

# Enclosure Selection Chemical Resistance Table



Decisions on the most appropriate material of construction will depend on various factors. A major consideration is the resistance properties of materials to various chemicals and environments. Other factors such as size, cost and performance must also be weighed to determine the most effective enclosure solution.

## Ratings

- A Substantial resistance** – the preferred material of construction
- B Moderate resistance** – satisfactory for use under most conditions; very slight swelling of elastomers
- C Questionable resistance** – use with caution
- D Severe effect** – not recommended for use

| Chemical                 | Non-metal      |                |              | Metal               |                |                     |                     |
|--------------------------|----------------|----------------|--------------|---------------------|----------------|---------------------|---------------------|
|                          | Noryl          | Polyester      | Polyurethane | Mild Steel Uncoated | Aluminium      | 304 Stainless Steel | 316 Stainless Steel |
| Acetic Acid (<20%)       | A              | A <sup>1</sup> | B            | D                   | B              | B                   | A                   |
| Ethyl Alcohol            | A <sup>1</sup> | A              | D            | A                   | B              | A                   | A                   |
| Aluminium Chloride       | A              | A              | -            | D                   | D              | D                   | C <sup>1</sup>      |
| Aluminium Sulphate       | A              | A <sup>1</sup> | A            | D                   | B <sup>1</sup> | B                   | B <sup>2</sup>      |
| Brine                    | A              | A              | -            | D                   | B              | C                   | C                   |
| Carbonic Acid            | A <sup>1</sup> | A              | -            | B <sup>3</sup>      | B <sup>1</sup> | A <sup>1</sup>      | A                   |
| Chlorinated Water (sat.) | C <sup>1</sup> | A              | D            | D                   | D              | C                   | C                   |
| Chlorine (dry gas)       | B <sup>1</sup> | A              | D            | B                   | C <sup>1</sup> | -                   | B                   |
| Diesel Oil               | A              | A              | B            | B                   | A <sup>1</sup> | A <sup>1</sup>      | A <sup>1</sup>      |
| Ethanol                  | A <sup>1</sup> | A              | C            | A                   | B              | A                   | A                   |
| Ferric Chloride          | A <sup>2</sup> | A              | A            | D                   | D              | D                   | D                   |
| Ferric Sulphate          | A <sup>2</sup> | A              | B            | D                   | B <sup>1</sup> | B                   | B                   |
| Formaldehyde 40%         | A              | A              | C            | D                   | B              | A <sup>1</sup>      | A                   |
| Fuel Oil                 | B              | A              | B            | B                   | C <sup>1</sup> | A                   | A                   |
| Hydrochloric Acid (<10%) | A              | A              | D            | D                   | D              | D                   | D                   |
| Hydrogen Sulphide (dry)  | -              | A              | -            | B                   | B              | C <sup>1</sup>      | A                   |
| Lime                     | -              | A              | A            | B                   | A              | A                   | A                   |
| Lubricating Oils         | C <sup>1</sup> | A              | A            | B                   | A <sup>2</sup> | A <sup>2</sup>      | A <sup>2</sup>      |
| Magnesium Hydroxide      | A <sup>2</sup> | -              | A            | B                   | C <sup>1</sup> | B                   | A <sup>1</sup>      |
| Milk                     | A <sup>2</sup> | -              | D            | D                   | A              | A                   | A                   |
| Nitric Acid (<20%)       | B <sup>2</sup> | C              | D            | D                   | D              | A                   | A                   |
| Mineral Oil              | A <sup>1</sup> | A              | A            | B                   | A              | A                   | A                   |
| Phosphoric Acid (30%)    | A              | A              | A            | D                   | C              | D                   | C                   |
| Sodium Bicarbonate       | A              | A              | A            | B                   | D              | A                   | A                   |
| Sodium Hydroxide (20%)   | A              | A              | A            | B                   | D              | B                   | B <sup>2</sup>      |
| Sodium Hypochlorite      | A              | -              | -            | -                   | D              | C                   | C                   |
| Sulphur Dioxide          | A              | A              | -            | B                   | B              | D                   | A                   |
| Sulphuric Acid (5-10%)   | A              | A <sup>1</sup> | -            | D                   | D              | D                   | B                   |
| Water, Acid, Mine        | -              | -              | -            | -                   | D              | B                   | B                   |
| Water, Distilled         | A              | A <sup>1</sup> | A            | B                   | A              | A                   | A                   |
| Water, Fresh             | A              | A <sup>1</sup> | A            | B                   | B              | A                   | A                   |
| Wine                     | A <sup>2</sup> | -              | -            | D                   | C <sup>1</sup> | A                   | A                   |

1. Ambient only (22°C)
2. Satisfactory to 48°C
3. Air free

Please note that B&R accepts no responsibility for the data contained in this table. As with all corrosion issues it is vital that particular plant and site conditions are taken into account when selecting materials.