

## 6. Storage Containers

Biological specimens are stored in glass and plastic containers. There are different grades of glass and plastic, and many specimens can be stored in these containers for over 50 years. The selection of the appropriate storage container that is resistant to the preserving chemical, temperature, UV light, and impact damage is an important consideration. The following table shows the different types of storage container and the considerations for long term storage along with the potentially unsuitable chemicals.

Container type	Discussion	Potentially unsuitable
Glass	Able to see the specimen inside the container	
Laboratory glass	Additional resistance to extreme temperatures	
 Grade 1 Polymer Polyethylene Terephthalate (PET)	Clear tough plastic.	
 Grade 2 Polymer High-Density Polyethylene (HDPE)	Common white or coloured plastic. Strong, chemical resistant.	<ul style="list-style-type: none"> <li>▪ Ethyl Alcohol</li> <li>▪ Naphthalene</li> </ul>
 Grade 3 Polymer Polyvinyl Chloride (PVC) Chlorinated Polyvinyl Chloride (CPVC)	Hard rigid clear plastic	<ul style="list-style-type: none"> <li>▪ Naphthalene</li> <li>▪ Bleach (NaOCl) – variable resistance</li> </ul>
 Grade 4 Polymer Low Density Polyethylene (LDPE) Linear Low-Density Polyethylene (LLDPE)	Soft flexible plastic used in squeeze-able wash bottles	<ul style="list-style-type: none"> <li>▪ Ethyl Alcohol</li> <li>▪ Naphthalene (70°C)</li> </ul>
 Grade 5 Polymer Polypropylene (PP)	Hard but flexible plastic. Resists harsh chemicals, often used to make containers like beakers, tubes, and vials that will hold strong chemicals.	<ul style="list-style-type: none"> <li>▪ Naphthalene</li> <li>▪ Bleach (NaOCl) – variable resistance (140°C)</li> </ul>
 Grade 6 Polymer Polystyrene (PS)	Rigid, brittle plastic. Petri dishes, but not appropriate for use with strong chemicals.	
 Grade 7 Polymer All other resins and Multi materials	Cross Linked Polyethylene (XLPE)	<ul style="list-style-type: none"> <li>▪ Naphthalene</li> <li>▪ Bleach (NaOCl) – variable resistance</li> </ul>
	Polycarbonate (PC): Tough plastic resisting impact and high temperatures.	
	Polytetrafluoroethylene (PTFE): Used for specific lab equipment (stir bars and tubing).	
	Polymethyl pentene (PMP): Clear plastic that resists chemicals, especially organic ones. Alternative to glass specimen containers.	
	Polyester	<ul style="list-style-type: none"> <li>▪ 100% Ethyl Alcohol</li> <li>▪ Borax</li> <li>▪ Bleach (NaOCl)</li> <li>▪ Detergents</li> </ul>
Vinyl Ester	<ul style="list-style-type: none"> <li>▪ Borax</li> <li>▪ Detergents</li> </ul>	

Plastic containers can contain a bund or port that allows a tap to be added, these can be manufactured with the port already installed or have the port drilled in. Avoid purchasing and replace any containers with drilled ports because the glue used to secure the plug is prone to failure, leading to leakage of the storage medium.