Engineering Information

Guardian

Corrosion Resistance Guide

Standard emergency eye wash and shower equipment is constructed from a variety of materials, including stainless steel (shower pull rods and actuating arms), chrome plated brass (valves and eye wash components) and galvanized steel (pipe and fittings). In addition, standard units may include plastic components (shower heads, eye wash bowls, spray heads, etc.) that are molded from ABS, polypropylene and/or nylon.

When installed in industrial environments, emergency eye wash and shower equipment is exposed to all of the conditions present in the environment, including temperature, humidity, sunlight and chemicals that may be present. In particular, the equipment can be exposed to acids, caustics and other chemicals that will cause the materials in the equipment to corrode. Such corrosion is a serious matter, since it can cause the equipment to deteriorate to the point of becoming nonfunctional. In an emergency, the equipment may not be available to an injured person. While Guardian carefully selects the materials used in its products, the possibility of corrosion cannot be eliminated.

Guardian offers several alternatives for improving the corrosion resistance of emergency equipment:

- **Powder Coated Finish.** All of our units can be furnished with a powder coated finish applied over the galvanized steel and brass components. The surfaces to be coated are cleaned and etched with phosphoric acid solution. Epoxy/polyester hybrid powder is electrostatically applied to the metal surfaces and then baked to cure. The result is a smooth, hard surface that provides excellent resistance to corrosion. Guardian powder coating is available in a variety of colors, including high visibility orange, green, yellow and red. These colors provide the equipment with increased visibility in the industrial environment.

- **Polyvinyl Chloride (PVC) Construction.** Guardian offers a wide array of units that are constructed of PVC and PVC-coated materials. All pipe and fittings are PVC. Valves, actuators and other components are brass with a PVC coating. These units can provide better durability than standard emergency equipment in certain environments.

- **Stainless Steel.** Guardian also offers a wide selection of units that are constructed entirely of stainless steel. These units are highly resistant to corrosion, and are ideal for use in areas such as laboratories and clean rooms.

In order to assist in selecting the equipment that is best suited for a particular application, Guardian has compiled a "Corrosion Resistance Guide". This corrosion information is offered as a guideline only, to assist in selecting the equipment that will be best suited for the user's application. *Due to the infinite number of combinations of chemicals found in any environment, as well as the effects of chemical concentration, temperature, humidity, etc., Guardian cannot predict and cannot be held responsible for the effects of any particular environment on any specific installation of emergency eye wash and shower equipment.*

Guardian Equipment
1140 N North Branch St.
Chicago, IL 60642

312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com

Engineering Information

Guardian

Corrosion Resistance Guide

A Good
B Fair
C Poor
D Not Recommended

CHEMICAL	CONCENTRATION	TEMPERATURE (F)	GALVANIZED STEEL	BRASS	EPOXY/POLYESTER POWDER COATED (SEE NOTE 2)	STAINLESS STEEL (TYPE 304)	POLYVINYL CHLORIDE (PVC)
Acetic Acid	85%	70		D	A	A	A
Acetic Acid, Glacial	99.50%			D	A	A	B
Acetone		70	A	A	A	A	D
Ammonium Hydroxide	10%	70	A	D	A	A	A
Amyl Acetate	Conc	70	A	B	A	A	D
Amyl Alcohol				A	A		C
Benzene		70	A	A	A	A	D
Butyl Alcohol			A		A	A	A
Calcium Hypochlorite	30%	70	A	D	A	A	A
Carbon Disulfide		70		B	A	A	D
Carbon Tetrachloride	CP (Dry)	70	A	A	A	A	D
Chloroform	Dry	70	A	A	A	A	D
Chromic Acid	50%			D	A		D
Cresol	90%				A		D
Crude Oil		70		D	A	A	A
Dioxane				A	A		D
Distilled Water		70	C	D	A	A	A
Ether		70			A	A	D
Ethyl Acetate					A		D
Ethyl Alcohol	10-100%	70	A		A	A	A
Ethyl Ether					A		D
Formaldehyde	37%	70	A		A	A	A
Formic Acid	90%	70			A	A	A
Gasoline		70		A	A	A	B
Glycerine		70		A	A	A	A
Hydrochloric Acid	38%	70	D	D	A	C	B
Hydrofluoric Acid	48%	70		D	A	D	B
Hydrogen Peroxide	90%	70		D	A	A	A
Isopropyl Alcohol				A	A	A	A
Kerosene		70		A	A	A	A
Lactic Acid	25%	70		D		A	B
Methanol		70		A	A	A	A
Methyl Ethyl Ketone				A	A	A	D
Methylene Chloride				B	A	A	D

Continued on next page.

Guardian Equipment
1140 N North Branch St.
Chicago, IL 60642

312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com

Engineering Information

Guardian

Corrosion Resistance Guide (cont'd)

A Good
B Fair
C Poor
D Not Recommended

CHEMICAL	CONCENTRATION	TEMPERATURE (F)	GALVANIZED STEEL	BRASS	EPOXY/POLYESTER POWDER COATED (SEE NOTE 2)	STAINLESS STEEL (TYPE 304)	POLYVINYL CHLORIDE (PVC)
Mineral Oil				A	A	A	B
Monochlorobenzene					A	B	B
Naphthalene					A	A	D
Nitric Acid	70%	70		D	A	A	B
Perchloric Acid	70%				A		C
Phenol	CP	70	A		A	A	D
Phosphoric Acid	75%	70		D	A	A	B
Sea Water		70	D	D	A	A	B
Silver Nitrate				D	A	B	A
Sodium Carbonate				B	A	A	A
Sodium Chloride	20%	70	D	B	A	A	A
Sodium Hydroxide	50%			D	A	A	A
Sodium Hypochlorite		70		D	A	A	B
Sodium Sulfide				D	A	A	A
Sulfuric Acid	87%	70		D	A	D	A
Toluene				A	A	A	D
Trichlorethylene		70		A	A	A	D
Turpentine		70		A	A	A	A
Urea (Saturated)					A		D
Xylene				A	A	A	D
Zinc Chloride	70%	70			A	B	B

Notes:

1. The above table presents the relative corrosion resistant abilities of certain materials in the specific corrosive environments described. This information should be considered as a general guide only. The table does not provide information on possible combinations of concentrations of corrosive media or temperature levels that may be found in the field. Even small changes in the concentration of the corrosive media or in the temperature at which interaction takes place may generate different results from those described above. Results different from those shown above may also result from impurities in the metals or plastics, the actual condition of the environment in which the materials are used, or other factors.

   NO GUARANTEE OF THE PERFORMANCE OF ANY METAL OR PLASTIC DESCRIBED IN THE TABLE IS EXPRESSED OR SHOULD BE INFERRED. GUARDIAN RECOMMENDS THAT MATERIAL SAMPLES BE SUBJECTED TO ACTUAL OPERATING CONDITIONS BEFORE FINAL SPECIFICATION.

2. The corrosion resistance data for powder coating is based upon laboratory testing consisting of subjecting coated samples to drops of the listed chemicals for ten minutes. Different results may be obtained when coated materials are subjected to chemicals for longer periods of time.

Guardian Equipment
1140 N North Branch St.
Chicago, IL 60642

312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com