



TECHNICAL NOTE

CHEMICAL RESISTANCE OF CORR-PAINT CP40XX-SERIES BINDERS

Project Description

The scope of this project was to baseline the chemical resistance properties of Aremco's Corr-Paint CP40xx, CP40xx-S and CP40xx-S1 Series Binders.

Conclusion

The goal of this project is to understand the chemical resistance of three resins used in the Corr-Paint series of products. The data below reflects how the tested materials behave when submersed in various acids, bases and solvents over time. Since these materials were tested as-is and not as part of a formulated system, the results may not be fully representative of how they would behave in a final formulation.

Products Tested

CP40xx Resin
CP40xx-S Resin
CP40xx-S1 Resin

Chemicals and Solutions Tested

ACIDS

- Sulfuric Acid
 - Concentrated, 50% and 10%
- Nitric Acid
 - Concentrated, 50%, 20% and 10%
- Hydrochloric Acid
 - 20% and 10%
- Phosphoric Acid
 - 80% and 20%
- Acetic Acid
 - 80% and 20%

BASES

- Sodium Hydroxide
 - 50% and 20%
- Potassium Hydroxide
 - 50% and 20%

SOLVENTS & FUELS

- Methylene Chloride
- Xylene
- Acetone
- Methyl Ethyl Ketone (MEK)
- Toluene
- N-Heptane
- Denatured Alcohol
- Diesel Fuel
- 10W30 Motor Oil

Sample Preparation

The base resins were spray applied to 1” x 3” glass microscope slides and allowed to air dry for 20 minutes each. Each resin was then fully cured. The CP40xx-S samples were baked at 250°C for 30 minutes; CP40xx and CP40XX-S1 samples were baked for 45 minutes at the same temperature. The chemical solutions were prepared using standard lab practices and kept in 4 oz. glass jars for testing.

Chemical Resistant Testing Criteria

The testing performed was a modified version of ASTM D 1308. The cured glass slides were oriented in the chemical solutions so that 50% of the sample was immersed while the upper portion remained in the vapor phase. These were stored at room temperature with each sample being evaluated according to the established timeline (after 24 hours, 1 week, 1 month, and 2 months).

The integrity of each sample was determined visually with the key parameters of coating appearance, adhesion, and hardness being examined. A baseline sample of the resin was used as a guide in determining how degraded each sample was and whether or not that sample should be further tested. After each evaluation, the samples that would remain in testing went back into solution while the failed systems were discarded.

A plus / minus scale was used for grading each sample. The scale breakdown is:

- + → coating is fully intact and shows no sign of degradation
- +/- → coating shows slight degradation but not enough to consider a failure
- → coating is no longer intact and has fully degraded

Evaluation Data

Please refer to the chart on the next page for the breakdown of how each resin material performed with respect to the various chemical solutions over time.

