



Technical Background

When certain materials come into contact with ZYLAR impact-modified styrene-acrylic copolymer resins, they can affect the weight, strength, color, dimensions, flexibility, or surface appearance of the part. These interactions can result in a wide variety of effects, but these effects can be broadly grouped into three categories. Chemical attack on the polymer chain, such as oxidation or depolymerization, can lead to a reduction in polymer properties. Absorption of materials such as solvents can result in physical changes due to softening, swelling, or dissolution of the polymer. Finally, the visible effects of stress cracking can vary widely, ranging from whitening of the part due to microscopic cracks, to complete part failure caused by extensive cracking. In addition to material composition, the temperature, pressure, length of time, and concentration of exposure may also affect polymer stability. Specimens having residual stress from molding or externally applied loads may be more prone to stress crazing or cracking when exposed to solvents.

Recommendations

ZYLAR impact-modified styrene-acrylic copolymer resins are generally NOT RECOMMENDED for direct contact with the following materials due to severe crazing, softening, or dissolution of the resin:

- Aromatic and aliphatic hydrocarbons, e.g. toluene, xylene, propane, gasoline, turpentine, kerosene
- Halogenated compounds, e.g. carbon tetrachloride, chloroform, bromine liquid, bromoform, refrigerants
- Oxygenated materials such as esters, ketones, ethers, anhydrides, aldehydes, e.g. butyl acetate, acetone (nail polish remover), tetrahydrofuran, acetic anhydride, phenol, propylene oxide, acetaldehyde
- Unsaturated oils, e.g. citronella oil, lemon oil, anise seed oil, boiled linseed oil, almond oil, wintergreen oil
- Concentrated mineral and organic acids, e.g. sulfuric nitric, glacial acetic
- Nitriles, e.g. acrylonitrile, acetonitrile
- Butadiene rubber
- Aromatic amines, e.g. aniline

ZYLAR impact-modified styrene-acrylic copolymer resins are classified as MODERATELY RESISTANT when contact may cause some visual surface effects such as crazing or discoloration. ZYLAR resins are generally considered to be moderately resistant to the following:

- Mono or lightly unsaturated fats and oils, e.g. castor oil, corn oil, cottonseed oil, cocoa butter, mayonnaise, olive oil
- Aliphatic amine compounds, e.g. ethylene diamine, triethylene, tetramine
- Concentrated aqueous acids, e.g. 25-50% acetic acid, vinegar, grapefruit juice, lactic acid
- Bleach



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ZYLAR impact-modified styrene-acrylic copolymer resins are generally considered to be RESISTANT to the following:

Aliphatic alcohols, e.g. methanol, ethanol, butyl alcohol, n-amyl alcohol, n-octyl alcohol

Saturated fats and oils, e.g. mineral oil, glycerine, soybean oil, petroleum jelly

Dilute aqueous solutions, e.g. alcohol/water mixtures (beer), sugar solutions (flavoring agents), honey, acids (tomato or carrot juice), detergents (for dishes, laundry), dilute ammonia (aq), soft drinks

This list is meant as a guide to illustrate the resistance of these resins to various categories of chemicals. Testing of the exact chemical formulation in direct contact with the particular grade of resin to evaluate suitability is highly recommended.