



Think Safety!

A Publication Of The West Virginia Propane Gas Association

Spring 2007

Are You Correctly Filling 20-Pound Cylinders?

The spring brings a return for most people to outdoor activities including grilling. As a result most propane dealers see a surge in their recreational cylinder business. Each day many dealers incorrectly purge, fill or in some cases requalify cylinders. This issue of *Think Safety* will address several aspects of correctly handling cylinders.

First, all recreational cylinders four pounds to 40 pounds must be equipped with an overfill prevention device

(OPD) before it can be legally filled.

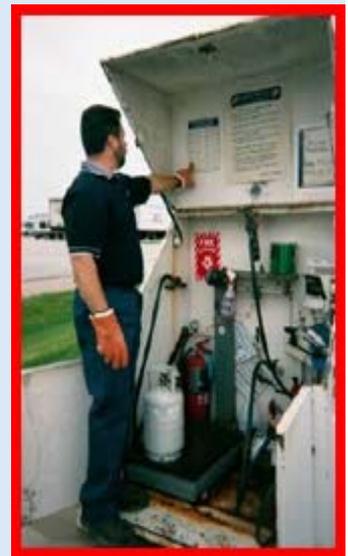
OPDs can easily be identified by the triangular hand wheel. If the cylinder does not have the triangular hand wheel, it cannot be filled, according to West Virginia law.

Cylinders used in industrial truck service, including forklift cylinders and cylinders identified and used for industrial welding and cutting gases are exempted from the OPD requirement. Cylinders manufactured prior to Oct. 1, 1998,

and designed for use in the horizontal orientation for which an OPD is not available are also exempt.

Obsolete valves can be replaced by OPD valves in an otherwise good tank. However, any business replacing valves must be licensed and any person performing the change must meet the training requirements specified in NFPA 58, Section 1.5.

Also, the OPD installed must be a listed valve assembly.



Installing A Dispenser Unit:

The installation, location and operation requirements for an LP gas dispensing station can be found in NFPA-58.

Dispensing stations can not be installed within a building, and any protective shelter must be well ventilated and not

cover more than 50 percent of the perimeter.

The pump controls must be located at the device in order to minimize the possibility of leakage or accidental discharge.

An excess-flow or differential back check valve must be installed at or on the dispenser at the point in which the hose is connected to the liquid piping.

A hydrostatic relief valve must be provided with the piping and dispensing hose so as to relieve pressure that could develop from the trapped liquid to a safe atmosphere or product-retaining

section.

Precautions should be taken to make the area trespass and tamper proof by constructing an industrial-type fence (chain link or equivalent material) of at least 6 feet high. There must be at least two emergency access points from within the enclosure. The access points must be at least three feet wide. There are two exceptions to this rule. A second gate is not required when the fenced or enclosed area is not over 100 square feet. Also, a second gate is not required when the point of transfer is

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Installing A Dispenser Unit:

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within three feet of the gate or if containers are not filled within the enclosure.

Fencing is not required when devices are used that prevent unauthorized operation of valves, equipment, and appurtenances that can be locked in place are used.

A manual shutoff valve and an excess-flow check valve shall be located in the liquid line between the pump and dispenser inlet where the dispensing device is installed at a remote location and is not part of a complete storage and dispensing unit mounted on a common base.

All dispensers either shall be installed on a concrete foundation or shall be part of a complete storage and dispensing unit mounted on a common base.

An emergency switch or circuit breaker must be installed so that the power can be cut in case of an emergency. It must be clearly identified as such be visible at the point of transfer. The switch must be not less that 20 feet or more than 100 feet from the dispensing unit.



Correctly Filling A Cylinder:

According to NFPA 58, an OPD shall not be the primary means to determine when a cylinder is properly filled. The OPD is intended to be a backup device

filled beyond 80 percent capacity. Consult NFPA 58 to determine which method is right for the particular cylinder you are filling.

OPD valves are machined parts, machined by human beings, and as such are not infallible. Therefore, cylinders should be filled either by weight or volumetric methods to insure that the cylinder is not

Most portable recreational cylinders will be filled using the weight method. When using the weight method, the cylinder should be filled to 42 percent of the marked water capacity in pounds. For instance, a "20-pound" cylinder with a

water capacity of 47.1 pounds should be filled with about 19.78 pounds of propane.

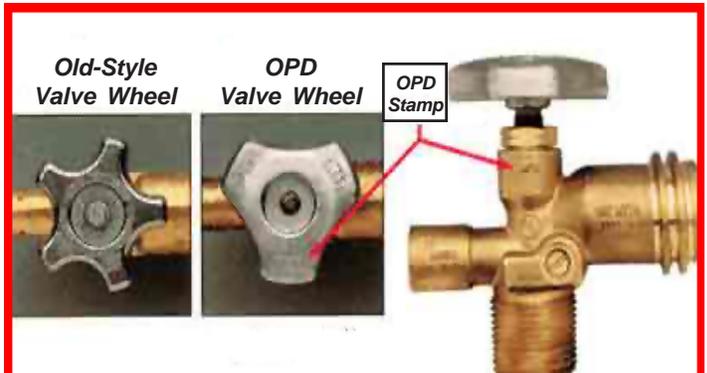
Overfilling a cylinder can create a dangerous situation. Once the cylinder leaves your filling station, there certainly is no guarantee that it will not be subjected to heat which can force the cylinder's relief valve to vent gas and relieve pressure.

If this happens in the trunk of a car, while sitting in a grocery store parking lot, the results can be life threatening.



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Preparing A New Cylinder For Filling:

All new cylinders must be purged in order to rid them of air and moisture, both of which are contaminants that could interfere with the proper operation of the connected appliance.

Never purge with liquid. Purging with liquid causes the liquid to flash into vapor, chilling the container, and condens-

ing any moisture vapor on the walls where it will remain while the pressure is being blown down.

Also, purging with liquid is very ineffective at removing air from the cylinder as less than 50 percent of the



air will be removed by this method and as little as 25 percent.

Instead, the cylinder should be pressurized to 15 psig propane vapor pressure. The vapor should be exhausted and the procedure repeated

at least four times.

If this procedure is repeated four times, the percentage of air in the cylinder will be reduced to 6.25 percent. Five times would reduce it to 3.13 percent and six times to 1.56 percent.

This may seem a little more time consuming at first, but it will be best in the long run.

Preparing A Used Cylinder For Filling:

Before filling a used cylinder, it must be visually inspected to make sure it is not out of date, or to make sure it does not show leakage, serious denting, bulging, gouging, excessive corrosion or serious damage to the foot ring or protective collar.

If the cylinder is out of date or otherwise determined to be unfit for refilling, it must be requalified. **If it is requalified by the visual inspection method only, the dealer must now obtain a Requalifier Identification Number (RIN).**

To requalify a cylinder by the visual inspection method, inspections must be performed in accordance with Compressed Gas Association Pamphlet C-6 (Standards for Visual Inspection of Steel Compressed Gas Cylinders) and/or C-6.3 (Guidelines for Visual Inspection and Requalification of Low Pressure Aluminum Compressed Gas Cylinders). Copies of these pamphlets are available from the Compressed Gas Association (<http://www.cganet.com>)

The inspection results must be recorded and maintained in accordance with Code of Federal Regulations 49 CFR 180.209. The records should include:

Date of Inspection (month and year).

DOT specification /exemption number.

Cylinder identification (registered symbol and serial number, date of manufacture, and owner).

Type of cylinder protective coating (including statement as to need of refinishing or recoating).

Conditions checked (e.g. leakage, corrosion, gouges, dents or digs in the shell or heads, broken or damaged foot ring or protective collar, or fire damage).

Disposition of cylinder (returned to service, returned to cylinder manufacturer for repairs or condemned).

Cylinders passing requalification by external visual inspection must be marked in accordance with 49 CFR 180.213. It must be marked with the RIN set in a square pattern, between the

month and year of the requalification date.

The markings must be at least 1/4 inch high, except for the RIN characters, which must be at least 1/8 inch high. Markings must be made by stamping, engraving, scribing or any other method that produces a legible, durable mark. The markings must be perma-

nent and placed on any portion of the upper end of the cylinder, excluding the sidewall. They must be readily visible at all times.

Markings Example

9 A1 98 X
32

Dangerous Cylinders:

Be on the lookout for cylinders that have been used in the making of methamphetamines. Those cylinders pose an extreme safety risk due to their use with anhydrous ammonia and should not be filled with propane when identified.

Anhydrous ammonia damages the brass valves in propane cylinders by cracking the valve body or its components. The result can be a violent expulsion of the valve from the cylinder.

These cylinders can be visually identified by the blue-green stains on the brass portions of the service valve or the pungent odor of ammonia on or

near the cylinder.

It can even be dangerous to move the cylinder due to the unknown integrity of the cylinder's service valve. If you move the cylinder, point the valve away from all personnel due the risk of expulsion.



Obtaining A RIN:

To obtain a RIN, a company must submit an application to DOT registering the facility as one that visually requalifies cylinders. The application must be signed by the facility manager, certifying that the facility will operate in compliance with the applicable hazardous materials regulations.

NPGA has developed a sample application for your use that has been reviewed and accepted by DOT.

The completed application should be submitted to:

Associate Administrator for Hazardous Materials Safety Research and Special Programs Administration

U.S. Department of Transportation

400 7th Street SW

Washington, D.C. 20590-

0001

The RIN applies to the facility where the requalification is performed not to any man-

ager or employee of the facility. If a company has more than one facility, then a separate RIN must be obtained for each facility that visually requalifies cylinders. An application may be submitted for all of the facilities at one time, however, each application must be signed by the manager in charge of the respective facilities.

A regional manager overseeing several facilities may sign

the applications, but by doing so, he is signifying that each facility is in compliance.

The RIN approval process usually takes approximately two to four weeks, depending on the number of applications submitted by the company and the availability of DOT personnel to review the applications.

Renewals must be submitted at least 60 days before the expiration date.

Are Your Employees Properly Trained To Fill 20-Pound Cylinders?
 Inside This Issue Of *Think Safety* We Will Focus On:

- Installing Dispenser Units
- Correctly Filling A Cylinder
- Properly Filling A New Cylinder
- Recognizing Used Cylinders That Should Not Be Filled
- Recognizing Cylinders Used In The Making Of Meth
- Applying For A Requalifier Identification Number (RIN)

See propanecouncil.org for dispenser training brochures.

A Test Is Also Included To Test Your Employee's Knowledge Of The Subject.

Training Quiz

Name _____ Social Security Number _____

1. Dispensing stations can not be installed within a building.
A. True B. False
2. Any protective shelter must be well ventilated and not cover more than ___ percent of the perimeter.
A. 30 B. 40 C. 50 D. 60
3. The pump controls must be located_____
A. At the device B. Near The Gate C. Near The Tank D. Inside The Office
4. An excess-flow or differential back check valve must be installed at or on the dispenser.
A. True B. False
5. A hydrostatic relief valve must be provided with the piping and dispensing hose.
A. True B. False
6. Precautions should be taken to make the area trespass and tamper proof by constructing an industrial-type fence of at least ___ feet high.
A. 5 B. 10 C. 7 D. 6
7. An OPD shall be the primary means to determine when a cylinder is properly filled.
A. True B. False
8. Cylinders should be filled either by _____ to insure that the cylinder is not filled beyond 80 percent capacity.
A. Weight B. Volume C. OPD D. A Or C
9. When using the weight method, the cylinder should be filled to ___ percent of the marked water capacity in pounds.
A. 42 B. 30 C. 50 D. 60
10. A "20-pound" cylinder with a water capacity of 47.1 pounds should be filled with about _____ pounds of propane.
A. 23.3 B. 19.78 C. 15.4 D. 47.1
11. All new cylinders must be purged in order to rid them of air and moisture.
A. True B. False
12. Never purge with liquid.
A. True B. False
13. The cylinder should be pressurized to ___ psig propane vapor pressure when purging.
A. 10 B. 20 C. 5 D. 15
14. The vapor should be exhausted and the procedure repeated at least ___ times.
A. 10 B. Three C. Four D. Five
15. Before filling a used cylinder, it must be visually inspected to make sure it is_____
A. It Is Not Out Of Date B. Not Leaking C. Not Dented D. A,B, and C
16. Anhydrous ammonia damages the brass valves in propane cylinders by cracking the valve body or its components. The result can be a violent expulsion of the valve from the cylinder.
A. True B. False

Training Quiz Answers

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