

Quick Guide to Ballast Tank Maintenance (Crew or Riding Crew)

Utilising Epo-chem™ RS 500P & RA 500M

Ballast Tank Corrosion:

Corrosion of steel in the marine environment is an electrochemical process in which the steel reacts with its environment; the coating is acting as insulation between the two. When the coating is aged, it will lose its elasticity and begin to crack. A continuous, wet environment with salt and oxygen also present makes the ballast tank an ideal environment for severe corrosion. The rate of corrosion is about 0.22mm/year.

There are three main types of corrosion: Electrolytic Corrosion, Pitting Corrosion and Microbial Induced Corrosion (MIC).

High temperatures can accelerate the corrosion. All sharp areas such as edges and corners (where film thickness is low), will corrode the fastest. Corrosion in ballast tanks always begin from top-side down.

The application of conventional paint systems in sea water ballast tanks can lead to many problems; shrinkage, porosity, becoming brittle with age, bad edge and weld coverage.



Double-bottom tanktop after
7 years in-service

Innovative Chemco Technology:

For the first time in the industry, and by utilising Chemco's innovative **solvent-free, wet & rust tolerant** technology, the crew or riding crew are able to carry out major maintenance work at sea or quayside in an efficient, safe and cost-effective manner. This revolutionary system comprises of two products:

- Epo-chem™ RS 500P:** An innovative **solvent-free, wet & rust tolerant** epoxy primer/finish system. The use of special sacrificial fillers enables the system to be applied to surface standards as low as Sa 1, WJ-3 or St 2.
- Epo-chem™ RA 500M:** A unique **solvent-free, wet tolerant**, highly chemical resistant, glassflake single coat/topcoat. It acts as an impermeable barrier topcoat for **RS 500P** or it can be used as a one-coat system with minimum surface preparation standards Sa 2, WJ-2 or St 3.

These products combine to make one multi-functional, groundbreaking coating system which has been extensively used for almost all vessel areas: all tank internals (e.g. ballast, potable water, greywater, fuel), decks, superstructures, engine rooms, void spaces and cargo holds.

This system has been tested to **IMO** standard and has been **approved** by **Lloyds** and **ABS** for application in sea water ballast tanks and crude oil cargo tanks. It has also been **certified** by **NSF** for potable water applications and **FDA compliant** for food contact and potable water.

These proven advanced speciality coatings have not only passed independent tests, they have also been approved and utilised by almost all major shipping companies worldwide with complete success.

System Characteristics:

Surface Preparation	Any convenient or cost-effective method can be utilised: abrasive blasting, water jetting or mechanical
Solvent Content/VOC Levels	Solvent-free system with zero VOC . Suitable for application in confined spaces and hazardous areas
Glassflake Technology	Ensures long-term corrosion protection by creating an impermeable barrier
H&S and Fire Hazard	Significantly reduced and non-flammable
Environmental Conditions	No humidity or dew point restrictions
Overcoating Intervals	No limitations
Dehumidification or Ventilation	No extensive requirements
Operational Shutdown	No shutdown required. Other work being carried out nearby can continue without disruption
Adhesion Values	Outstanding adhesion to rusty or poorly prepared and wet surfaces (> 1200 psi / 8 MPa)
Back-in-service Times	4-8 hours. System can 'continue' to cure' underwater
Application Method	Easy to apply by brush, roller or airless spray
Compatibility	Compatible with almost all protective coatings, including shop primers and coal-tar epoxies

Specifications:

Specification A: One coat of **Epo-chem™ RS 500P** (150-200µ)

Total DFT = 150-200µ

Specification B: One coat of **Epo-chem™ RS 500P** (100µ) and one coat of **Epo-chem™ RA 500M** (250µ)

Total DFT = 350µ

Application Process:

Application Instructions:

Please read technical and safety data sheets before starting work

- Remove mud, sediments, oil and grease
- Mechanically remove hard rust and feather rough edges of existing coating
- Remove dirt and residues
- High pressure water wash the substrate
- Stripe coat all rusty areas, welds and sharp edges with primer
- Large areas can be spray applied

Please ensure the following:

1. The applied film must be pinhole free and continuous.
2. Re-coating interval is unlimited; re-coat as soon as the previous coat is touch dry.
3. Pot-life: 60 minutes for **RS 500P*** and 90 minutes for **RA 500M @ 15°C**.
4. Do **not** use thinners for brush/roller applications. Use 2.5-5% for spray applications in cold conditions and/or long hoses over 50 metres length.
5. Cleaning: any epoxy cleaner on board will be suitable.

*Tropical grade: 65 minutes @ 30°C

Step 1: Surface Preparation

Prior to surface preparation it is essential to ensure that any mud and/or sediments are removed.

Mechanical preparation (St 2-3) can be utilised to remove hard rust, followed by High Pressure Water Jetting (HPWJ) (500-800 bar) to WJ-3/4 standard.



Acceptable mechanical preparation standard



Acceptable water jetting preparation standard

Step 2: Stripe Coating

Stripe coat all sharp edges, corners and weld areas with **Epo-chem™ RS 500P** by brush or roller to a minimum DFT of 100µ.

Stripe coating can be undertaken **before or after** the first coat.



All sharp edges and corners are coated to a minimum of 100µ



All weld areas are stripe coated regardless of their condition

Step 3: Primer/Single Coat

The primer coat **Epo-chem™ RS 500P** is applied to a minimum DFT of 100µ.

If the specification is for a single coat of **RS 500P**, a minimum DFT of 150-200µ should be achieved.



One full coat of RS 500P applied to rusty prepared steel



Full surface coated with RS 500P, including all sharp edges, corners and weld areas

Step 4: Single Coat/Topcoat

Once the primer coat of **Epo-chem™ RS 500P** is touch dry, apply a topcoat of **Epo-chem™ RA 500M** to a minimum DFT of 150-250µ*.

If applying RA 500M as a single coat, ensure all sharp edges, corners and weld areas are stripe coated.

*DFT of 150-200µ is achievable for hand applications but minimum 250µ is required for airless spray applications.



All sharp edges, corners and weld areas are coated with RA 500M



Completed application consisting of one stripe coat (RS 500P), one primer coat (RS 500P) and one topcoat (RA 500M)

Guarantees:

Specification A: A single coat of Epo-chem™ RS 500P (150-200µ) is guaranteed for 5 years.*

Specification B: One coat of RS 500P (100µ) and one coat of RA 500M (250µ) is guaranteed for 10 years.*

*A minimum of one stripe coat is required for both specifications.