

PARATENE®

Acids and Inhibitors

A New Approach to Acid & Corrosion Inhibitors.

CleanHarbors®





We eliminate the guesswork with stringent testing.

Why do we need Corrosion Inhibitors?

Corrosion Inhibition is an absolute necessity in order to prevent damage to the equipment during acid cleaning operations. Each different type of metallurgy is susceptible to acids at least to some degree; however the addition of the right kind of corrosion inhibitor can reduce the damage incurred.

Criteria

Many of the corrosion inhibitors currently on the market have not been tested against a variety of materials, temperatures and environments typically observed in chemical cleaning. At Clean Harbors, the guesswork is taken out, as stringent testing has been performed to provide our customers with the best product possible.

Features and Benefits

- Low toxicity
- Good Inhibition within the range of 3-10% acid
- Good Inhibition between range of 20-80°C (68-176°F)
- No undesirable residue left behind
- Cost Efficient



Paratene® I207

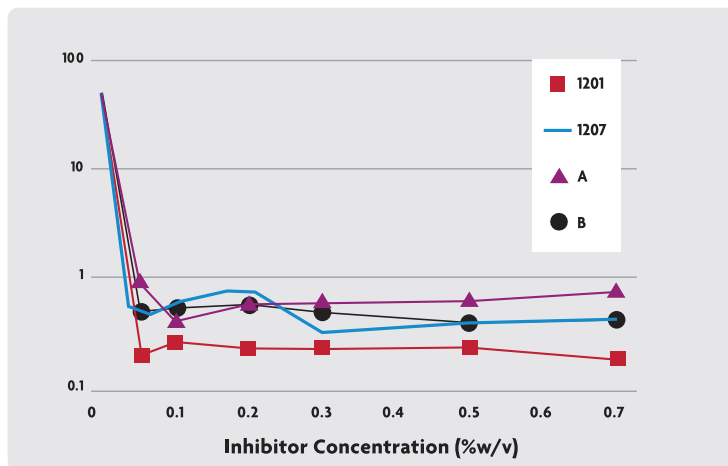
HCl Inhibitor

Paratene® I207 is a revolutionary product designed to inhibit hydrochloric acid (HCl) corrosion without the use of toxic components such as propargylic alcohol (Paratene® I201) and alkyl pyridine quaternary amines.

Features and Benefits

- High Temperature Performance
- Low Toxicity
- Low Flammability
- Highly Dispersible
- Washes away clean, No Residue

10% HCl Corrosion Inhibition at 60°C



PARATENE® Acids and Inhibitors

Paratene® I211

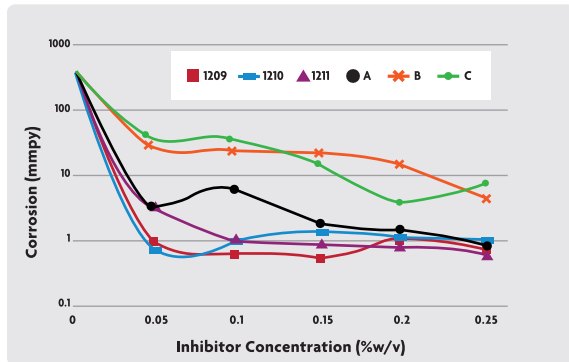
Organic Acid Inhibitor

Paratene® I211 is a heavily researched organic acid corrosion inhibitor. We took all the issues from the previous products, Paratene® I209 and I210, and solved them with this unique blend specially formulated for Clean Harbors.

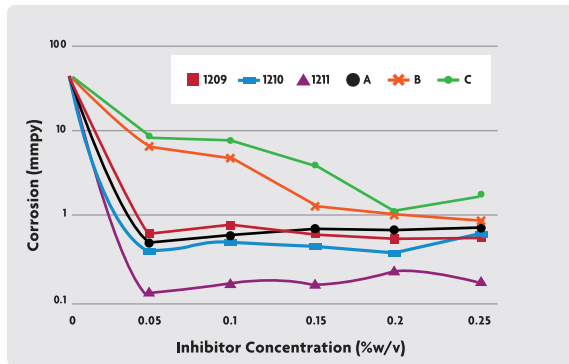
Features and Benefits

- High Temperature Performance
- Low Toxicity
- Low Flammability
- Highly Dispersible
- Highly Dispersible
- Stable Long-term in Acid

Sulphuric Acid Corrosion Inhibition at 60°C



Citric Acid Corrosion Inhibition at 60°C



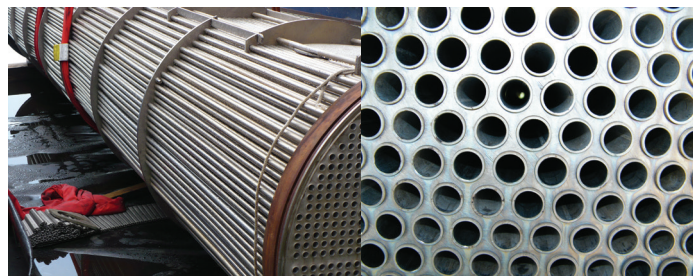
Paratene® M390

Inhibited Organic Acid for Industrial Cleaning

In industrial chemical cleaning, acids are often used for the removal of inorganic scales and deposits. Paratene® M390 is a strong organic acid that combines the best properties of inorganic acids with the benefits of using weaker organic acids.

Features and Benefits

- **Utility** – dissolves many types of scale
- **Efficiency** – Dissolves scale rapidly with minimal chemical
- **Compatibility** – suitable for most types of metallurgy
- **Safety** – Easy to handle, dispose of and minimal toxicity



Exchanger Fouled with Iron Carbonate after Paratene® M390 Cleaning

Paratene® M390 has been tested and found effective in removing magnetite (Fe_3O_4), hematite (Fe_2O_3), calcium carbonates ($CaCO_3$), iron sulfide (FeS) and dolomite ($CaMg(CO_3)_2$). Other scales and deposits should be tested prior to use. Paratene® M390 was designed to be a one-stop shop product, with the inhibitor already in the formulation.

	Carbon Steel	Cast Iron	300 Series Stainless	400 Series Stainless	Copper	Copper Alloys	Monel	Cupro Nickel	Chrome Alloy	Zinc	Aluminum	Titanium
HCl	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
HCl/Thiourea	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
HCl/ABF	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
H ₂ SO ₄	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Sulphamic	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Phosphoric	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Citric	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Formic	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Glycolic	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Acetic	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Nitric	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
H ₂ O ₂	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Paratene® M390	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Good Corrosion Control
 Fair Corrosion Control
 Unsatisfactory

Compatible Materials





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