



Fig. 1

The Aldrich Sure/Pac cylinder system (Fig. 1) provides a convenient method for storing and dispensing research quantities of air-reactive liquids, enabling us to offer many air-sensitive organometallics, both neat and in solution. Highly reactive chemicals can be handled and stored without exposure to atmospheric moisture or oxygen. Yet, the valve design allows ready and convenient transfer of the reagents using standard syringe techniques. (See Technical Bulletin AL-134 for details regarding these procedures.)

Since the reagents packaged in Sure/Pac cylinders are all extremely reactive towards water, oxygen, or both; they must never be exposed to the atmosphere. Dispensing of the reagent requires standard syringe techniques.

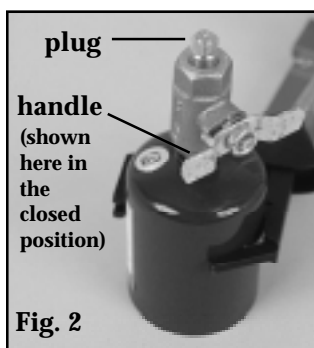


Fig. 2

**The users must be fully qualified and experienced laboratory workers to handle these reagents without problems. Users must be made aware of the very hazardous nature of these products.**

### Reagent transfer using septum inlets

On receiving one of these cylinders, we recommend inserting a septum-inlet adapter in the ball valve on the cylinder. Fig. 2 outlines the parts of this valve. The valve itself is made of bronze, as the reagents shipped are not corrosive toward bronze in the absence of atmospheric moisture.

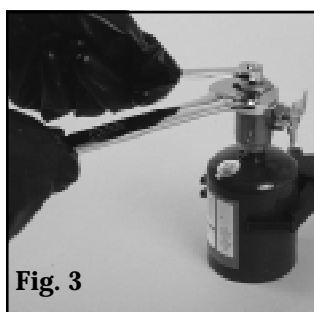


Fig. 3

1. The cylinder should be clamped or held in place as shown in Fig. 2.
2. Make sure the ball valve handle is closed (Fig. 2).
3. Remove the plug while holding the valve with a wrench (Fig. 3). The plug should be saved and later replaced if the entire contents are not removed.

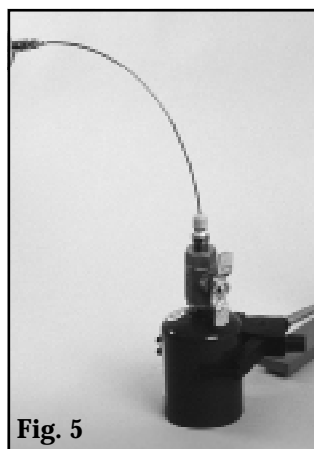


Fig. 5

4. A septum is placed on a special adapter. Fig. 4 shows an adapter for use with a 6mm septum.



Fig. 4

5. The cylinders were originally filled under a nitrogen or argon atmosphere and then closed under a slight pressure (1-2 psi). However changes in temperature and pressure can result in

depletion of that pressure. Therefore, a nitrogen-flushing needle is inserted through the septum on an adapter; it is then screwed in place on the valve and the needle removed.

6. A final tightening with a wrench is recommended but it is not necessary to apply excessive torque. If the threads on the adapter are prewrapped with Teflon® tape, a tight seal is obtained with minimum effort.
7. Once the adapter is in place, the valve can be opened and reagent can be transferred using standard syringe techniques (Fig. 5).

### Adapters and tees

We offer adapters and tees (Fig. 6) in both brass and stainless steel for use with 6-, and 13-mm septa. The vertical inlet is available for the two septa sizes mentioned above. Adapters are recommended for simple syringe transfer techniques where as a tee is for syringe techniques using nitrogen pressure. The side inlet on Aldrich tees are for 6-mm septa (only a small gauge needle is needed for nitrogen). It is possible to not use a septum inlet tee; however, BOTH the nitrogen-pressure needle and the transfer needle must be inserted through the single septum.

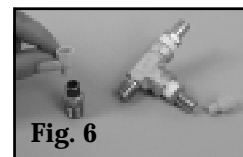


Fig. 6

Before using a septum inlet tee, the threads should be wrapped with Teflon tape. The tee is then equipped with appropriate septa and placed on the valve of the Sure/Pac cylinder, using the same procedure described in "Reagent transfer using septum inlets." Nitrogen pressure is applied at the side septum and the reagent can be transferred using standard double-tipped needle techniques (Fig. 7).

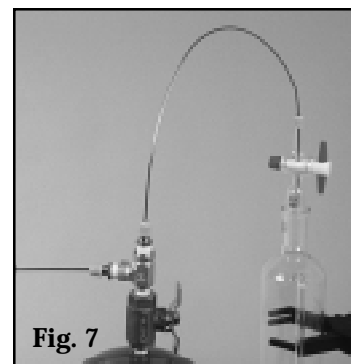


Fig. 7

#### Septa guide

We recommend using the smallest size septum possible.

**6mm:** for 18 gauge or smaller needles

**7mm:** for needles up to 14 gauge

**13mm:** compatible with all needle gauges offered by Aldrich. However due to its large size, it is more apt to leak.

#### Brass vs Stainless steel

**Brass:** can be reused many times and is generally inert to most solvents.

**Stainless steel:** when corrosives are used or if acid is used during cleanup.

#### Cleanup and disposal

The following instructions pertain to the adapter or tee, and the Sure/Pac cylinder. Cleanup of syringes and needles is covered in AL-134.

#### Adapter or tee

1. Close the valve on the cylinder.
2. Remove the adapter or tee with a wrench while using a second wrench to hold the valve securely.
3. Normally the used adapter or tee will not be soiled with an excessive amount of reagent and can be cleaned by rinsing with water, then acetone, in a sink. However, if the adapter or tee appears to be coated on the inside with a large amount of active reagent, remove septa and allow the parts to air for a few hours in a hood *in the absence of flammable vapors*.

#### Disposal of the empty cylinder

These cylinders are **NO-DEPOSIT** and **NO-RETURN**. The following is a recommendation for safe disposal and does not differ significantly from what should be followed for all empty chemical containers. The user of the reagent is most familiar with the contents and should accept the responsibility for safe disposal of the empty container.

A cylinder containing any residual material must never be opened to the atmosphere. The last traces of reagent must be removed using one of the syringe or double-tipped needle transfer procedures. The reagent should be used completely for a chemical reaction; however, if unused and unwanted material must be destroyed, it must be transferred to an appropriate reaction flask for hydrolysis and/or neutralization with adequate cooling.

1. The essentially empty cylinder is then rinsed three times with an inert, dry solvent; this rinse solvent must be hydrolyzed or neutralized. The best solvent to use is the same solvent used for the solution of the original reagent. If the cylinder originally contained a neat reagent, then use a solvent which is completely inert and unreactive toward the reagent.
2. The solvent must be added to and removed from the cylinder under nitrogen pressure using standard syringe or double tipped needle procedures.
3. After adding each rinse, the cylinder is swirled or shaken.
4. After the triple rinse is complete, the valve can be closed and the adapter or tee removed following the steps outlined in **Cleanup and disposal**.
5. At a safe location, preferably outdoors or, AT A MINIMUM- in the back of a hood, the valve is opened to the atmosphere. After allowing the cylinder to air for at least a few weeks, the valve should be removed and both the valve and cylinder must be triple-rinsed with water before disposal.

Every Sure/Pac cylinder is new and unused before it is filled with reagent. Thus, you can be sure that every Sure/Pac cylinder contains high-quality reagent.

It is our hope that you find the use of these cylinders and the related equipment to be straightforward. We recognize that the reagents contained in our Sure/Pac cylinders may not be easy to work with and we want to do everything possible to help. If you need further assistance, please contact us.

Sure-Pac is a trademark of Aldrich Chemical Company, Inc.  
Teflon is a registered trademark of E.I. du Pont de Nemours & Co., Inc.

## Aldrich Cylinder Return Service

We now accept your empty Sure/Pac cylinders, Lecture bottles, and Steel cylinders. Contact Aldrich Customer Services Department to receive a complete information packet on having Aldrich handle your empty cylinders.

*Cylinders must be completely empty, leak free, and fully functional. This service pertains only to those products purchased from Aldrich Chemical Co., Inc.*



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