



# **Perry Fiberglass Products, Inc.**

LEADERS IN THE DESIGN AND MANUFACTURING OF DUCTWORK, CARBON ADSORBERS, SCRUBBERS, FANS, PIPING, & TANKS

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# **Handling, Installation and Operating Instructions**

## **For**

# **Chemical Scrubber Packing**

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Note: Should you have any questions concerning the installation of PERRY packings, please call your supplier or contact Perry Products directly at 321.609.9036

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## 1. SHIPMENT, STORAGE, AND HANDLING

### 1.1 Shipment Description

PERRY packings are usually shipped to location by contract motor freight trucks. Standard shipping containers are corrugated cardboard boxes containing 10 cubic feet of packing each.

### 1.2 Storage and Handling

Plastic packings are shipped in cardboard boxes which are not designed for outside storage. Care should be taken when handling boxes to prevent boxes from tearing open or corners becoming crushed.

#### 1.2.1 Inside Storage of Standard Boxes

1. Stack boxes on wooden pallets or on level floor so that there is no danger of water damage. Make sure the entire bottom surface of each box is fully supported.
2. Do not stack boxes more than three high or tape boxes together as a group. If the packing is to be stored in a climate with high humidity (90% or more) for extended period of time, then reduce stacked height to two boxes.
3. Do not put any load on top of stacked boxes. Never allow any person to climb on or store other equipment on top of any of the boxes.

#### 1.2.2 Outside Storage of Standard Boxes

1. Outside storage of standard boxes is not recommended; however, if no other alternative is available, follow recommended stacking as inside storage to maximum of two high.
  2. Completely cover boxes with weatherproof canvas or plastic. It is important that air can circulate among the boxes so that condensation does not form on the inside of the cover.
  3. Boxes of packing stored outdoors will not support any load. Make sure that rain water, ice or snow do not build up on top of the covered boxes.
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## 2. INSTALLATION INSTRUCTIONS

### 2.1 General Information

There are many ways to install plastic random packing. Installation procedures vary depending on the column diameter, size of packing, packed bed height, and position of other internals. Generally, if common sense is used, problems can be avoided.

For small-diameter columns of less than 30 inches, it is usually easier to load through lower-level manways or use a chute to lower the packing to the support level. For larger columns, it may be possible to place men inside so that complete boxes or bags can be lowered and manually dumped. Extreme caution should be used in this procedure. Make sure the packing support is designed to hold the combined load of the workmen and the packing. Another method is to attach a rope on the top of a bucket and another on the bottom and lower the packing to the desired level. The rope attached to the bottom would then be used to tip the bucket over.

Finish all welding or other work that produces sparks before installing any packing. Test the dimensional compatibility of the individual packing pieces with the openings in the support grid. Make sure that it is not possible for packing to squeeze through any openings.

### 2.2 Installation Procedures

1. P-LANPAC, PERRY Q-PAC and NUPAC are designed to be randomly dumped in place. Never let pieces of packing free fall more than 15 feet. In cold weather (below 45°F), particular care must be taken in handling and installing plastic packings, since the brittleness of the plastic material will be greatly increased.
  2. Make sure the packing fills all the space in the packed bed section. Pay particular attention to the manways and other irregular spaces.
  3. Check the position of sensors when they become buried in packing. Be careful not to drop packing on sensitive process measurement devices.
  4. If workmen are in the tower, use plywood to distribute their load over as large an area as possible. Never exert a concentrated load onto a few of the individual packing pieces. Check with the packing support
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manufacturer for loading limits before placing men inside the tower. Use a garden leaf rake, with flexible head, to level packing.

5. Before completing the packing installation, consult the installation procedures of the bed limiter, liquid distributor, and other internal components to see if partial installation of these parts is required before packing installation is completed.
6. Be careful not to leave any foreign matter in the packed bed section. Make sure all plywood, boxes, and bags are removed.
7. If procedures are not clearly understood by the personnel installing the packing, they should call the packing manufacturer for additional information required.

### 3. OPERATION AND MAINTENANCE

#### 3.1 Operation

Operation of the vessel should be in accordance to the procedures outlined by the vessel manufacturer and according to the design specifications.

#### 3.2 Maintenance and Cleaning

The packing should be inspected on a regularly scheduled basis. Past experience indicates a minimum inspection period of six (6) months to check for excess fouling. The optimum inspection time will vary from area to area depending on the rate of concentrations of deposits from your water source.

The appropriate packing maintenance procedure is determined by the type and amount of fouling (collected deposits such as iron compounds, carbonates, and bacteria) that has accumulated on the packing. The packing can usually be cleaned in place if fouling is not permitted to get excessive.

Under some circumstances, the packing media may foul with mineral scale or biological growth. If the proper steps are taken in a timely fashion, the fouling can be reversed. If these procedures are too time consuming or the manpower is not available to perform these duties, contact Perry Products, Inc. There are service companies that per-

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form these duties throughout the United States, and Perry can provide recommendations.

### 3.2.1 Mineral Scale (iron / manganese oxide, calcium carbonate, etc.)

1. The pressure drop through the packed bed should be monitored on a weekly basis. Once the pressure drop reaches twice the original amount, it is time to clean the system.
2. Shut down the column and drain it. Inspect the sump for scale formation, remove any deposited solids and flush the sump with water. Close up the sump and fill with a 3% solution of muriatic acid (HCl). This solution should be recirculated over the packing using the existing liquid distributor until the packing is clean—approximately 2 to 3 hours—*without* the blower running. Nobody wants HCl raining down on them. If the pH of the solution rises above 4, that means that there was not enough acid to dissolve all the scale. In that case, the sump should be drained and the procedure repeated with another batch of 3% HCl.
3. After the packing is cleaned, drain and dispose of the spent acid, and thoroughly flush the system with water. The column can then be placed back in operation.

### 3.2.2 Biological Growth (algae, bacteria, etc.)

The growth of organic matter in a column is a direct function of water quality. If the water used in a column is treated (chlorinated) by a municipal water treatment plant, then you will probably not experience problems. If this is not the case, then microbial growth may occur.

To clean fouled packing, shut the column down and drain the sump. Add a 1% solution of sodium hypochlorite (NaOCl) to the sump and recirculate over the packing using the existing liquid distributor for approximately one hour *without* the blower running. Drain the column afterwards, and thoroughly flush it with water. The column can then be placed back in operation.

Depending on the water quality, this procedure might have to be performed once a week, once a month, or never. The pressure drop should be monitored and this procedure should be performed as a

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routine maintenance procedure before excessive biological growth becomes a problem.

### 3.3 Fouling Prevention

If existing equipment has had history of excessive fouling, or if a new installation needs to be cleaned too frequently, contact Perry Fiberglass Products, Inc. for information about water pretreatment options to reduce or eliminate fouling deposits.

## 4. WARRANTY

Seller represents that the goods or equipment sold pursuant to this order will be free from defects in workmanship or material for a period of one (1) year. Perry Products makes no other warranties, expressed or implied, whether of workmanship, performance, quality, durability, merchantability or fitness for any particular purpose or use or otherwise with respect to materials sold, or with respect to any part or labor furnished during the sale, delivery, servicing of the material. In no event shall Seller be liable to Buyer for any special, indirect, incidental or consequential damages arising out of, or as a result of, the sale, delivery, servicing, use or loss of use of the material or any part thereof, or for any charges or expenses of any nature incurred without Seller's written consent, even though Seller has been negligent. The obligations of Seller are limited to repair or replacement of defective material, or—at its sole option—to the refund of the purchase price. Buyer assumes all risk and liability for results of using the material covered by this order, whether used separately or in combination with other products, and agrees to hold Seller harmless for all damages, direct or consequential, resulting from the use thereof.

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