THE HAZ MAT GUYS
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Common Plastics Used

1. HDPE (High-Density Polyethylene)
- **Properties**: High impact strength, excellent chemical resistance to acids, bases, and alcohols.
- **Uses**: Widely used for storing corrosive chemicals like acids or caustics.
- **Limitations**: Not suitable for strong oxidizers like chlorine or concentrated nitric acid.

2. Polypropylene (PP)
- **Properties**: Strong, lightweight, and resistant to many acids and organic solvents.
- **Uses**: Ideal for handling corrosive solutions and low-temperature applications.
- **Limitations**: Can degrade under UV exposure or in the presence of strong oxidizers.

3. PVC (Polyvinyl Chloride) Types 1 & 2
- **Properties**: Excellent chemical resistance; Type 1 is more rigid, while Type 2 is flexible.
- **Uses**: Suitable for containment of low-concentration acids, bases, and salts.
- **Limitations**: Poor resistance to organic solvents and high temperatures.

4. UHMW (Ultra-High Molecular Weight Polyethylene)
- **Properties**: Extremely tough, with excellent abrasion and chemical resistance.
- **Uses**: Frequently used for chemical liners or containment barriers.
- **Limitations**: Difficult to bond or weld due to its surface properties.

5. PTFE (Polytetrafluoroethylene, commonly known as Teflon)
- **Properties**: Superior chemical resistance, high-temperature tolerance, and non-reactive surface.
- **Uses**: Ideal for high-temperature or highly corrosive chemical environments.
- **Limitations**: Expensive and less impact-resistant than other plastics.

6. PET (Polyethylene Terephthalate)
- **Properties**: Transparent, strong, and resistant to a wide range of chemicals.
- **Uses**: Common in emergency water storage or for less aggressive chemicals.
- **Limitations**: Poor resistance to high temperatures or strong acids.

7. Acetal (Polyoxymethylene)
- **Properties**: High mechanical strength, excellent dimensional stability.
- **Uses**: Suitable for structural components in hazmat systems.
- **Limitations**: Limited chemical resistance to strong acids and bases.

8. Polycarbonate (PC)
- **Properties**: High impact resistance, transparent, and strong.
- **Uses**: Often used in viewing panels for hazmat equipment.
- **Limitations**: Susceptible to cracking when exposed to certain solvents.

9. ECTFE (Ethylene Chlorotrifluoroethylene, marketed as HALAR)
- **Properties**: Excellent chemical resistance, especially to halogens and acids.
- **Uses**: Best for handling highly reactive or aggressive chemicals.
- **Limitations**: Higher cost compared to HDPE or PVC.

10. Nylon
- **Properties**: High strength, abrasion resistance, and good mechanical properties.
- **Uses**: Often used for fittings or components, not direct chemical containment.
- **Limitations**: Absorbs water, which can compromise chemical resistance.

11. ABS (Acrylonitrile Butadiene Styrene)
- **Properties**: Strong, impact-resistant, and affordable.
- **Uses**: Often employed in secondary containment.
- **Limitations**: Poor chemical resistance to solvents and acids.

12. Flourosint
- **Properties**: Enhanced PTFE with improved mechanical strength and wear resistance.
- **Uses**: Ideal for seals or components in highly corrosive environments.
- **Limitations**: Expensive and less widely available.

13. PEEK (Polyetheretherketone)
- **Properties**: Exceptional chemical and thermal resistance, high mechanical strength.
- **Uses**: Ideal for extreme conditions in high-temperature or high-pressure systems.
- **Limitations**: Very high-cost limits widespread use.

14. PVDF (Polyvinylidene Fluoride)
- **Properties**: High chemical resistance, good thermal stability.
- **Uses**: Suitable for highly corrosive or high-purity chemical applications.
- **Limitations**: More expensive than PVC or HDPE.