

ARC 360

An advanced alternative to conventional acids used for manual and cleaning in place (CIP) descaling operations. Ideal for cleaning and descaling black water systems and vacuum system pipework, through to and a variety of on-board process equipment such as plate heat exchangers, evaporators and coolers. ARC 360 is formulated with biobased degreasing surfactants to improve scale removal so there is no need for a separate degreaser treatment. Also included is an effective corrosion inhibitor optimised for the formulation to protect exposed, cleaning metal surfaces, welds and joints.

Product Description

ARC 360 is a non-abrasive, descaling and degreasing solution designed specifically for marine equipment. Free from bleach, ammonia, phosphates, and harsh solvents, it safely removes scale and grease without damaging metal surfaces or finishes. Its enhanced safety profile makes it suitable for use where traditional acidic cleaners cannot be applied, and its integrated corrosion inhibitors help protect equipment during regular use.

Key Features

- Bleach, ammonia, phosphate & solvent-free formulation
- Safe for use on metal surfaces and finishes
- Replaces traditional mineral and organic acids
- Dual-purpose: descales and degreases in one application
- Contains powerful bio-based cleaning agents
- Enhanced safety profile - suitable where acids can't be used
- Includes corrosion inhibitors for asset protection
- Ideal for repeated descaling of sensitive shipboard equipment
- No risk of upsetting sewage treatment systems

Application Area

Scale of various compositions occur in a wide range of marine applications and processes. These range from struvite, uric and carbonate scales in black and grey water systems, to complex mineral scales encountered in process equipment such as plate heat exchangers, evaporators, coolers and freshwater generators.

Acid descaling generally falls into two categories:

- Regular/daily maintenance application of solutions of weaker organic acids (e.g. citric or sulfamic acids)
- Aggressive descaling with strong mineral acids (e.g. hydrochloric or phosphoric acids)

With the exception of sulfamic acid, weak organic acid have a good environmental profile, but are not that effective in difficult, high scale situations. Strong mineral acids such as hydrochloric acid are very effective at removing scale but are also very corrosive towards metal and people. Their use is often restricted to port or dry dock and by specially trained and equipped operators. ARC360 is far safer to use than strong mineral acids during normal ship operations and whilst at sea. ARC360 is 100% biodegradable and is not only safer to use by personnel and materials, is safer for the environment.

IN USE

Carbonate Scale Removal

Time taken to completely dissolve 5g of a mixture of calcium and magnesium carbonates at 20oC (static) by ARC 360 (1/10 dilution) = 48 mins.

(this compares to 2.8% HCl (43mins) and 6.7% Citric acid (58mins))

Black Water Scale Removal

316L SS pipe recovered from black water system of a Scandinavian ferry ARC 360 diluted 1/10. Temperature = 20oC. Sections soaked (no agitation) for 60mins, rinsed dried and weighed.

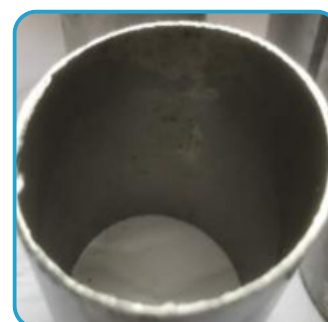
Corrosion Inhibition

316L SS sections were (cold) cut into sections, soaked in ARC 360 (1/10 dilution), 14% HCl or 28% H3PO4 for 2hrs & air dried for 24hrs

Before



After



97.7% scale removal

(>95% removal required
2.8% HCl or 8% H3PO4
or 6.7% citric acids)

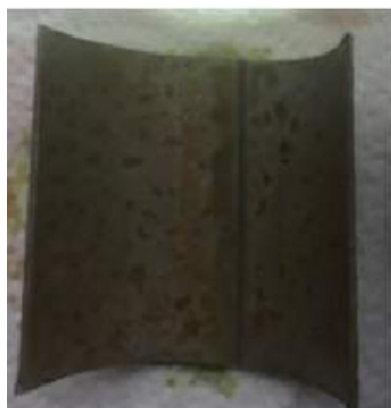
Corrosion Inhibition Test Results

Galvanised mild steel coupons were soaked for 2h in ARC 360 (1/10 dilution), with and without inhibitor and compared to 14% HCl and 6.7% Citric acid

Product	Inhibitor	% Weight Loss
ARC 360	+	0%
ARC 360	-	2.8 %
HCl	+	0.7%
HCl	-	11.5%
Citric acid	+	0.6%
Citric acid	-	10.2%

Aluminium coupons were soaked for 2h in ARC 360 (1/10 dilution), with and without inhibitor and compared to 14% HCl and 6.7% Citric acid

Product	Inhibitor	% Weight Loss
ARC 360	+	0.15%
ARC 360	-	10.2%
HCl	+	1.2%
HCl	-	27.2%
Citric acid	+	1.8%
Citric acid	-	19.4%



CONCLUSION

ARC 360 when diluted by 1/10 standard working concentration dissolves carbonate scale and mixed black water scale in the same time as HCl and other common acids (corrected for H⁺ concentration).

No corrosion on 316L or 304 stainless results with correct use.

Protection of galvanised metals and aluminium surfaces is enhanced with correct use compared to common mineral and organic acids.

DIRECTIONS FOR USE

Deep clean black water pipes

1. In situ whilst the ship is operational, add 200ml of ARC 360 down each toilet and flush it with warm water (30-40C) repeat 3 times per day over 5 days. At the end of each day flush with clean warm water.
2. In-Situ when ship not operational, Isolate sections of pipe and fill with neat ARC 360 allow to stand for 24 hours then flush out pipe section with clean water. Repeat if required with a 50% solution of ARC 360 again soaking for 24 hours and rinse through when finished. Should a 3rd application be required repeat above at 25% solution of ARC 360.
3. If vacuum produced via an ejector, then the addition of an Antifoam agent will be required to stop excessive foaming.

Regular Maintenance Manual

For Descaling of black water waste system apply between 100-200ml of ARC 360 in a 2L of hot water. Poured down the cabin toilet and flush once only. Repeat as required. Apply weekly as a maintenance treatment or as per maintenance schedule. ARC 360 has a built-in degreaser so no separate degreasing step is required even if the scale is contaminated with body fats, oil, greases typically found in black water pipes.

Regular Maintenance Automated

Adjust dosing pump to inject 10ml per connected toilet upon pipe section. If vessel used LA20 as daily biological toilet cleaner, dosing rate should be adjusted to 5ml per connected toilet. Alternatively you will be able to disconnect dosing pumps once old buildup is removed.

Cleaning in Place (CIP)

Suitable for use on such as plate heat exchangers, evaporators, coolers, freshwater generators and other process equipment that is normally cleaned by CIP. Also suitable for off-line cleaning. The product concentration required depends on the extent of scale build up and the desired time to achieve a satisfactory result. For guidance, use between 2 to 30% solution (i.e. between 1:50 and 1:3 dilution). In the absence of any existing CIP procedures, it is recommended to start with a 1:10 dilution of the product in clean water and to circulate this through the CIP equipment for 3-4 hours. Product dilution and contact time may need to be varied depending on initial results. It is also possible to simply replace the current CIP liquid with an equivalent concentration of ARC 360.

After Use

At the end of the cleaning operation, it is important to thoroughly rinse the equipment and all contacted surfaces with clean water to remove any residual product and dissolved scale. Always refer to equipment manufactures guidance on use of and contact with acidic cleaners.

Features & Benefits

- ✓ More effective than common organic and mineral acids
- ✓ Contains a powerful bio-based degreasing agent
- ✓ Includes a corrosion inhibitor for metal protection
- ✓ pH-neutralizing effect prevents sewage imbalance
- ✓ Fully biodegradable and environmentally safe
- ✓ Suitable for CIP and manual cleaning of scaled equipment
- ✓ Removes scale, mineral deposits, light rust, and oil
- ✓ Safer to handle at sea than concentrated acids
- ✓ Non-hazardous to marine environments
- ✓ Dual-action: degreases and descales in one step
- ✓ Saves time and reduces resource usage

i Disclaimer

The information provided in this Technical Data Sheet is accurate at the date of issue and should be used for indicative purposes only. Please refer to your Company Representative for specific User instructions as to how these relate to your usage requirements. Please note that GNC Marine is not liable for claims, damages, costs or expenses of any kind arising from the mishandling of the product or changes that might occur during the handling, storage and application conditions provided by any third party who does not follow the minimum requirements defined in the SDS. Please refer to the SDS for further information regarding the handling, storage and application procedures for the product.

Note




- Not recommended for blackwater pipes free from scale
- Avoid routine use in systems not regularly flushed
- Do not allow product to sit or pool in pipework
- Use caution on vessels with onboard water generators or softeners (risk of free chlorine)
- Avoid on poor-quality or damaged stainless steel, especially if heavily welded or drilled

Product Information

Packaging: 4x5L (standard size)
Product Code: 80001-20

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Contact Info

 +45 88441716
 gnc@gncmarine.com
 www.gncmarine.com