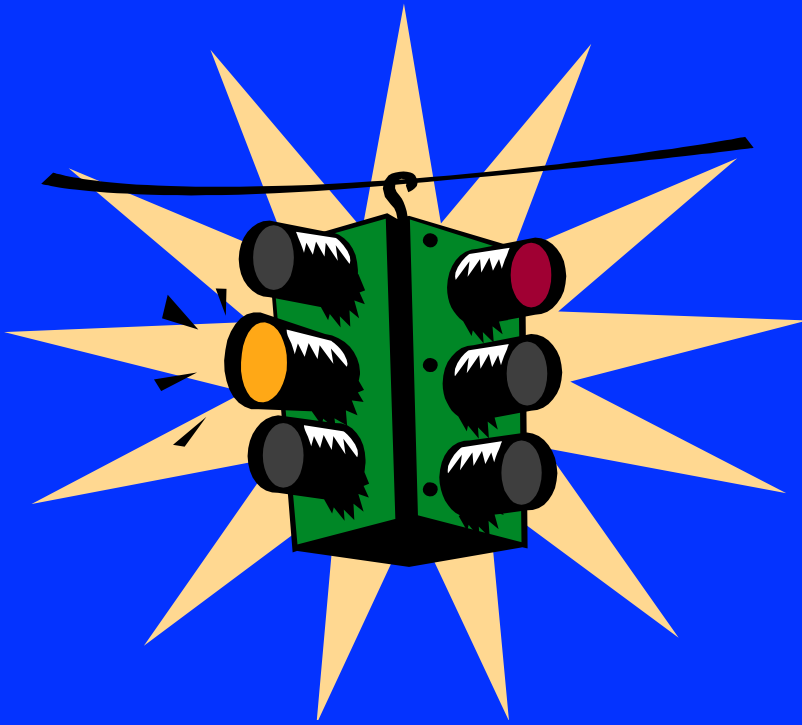


Hazardous Materials Handling

High Pressure Cylinders



Goals and Objectives

- Safety through Knowledge
- Handling and Transporting High Pressure Cylinders

TRAINING FOR INDIVIDUALS THAT USE BUT DO NOT FILL CYLINDERS

*The US Dept. of Labor,
Occupational Safety
Health Administration
(OSHA) regulates safety
in the work place.*

THE CODE OF FEDERAL REGULATIONS
(CFR49:172.700) MANDATES THAT ALL
INDIVIDUALS WHO HANDLE
COMPRESSED GAS CYLINDERS SHALL
RECEIVE APPROPRIATE HAZARDOUS
MATERIAL TRAINING.
TRAINING SHOULD OCCUR EVERY
THREE YEARS
BY LAW YOU SHOULD RECEIVE THIS TRAINING
WITHIN 90 DAYS OF HIRING

Luxfer has published do's and don'ts for handling aluminum cylinders.

TANK TIPS

Do

- ▶ Keep the threads and inside of your cylinder dry and free from oil, dirt or other contaminants.
- ▶ Check the retest date. Make sure your cylinder is hydrostatically retested every five years.
- ▶ Look for a current VIP sticker. Have your cylinder visually inspected at least annually and more frequently if in heavy service.
- ▶ Read and understand all caution labels on your cylinder.
- ▶ Thoroughly wash your cylinder and boot assembly after every dive.

Don't

- ▶ Drop your cylinder.
- ▶ Allow your cylinder to roll while travelling.
- ▶ Fill a cylinder which is past its retest date.
- ▶ Overfill your cylinder. Fill to the stamped service pressure ONLY.
- ▶ Expose your cylinder to temperatures exceeding 265°F (130°C).
- ▶ Paint your cylinder yourself.

▶ These tips are brought to you in the interest of dive equipment safety by Luxfer Gas Cylinders, the world's largest manufacturer of aluminum high-pressure gas cylinders.

Be a Responsible Diver!

Luxfer supports the Responsible Diver program and urges you to follow the Responsible Diver Code. Ask your dive store for a copy of the "Are You a Responsible Diver?" brochure.

Your Responsible Diver duties include having your equipment serviced to manufacturers' standards by a factory-authorized service technician or, in the case of your diving cylinder, by a certified scuba cylinder visual inspector. Many dive stores have technicians who have been trained and certified to do visual inspections by a nationally recognized training organization, such as Professional Scuba Inspectors (PSI).

Remember, May is Responsible Diver Month. Ask your participating dive store for details!

SEAGATE CYLINDER CO. INC.

DO's

- Keep the threads and inside of your cylinder free from oil, dirt, and other contaminants
- Check hydro date, test every five years
- Look for a valid Visual Inspection Sticker, internal inspection annually, more frequently based on use
- Read all manufactures lables
- Thoroughly wash cylinder and boot assemblies

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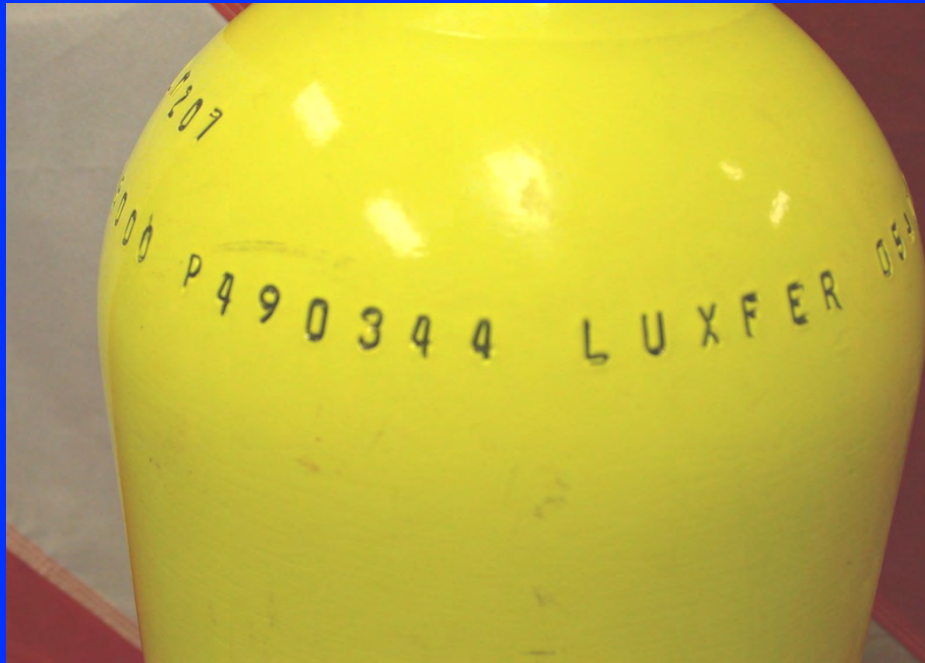
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SEAGATE CYLINDER CO. INC.

DON'TS

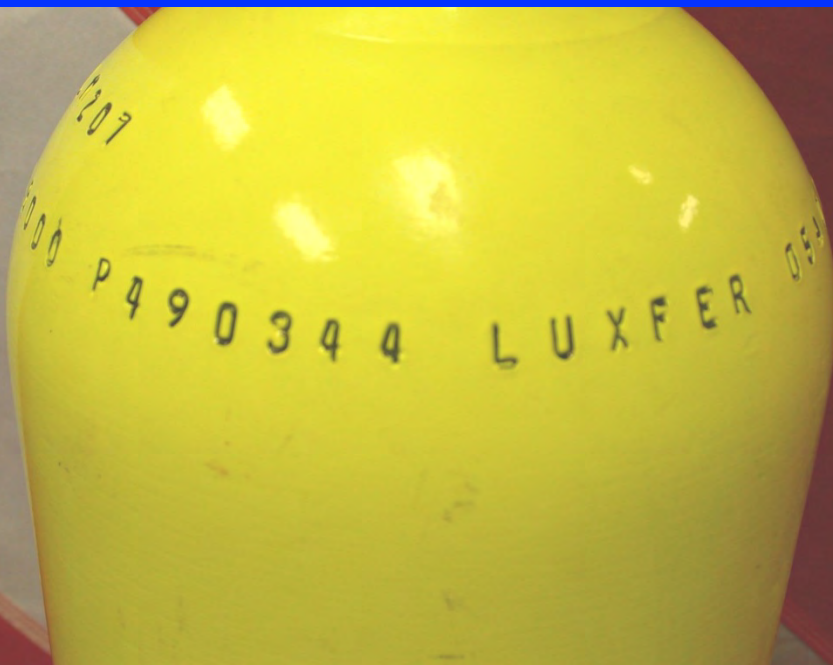
- ◆ Don't drop your cylinder
- ◆ Allow your cylinder to roll while transporting
- ◆ Fill a cylinder which is past its test date
- ◆ Allow over filling past the stamped pressure
- ◆ Expose your cylinder to temperatures exceeding 265f
- ◆ Paint your cylinder

**THE US DEPT OF TRANSPORTATION REGULATES
TRANSPORT AND TESTING OF PRESSURE CYLINDERS.
TANK INFORMATION IS STAMPED ON THE NECK AREA
OF THE CYLINDER**



ALUMINUM CYLINDERS

- ◆ Internal visual inspection annually
- ◆ Neck inspected by Visual Plus looking for stress load cracking in neck area of tank
- ◆ Internal inspection by drop light to check for signs of water or other contaminants
- ◆ P490344 indicates serial number
- ◆ LUXFER indicates manufacturer
- ◆ DOT (Department of Transportation)
- ◆ 3AL Indicates type of metal
- ◆ 3000 Indicates working/fill pressure
- ◆ TC-3AL M 207 metric fill pressure
- ◆ One BAR equals 14.7psi
- ◆ 207 times 14.7 psi equals fill pressure



Aluminum Cylinders shall be inspected using the Visual Plus method.
Visual Plus emits an eddy current that detects cracks in the neck of
Aluminum Cylinders.

The Visual inspection sticker should indicate that the tank was inspected
in this manner and identify inspection agency

THIS TANK HAS BEEN
INTERNALLY AND EXTERNALLY
INSPECTED AND FOUND FREE
OF ANY SIGNIFICANT RUST
OR CORROSION AT THIS TIME.

SCUBA HUT

139 Delaware Avenue
Glen Burnie, Maryland 21061
(410) 761-4520

*aluminum tanks
inspected by*
.....
VISUALplus

EXPIRES ON JANUARY 1
OF YEAR INDICATED

2001 2002 2003



STEEL TANKS

- ◆ ICC (INTERSTATE COMMERCE COMMISSION) PRIOR TO 1970
- ◆ DOT (DEPARTMENT OF TRANSPORTATION) AFTER 1970
- ◆ 3AA INDICATES METAL OF TANK
- ◆ 2400 INDICATES WORKING PRESSURE
- ◆ 735395 IS SERIAL NUMBER OF TANK
- ◆ PST IS MANUFACTURER OF CYLINDER
- ◆ 7-01 IS MANUFACTURE DATE
- ◆ INTERNAL INSPECTION ANNUALLY
- ◆ DROB LIGHT METHOD OF INSPECTION
- ◆ SOME TANKS HAVE A BATCH AND SERIAL NUMBER



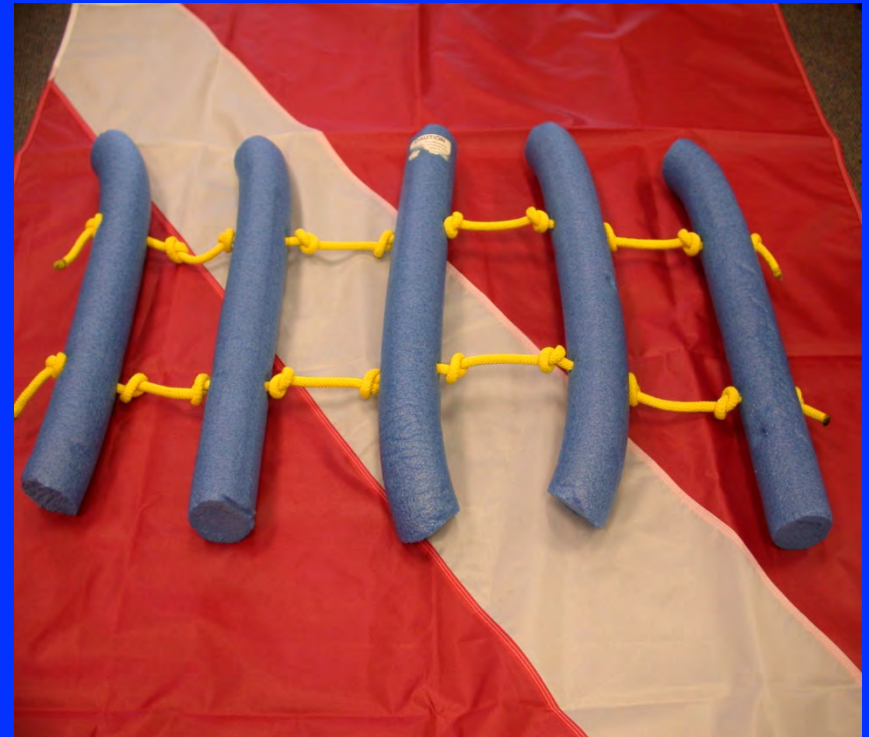
Transporting Cylinders

Cylinders should be fixed as not to roll or bounce around when being transported



◆ Tank holders shown below work well on boats and Vans

◆ This type of holder works well with passenger vehicles



Tank valves

Left to Right

- J Valve not made any longer, used mechanical reserve mechanism
- D.I.N Valve, 300 BAR normally used at pressures over 3000 PSI, requires special adapter on regulator
- K Valve most commonly used valve



Hydrostatic Testing

⇒ By law, tanks are tested hydrostatically every five years. If they pass, a stamp is placed in the neck. It indicates testing agency, and date of testing. Always in neck area of scuba cylinders.



Boots, Coatings and Storage

- ◆ Boots allow Steel cylinders to stand up as the bottoms are round.
- ◆ Boots also act as shock absorbers to protect pool and boat decks
- ◆ Steel tanks are Galvanized or epoxy coated for external protection from oxidation.
- ◆ Aluminum cylinders are only painted and should not be repainted, concerns are heating in the painting process
- ◆ Cylinders should be stored in the vertical position and securely chained or fastened in tank holders in an area where they will be out of foot traffic.

Conclusions

While pressure vessels do propose a risk, through proper handling, storage, use and filling the risk may be reduced.

The rupture of cylinders does occur but by being informed it is our goal minimize the danger of that happening.

You are now ready to take the Hazmat exam for users of high pressure cylinders.
See your DSO or DCB Chairperson