

	<p>FABRAP   ACADEMY  <b>PAINTING SPECIFICATION</b>    INTEGRATED MANAGEMENT SYSTEM</p>	<p>Doc No. : Paint  Page : 1/59  Date : 1-1-2017  Rev. No. : 0  Appr. By : GJS</p>
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# **FABRAP | ACADEMY** **Painting** **Specification**

**December 2018**

Originally submitted by:

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## Safety-, environmental- and quality aspects (risk)

To act in accordance with the safety-, environmental-, and quality regulations and rules is essential!!

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## Design intent

- Coatings applied seldom cost and pollute less.

Hence, it is true that from an economical as well as environmental point of view, that in most cases, the longer the applied coating system last, the more economical the application is. Economical here means in terms of costs both from a monetary and environmental standpoint.

- GJS strives to be “enviro-economical”.

In a world of limited resources, it is vital that each application is carried out with the proper service life intent in mind. A new shore tank is built for no less than 50-year service life, hence the application of the coatings on that object shall be designed for at least half that service life, meaning repairs but not recoating shall be allowed during that period. A tank that is 35-40 years of age, and is recoated, that might have only 10 years of service left does not require the same standard of treatment.

Hence, this specification includes two system designs; one for a 25-year service life, and one for a 10 year service life.

The term “Service life” means that the coating will not be fully refurbished within the specified time period. The topcoat may “fade”, loose gloss and a new one applied at one or several occasions during the service life, and any failed spots repaired (damages or minor imperfections in the original application..).

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## Coating strategy

All metals are extracted from its ore by adding large amounts of energy. This means that the metals, however useful in this state, are unstable and “desire” to return to the lower energy state of the ore. This natural evolution is delayed by the use of corrosion control measures.

Tank farms are located near the sea – Thus defining the service environment :

**Durability of the protective paint system : Very High (VH), expected life time more than 25 years according to ISO 12944-1:2017 (5.5)**

**Classification of environments : C5 very high corrosivity according to ISO 12944-2:2017**

**Protective Paint System : Table C.5/ System N°. 08 (ZnR + Ep + PUR / 4 coats 320 µm) according to ISO12944-5:2018**

Zn: Two component Zinc Rich Epoxy Primer

Ep : Epoxy sealer, Coatong

PUR : Polyurethane finish

This is a tough environment for steel structures, and combined metal structures. For combined metal structures such as stainless steel tanks with mild steel ladders, handrails there is the added danger of galvanic corrosion.

The coating strategy at GJS is designed to preserve newly built tanks by use of coatings to a degree that steel renewal is not required during the service period of the tank; for refurbished coating the intent is that it shall perform for the remainder of the tanks service life. The service life of a tank is here assumed to be 50 years. Further, the intent is that the cosmetic appearance during the service period shall give support to GJS’s good name and reputation.

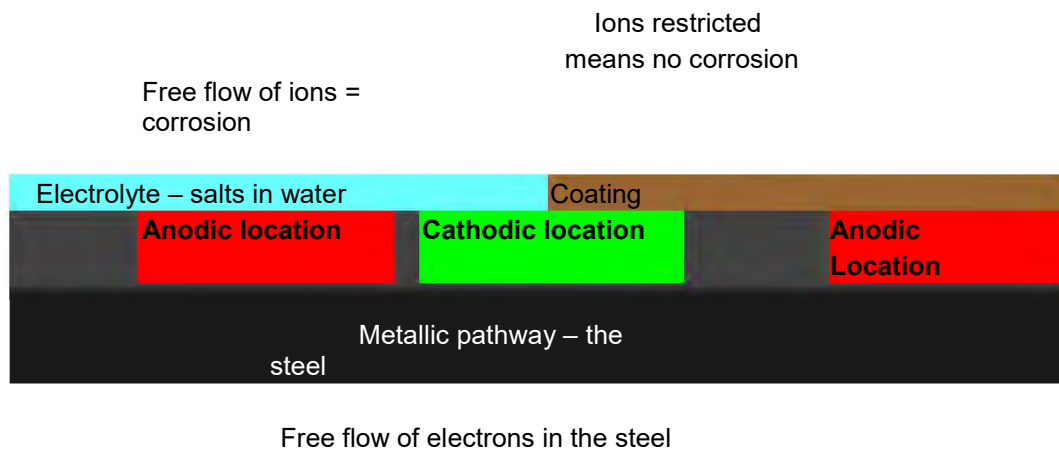
The coating will be in need of localized touch-up, and cosmetic top coating during the service life period to ensure proper cosmetic quality.

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## Coatings – how they work

Corrosion is an electrochemical process that requires an anode and a cathode to create a potential, an electron pathway (a means for electrons to be transported) and an electrolyte (a means for current to be transported over the surface of the steel). Any one of these prerequisites missing and corrosion cannot take place.



Anodes work by corroding in preference of the steel, loading the steel up with electrons, preventing dissolution of the metal. Anodes require a constant wet environment and are normally not successful on tank farms, except in special application (such as to protect uncoated, or poorly coated, exterior tank bottoms).

Organic coatings are so called “semi-permeable membranes” and work by preventing the electrolyte to flow at the coating-steel interface. There is enough water vapor (vapor transfer) and oxygen going through any organic coating to sustain corrosion under it at any small spots where the coating and steel are not in intimate contact (complete wetting) – Such spots do always exist to a degree. This means that each coating has a finite service life, as the surface under it will eventually degrade. The issue here is therefore, to assure that this coating degradation occurs at an acceptable rate.

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# SPECIAL PRODUCT DATA SHEETS

See suppliers website for latest information

Some information is also available in the attached suppliers file on the GJS Intranet

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