

Safety and Handling Liquid Scintillators

Contaminated Solvent Action -

Liquid scintillators are all made with organic liquids which have good solvent properties. Hence, they should not come in contact with materials that could be dissolved or attacked by the liquid. Such materials include most plastics and rubbers, and many types of cements, adhesives, and paints.

Water -

Water is a contaminant that can reduce the light transmission properties of a liquid scintillator. It is only slightly soluble in most scintillators used by the physicist and is usually only a problem when large quantities (55 gallons or more) of scintillator are being used.

Moisture in the air readily condenses on the interior walls of large, empty containers. When the scintillator is introduced into the container, this water mixes into the liquid scintillator producing a hazy mixture. Be sure your containers are dry just prior to adding the scintillator.

Cleaning Solvents -

Common cleaning solvents such as halogenated hydrocarbons, alcohols, and ketones are good scintillation quenching agents. Examples of such solvents are chloroform, isopropyl alcohol, and acetone, respectively. Thoroughly dry and ventilate scintillator containers you've cleaned with these kinds of solvents prior to addition of the scintillator.

Air -

Liquid scintillators perform best when free of dissolved atmospheric oxygen. Dissolved oxygen reduces the light output by about 30% from the optimum. It always destroys any pulse shape discrimination properties that the liquid might possess.

The scintillator is deoxygenated easily by slowly bubbling finely dispersed, dry nitrogen gas through it. An atmosphere of pure nitrogen should be maintained above the liquid in its closed container. You also can use inert gases such as argon for this activity.

For liquids having pulse shape discrimination properties, such as BC-501A, you must exercise special care to avoid exposing the scintillator to oxygen after the deoxygenation process. BC-501A usually is used in small quantities (less than 2 liters) which require 20-60 minutes of nitrogen bubbling before the container is sealed. You also can deoxygenate small volumes of liquid scintillator by freeze pumping.

Important General Information -

Liquid scintillators, if handled correctly, can have unlimited lifetimes of high quality performance. In general, liquid scintillators should be stored away from strong light, preferably in darkness. The liquids are flammable and should be kept away from any source of fire.

Small quantities of liquid scintillator are shipped in glass bottles under nitrogen; and, to ensure a long shelf life, should be stored under nitrogen or other inert gas. Larger quantities of scintillator are shipped in selected and cleaned steel 5-gallon and 55-gallon containers, which should be kept not to exceed 90°F.

The basic rule to keep in mind when using liquid scintillators is that contamination must be avoided.

Safety and Handling Liquid Scintillators

Safety -

Reference the MSDS (Material Safety Data Sheet) included with your scintillator shipment for specific instructions.

In general:

WEAR PROTECTIVE GLOVES

VENT ROOM

EXTINGUISH ALL FLAMES

MSDS are available on our website www.crystals.saint-gobain.com



Saint-Gobain Crystals

www.crystals.saint-gobain.com

Manufacturer reserves the right to alter specifications.

©2005-2016 Saint-Gobain Ceramics & Plastics, Inc. All rights reserved.

(09-16)