Tanks – different types and sizes

Tanks for liquids

Lots of variations of liquid content, but also on types, sizes, temperature, pressures etc:
Tank content – Chemicals
What paint system to choose is dependent of the tank content

- Crude oil
- Clean Petroleum Products
- Bio fuel
- Vegetable oils
- Drinking water
- Beverages (wine)
- Fire water (sea water, to cool other tanks)
- Other chemicals
Which paint to choose when?

**Zinc Silicates:**
- Alcohols
- Ketones
- Other Solvents

**Vinyl Esters:**
- Biofuels
- Acids
- Aggressive chemicals
- Temperature, max 85 °C

**Epoxies:**
- Alkaline solutions
- Some Biofuels
- Water in various forms
- Phenolic epoxies used for higher temperatures
- Oils (Veg. & mineral: Note acid Value)

Note:
- Use the resistance list.
- Technical Support from supplier
Tank coatings – Epoxy Systems

Epoxy Systems in general:

- Typical paint system: 2-3 coats to reach 12 mils Dry Film Thickness
- Light colors for ease of inspection and tank cleaning
- Resistant to many chemicals
- Short over coating time
- 30 years plus experience with this generic type of product
Tank coatings – Pure Epoxy

Pure epoxy

• Typical paint system: 2-3*4 mils Dry Film Thickness
• Light colors for ease of inspection and tank cleaning
• Resistant to many chemicals:
  – Varies product to product
• Typical 3 weeks overcoating time (73.4°F)
• Pure epoxy technology to meet specific owner requirements

• Good general chemical resistance, weak on acids
Tank coatings – Phenolic Epoxy

- Phenolic epoxy, mid range Volume Solids
- Typical paint system: 2*5 mils
- Typical 4 weeks overcoating time (73.4°F)
- Resistant to many chemicals:
  - Varies product to product, better than Pure epoxies
- Comments to general generic resistance:
  - Typical for dry temperatures up to 392°F
  - Crude Oil and water up to 203°F

- Good general chemical resistance but weak on Free Fatty Acids (FFA) for example Bio Fuels
Tank coatings – Novolac Epoxy

- Novolac epoxy, mid range Volume Solids
- Typical paint system: 2*5 mils
- Typical 4 weeks over coating time (73.4°F)
- Resistant to many chemicals:
  - Varies product to product, better than other Phenolic epoxies
- Comments to general generic resistance:
  - Typical for dry temperatures up to 392°F (often 320°F)
  - Crude Oil and water up to 284°F

- Good general chemical resistance very good on Free Fatty Acids (FFA) for example Bio Fuels
Tank coatings – Solvent Free Phenolic Epoxy

- Solvent Free Phenolic (Novolac) Epoxies
- 100% volume solid Novalac/Phenolic epoxy
- Typical paint system: 2*8 mils
- Resistant to many chemicals:
  - Varies product to product between pure epoxy and Novolac in performance
- Resistance to clean petroleum products
- Crude oil up to 302°F
- Ease of application, standard airless spray needs consideration

- General Chemical resistance is good, similar to other Novolac epoxies for FFA, and temperature resistance weaker on other chemicals
Challenge

• Knowing the Chemistry and theory is Good and Useful but other factors in paint formulation changes performance as do external factors such as:
  • Exposure & lifetime needs
  • Substrate preparation
  • Application possibilities

• Every Product is different
• Every Project has it’s differences
Conclusion

- Know your needs
  - Budgets are critical
  - Always remember chemical resistance flexibility can help in the future
- Have an idea of the product type so that you are offered a proper proposal from the supplier
- Seek the suppliers technical advice on all aspects of the project
  - Substrate
  - Preparation
  - Application
  - Safety, Health & Environment requirements
- Check the resistance list meets your needs