC® OFC 100

Magnification 10x
Olympus BX51

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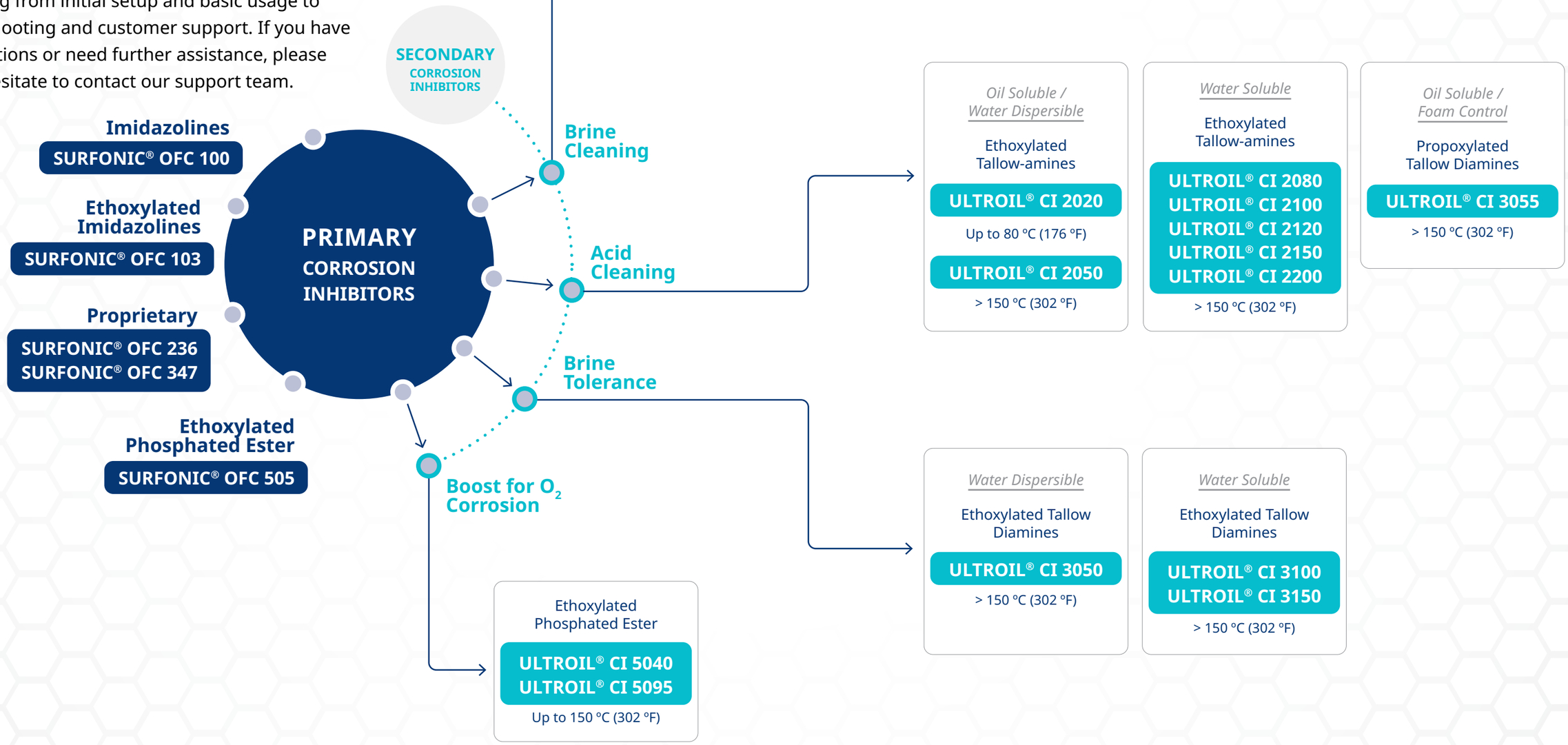
PRODUCT GUIDELINE

Our product guidelines are designed to provide clear and comprehensive instructions on how to choose the right product from our corrosion inhibitor portfolio and maximize its benefits. The guidelines are divided into two sections – **PRIMARY** and **SECONDARY** – covering everything from initial setup and basic usage to troubleshooting and customer support. If you have any questions or need further assistance, please do not hesitate to contact our support team.



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ULTROIL® CI 5095

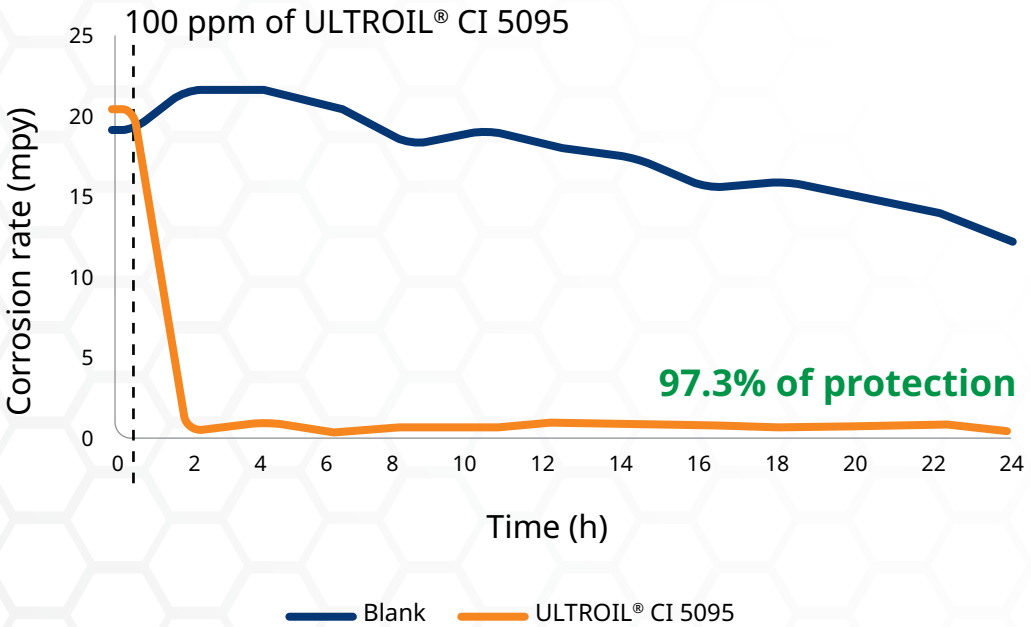
Alkyl phosphate ester corrosion inhibitor

Phosphate ester derivatives are an interesting class of film-forming chemicals that can be used as boosters in corrosion inhibitor formulations. Their greater solubility in aqueous systems makes them an alternative for certain formulations.

FEATURES & BENEFITS

- High active content
- High temperature
- Inhibition booster
- Synergistic effect

PRODUCT PERFORMANCE (Sweet CO_2) - BUBBLE TEST



Test conditions:

- Temperature 60 °C
- Carbon Steel CO1018
- 1000ppm NaCl Brine
- 1:1 Brine/Kerosene
- No enhancer added

Formulation:

- Water (80%);
- Acetic Acid (3%);
- ULTROIL® Cl 5095 (17%)

TECHNICAL DATASHEET

Product	Corrosion type: Sweet (CO_2)	Corrosion type: Sour (H_2S)	Corrosion type: Oxygen (O_2)	Special properties: High Temp.	Special properties: High Brine	Additional Properties	pH[a]	Physical Form (20 °C)	Flash Point (°C (°F))	Viscosity (cP @25 °C)	Solubility[b]: Water	Ethanol	MEG	Hexane/Heptane	Kerosene
Primary Corrosion Inhibitors															
Imidazolines															
SURFONIC® OFC 100	●	●	●			High Imidazoline Content	10	Liquid	(> 175 (>347))	160	I	S	S	S	S
SURFONIC® OFC 103	●	●	●			Ethoxylated imidazoline	11	Liquid	(> 175 (>347))	1500	I	S	S	S	S
Proprietary															
SURFONIC® OFC 236	●	●	●	●		Specialty blend	12	Liquid	(> 185 (>365))	621	I	S	I	I	I
SURFONIC® OFC 347	●	●	●	●		Specialty blend	12	Liquid	(> 185 (>365))	691	I	S	I	I	I
Phosphated Ester															
SURFONIC® OFC 505	●	●	●		●	Sustainability appeal	3	Liquid	(> 138 (>280))	533	S	S	S	S	S
Secondary Corrosion Inhibitors															
Ethoxylated Coco Amines															
ULTROIL® CI 1020	●	●				Cleaning Properties	10	Liquid	(198 (388))	95	P	S	I	S	S
ULTROIL® CI 1050	●	●				Cleaning Properties	10	Liquid	(135 (275))	106	S[c]	S	S	S	S
Ethoxylated Tallow Amine															
ULTROIL® CI 2020	●	●				Acid Cleaning	11	Liquid	(216 (421))	3950	P	S	S	S	S
ULTROIL® CI 2050	●	●				Acid Cleaning	10	Liquid	(> 260 (> 500))	100	S[c]	S	S	S	S
ULTROIL® CI 2080	●	●		●		Acid Cleaning	10	Liquid	(126 (259))	160	S	S	S	S	S
ULTROIL® CI 2100	●	●		●		Acid Cleaning	10	Liquid	(> 260 (> 500))	140	S	S	S	S	S
ULTROIL® CI 2120	●	●		●		Acid Cleaning	10	Liquid	(> 260 (> 500))	200	S[c]	S	S	S	S
ULTROIL® CI 2150	●	●		●		Acid Cleaning	10	Liquid	(180 (356))	200	S[c]	S	S	I	I
ULTROIL® CI 2200	●	●		●		Acid Cleaning	10	Liquid	(> 200 (> 392))	370	S[c]	S	S	I	I
Alkoxylated Tallow Diamine															
ULTROIL® CI 3050	●	●		●		Formulation Aid	13	Liquid	(124 (255))	600	S[c]	S	S	S	S
ULTROIL® CI 3055	●	●		●		Low Foam / Emulsion & Acid Cleaning	11	Liquid	(100 (212))	350	P	S	I	S	S
ULTROIL® CI 3100	●	●		●	●	Formulation Aid	11	Liquid	(>94 (> 201))	230	S[c]	S	S	S	S
ULTROIL® CI 3150	●	●		●	●	Formulation Aid	12	Liquid	(> 200 (> 392))	220	S[c]	S	S	I	I
Phosphated Ester															
ULTROIL® CI 5040	●	●	●			Inhibitor Booster	2	Liquid	(> 150 (> 302))	3800	S[c]	S	I	I	P
ULTROIL® CI 5095	●	●	●	●		Inhibitor Booster	2	Viscous liquid	(> 150 (> 302))	1900	P[c]	S	I	S	S

[a] 1 wt% in 10:6 IPA:Water
[b] Solubility values obtained with 50 wt% of inhibitor
[c] Solubility values obtained with 25 wt% of inhibitor
S – Soluble **P** – Partially Soluble **I** – Insoluble

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