Introduction

AOC corrosion resistant resins are designed to meet the demands of the fiber-reinforced polymer (FRP) composite industry when corrosion resistance performance is critical. This guide is designed to assist the fabricator of FRP components in selecting the appropriate resin for parts which will be exposed to highly corrosive environments.

This data is the result of years of extensive laboratory testing and actual field exposure in North America and Europe.

The term resistance is used in the sense which is commonly used in the trade, not as the complete retention of all optical and mechanical characteristics. Refer to ASTM G 15 and ASME/ANSI RTP-1 for common corrosion definitions.

Resin System Selection

Resin system selection is governed by the chemical service and environment to which the equipment will be exposed, end user specifications and preferences, or fabricator recommendation.

User specified:

Frequently the user will specify the resin system and laminate construction for particular applications. The requirement may be based on past experience, resin manufacturer recommendations, the supplier of the chemicals being handled, or the manufacturer of an equipment package. The fabricator should always confirm the source of selection and the acceptability of equivalent alternate systems.

Fabricator recommendation:

When the user depends on the fabricator to recommend aresin system, it is important to be certain that the user states allaspects of the application and service.
The following information should be clearly defined:

- The common name and, when possible, the chemical name. For example, muriatic is a common name for hydrochloric acid. This information is generally contained in the Material Safety Data Sheet for the medium.
- Concentration of each of the chemical components.
- Specific gravity of each chemical solution or mixture.
- pH, if it is an aqueous system.
- Normal operating temperature range. Also include any anticipated temperature excursions due to process upset or other abnormal condition.
- Maximum use temperature - (not maximum design temperature).
- Pressure and/or vacuum conditions. For tanks it is also important to know if filling will be by pressure such as from a tank wagon.
- Use in food and drug applications should be identified where applicable.
- Length of exposure to the medium if less that continuous. In unusual cases, only a short period of exposure is to be expected. For example, the laminate may need to withstand only occasional splashes.
- Process description - where a reaction such as neutralization takes place in the tank.
- Fire retardancy, where applicable, including flame spread rating and smoke requirements.

Resin Selection:

Normally a suitable resin can be selected from the Corrosion Resistance Resins Guide based on the above information. The temperature data presented in the guide represents the highest temperature at which the individual product has demonstrated acceptable service life in a laboratory environment or in actual field use. Testing of coupons is ongoing, and environments not tested may be done at customer request. Serviceability should not be interpreted to mean the full retention of all visual and mechanical properties, but rather an expectation of how a properly designed and fabricated structure will perform. Short exposure periods at higher temperatures usually do not affect product integrity if the heat distortion temperature of the cured resin is not exceeded. However, the highest temperature reached and the exposure duration at this temperature should be indicated when making inquiries.

The resistance of Vipel® resins to chemical environments listed in this guide has been established according to ASTM C581 and the ASME/ANSI RTP-1 standard coded "Reinforced Thermoset Plastic Corrosion Resistant Equipment."

This list does not apply to mixtures of different media unless we have explicitly stated. It contains chemically declared media and some brand name chemicals, which were not precisely identified with respect to chemical composition. When the concentration is listed as less than 100%, the remaining product is water unless specifically stated otherwise.

Caution: Many of the applications and chemical services listed in the guide make reference to NOTES in the column adjacent to the chemical. These notes are an integral part of the listing recommendation and must be strictly followed. The notes will indicate those applications requiring different veil materials, cure systems, liner construction or thickness and post curing requirements.

In those instances where the specific application is not listed, the fabricator is encouraged to contact AOC. The above information should be included and should be directed to:

Corrosion Product Leader
AOC
950 Highway 57 East
Collierville, TN 38017
Phone: (901) 854-2800
Fax: (901) 854-2895
E-mail: Corrosion@aoc-resins.com