

D.O.T. REQUIREMENTS FOR TRANSPORTATION OF SAMPLE CONTAINERS

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During my travels around the United States talking about sampling and sample containers, it has come to my attention that the oil and gas industry in the U.S. needs to be a little better informed on proper handling, shipping and transportation of sample containers of all types. Since everybody in the oil, gas and chemical industry seems to be involved in taking samples and handling sample containers, it behooves us to understand the laws and rules that govern their transportation.

The Department of Transportation (D.O.T.) Title 49 covers the rules and regulations for the manufacture, handling and transportation of sample containers of all types. Whether you use specially-built sample containers, old homemade sample containers, old World War II oxygen bottles, gigantic sample containers, or very small cylinders, if you are transporting those sample containers in your vehicles or you are shipping them by common carrier and they have hazardous materials in them, you must be aware of the rules that govern the handling of those cylinders.

This paper is for information only and certainly not meant to be the last word on the use of sample cylinders as far as transportation goes. Each company's own legal department must have their own interpretation of these rules and abide by these rules. If local, state or county regulations are in force, they must also be adhered to. However, the D.O.T. has the final say and certainly is the most stringent in many, many cases. So, consequently, you must understand how important it is that the handling of sample cylinders must be carefully done.

The actual purpose of D.O.T. Title 49 is to ensure the safety of the public, as well as the people directly involved in handling hazardous materials in sample cylinders. Also, we put this information together so that you, as an individual, and your company can avoid penalties that might be imposed by law enforcement agencies and/or the D.O.T. inspectors themselves for improper transportation of these sample containers.

In January 1988, the D.O.T. informed local law enforcement agencies that anyone who had the authority to write a citation for travel violation, or

anyone in the law enforcement business, could also write a citation for the improper transportation of sample containers. This makes the enforcement arm much more encompassing than it ever has been before. Up until that time, only the D.O.T. people themselves were concerned about these sample containers. For your information, however, these law enforcement people around the U.S. normally are not aware of most of the rules that govern these sample containers, nor are they aware of the fines and penalties that can be involved and, consequently, many people would not necessarily write you a ticket if you were stopped.

However, so you will understand the severity of the situation, the fine for improper transportation of a sample container can be as high as \$25,000.00 per sample cylinder for the company and as much as \$500.00 for the driver of a vehicle. Now remember, this is for each sample container, not for a lot, or a bunch, or a wad, or a group, or a box full, but for each sample container that is improperly transported.

Because of this, it certainly behooves us all to understand this law and comply with it.

As an example, the compliance to D.O.T. Title 49 involves adherence to the following sections:

1. **Hazardous Materials Table 49 CFR 172.101.** The Hazardous Materials Table describes what you have in the sample container and how to handle it; whether it is a hazardous flammable liquid or a flammable gas, a poison, radioactive, and other classes.
2. With each sample container, there is a requirement that **Shipping Papers** are filled out. These shipping papers are covered in 172.200. On the shipping papers, there must be information regarding the proper shipping name, the hazard class (flammable liquid, flammable gas), the U.N. number or identification number, the quantity that is in the sample container, and as of January 1991, an emergency response number must be on the shipping papers. All of these are covered in 172.101. The

emergency response number is 172.602. The emergency response number is one of the newest additions to the shipping papers and should be very carefully looked at to determine its' exact requirements for your organization.

3. **Packaging Requirements.** Each sample container has specific packaging requirements. The requirements vary as to what is in the sample container, how it is being transported, and what its' design and construction amount to. Those are also covered in 172.101. They include general specific exemptions and definitions for packaging.
4. **Marking Requirements.** The marking requirements for sample containers (flammable liquid, flammable gas, etc.) is covered in 172.300.
5. **Labeling Requirements.** 172.400.
6. **Placarding Requirements.** 172.500. At the writing of this paper, for general transportation of sample containers the way we will talk about it in this particular instance for individuals collecting samples for their own companies or small volumes of samples, placarding requirements have been delayed, so you will not have to have your vehicle placarded.
7. **Federal Motorcarrier Safety Regulations.** 39 CFR 390-397.

In addition to these specific applications of D.O.T. Title 49, if you are a user of a sample container (a standard sample cylinder with 1 or 2 valves - not the special piston style sample container, but a rolled-end standard cylinder), if that cylinder is over 4-1/2" in diameter and/or over 12" long, that sample container must have a relief valve. If you are using constant pressure sample containers, the CP cylinder must have a relief valve on both ends. The relief valves on sample containers must conform to Compressed Gas Association publications that are applicable to relief valves. For the transportation of sample containers, sample containers must be enclosed in some kind of carrying case, box, or something that will protect that sample container in case of an accident. This protection can also include caps and collars on the larger cylinders that you may be involved in using. That is also legal.

It is also a requirement that sample containers used in liquid service should never be filled more than 80% full. It is against the law to transport a sample container filled with liquid completely full.

Who is effected by this? As you can tell, anyone who handles these sample containers, gives them to someone else to handle, offers them for shipment, or is involved in transportation is involved in the D.O.T. Title 49 compliance.

One of the most important considerations when talking about D.O.T. Title 49 is to understand that whenever a sample container is moved off of your property onto any state, county, city, township or local highway, you must be in compliance with D.O.T. Title 49 and local regulations.

The following is a checklist for your compliance information:

1. **Determine if the material that you are trying to ship is regulated.**
2. **Determine the quantity to be shipped.**
3. **Determine the proper shipping name.** Do not use common names. Get the name of the product out of the D.O.T. Table.
4. **Determine the hazard class --** flammable gas, flammable liquid, others.
5. **Determine the identification number.** This is the U.N. number that is also in the Table.
6. **Determine the proper packaging.** Remember, sometime in 1992 or later, there will be a requirement that, in order to comply, a package must be approved. At this writing, there is no requirement nor is there even information on approved carrying cases for sample containers.
7. **Determine the proper marking or label and apply them to the outside of the sample container.** If sample cylinders are transported individually, each sample container must have an appropriate tag and/or marking, and the proper paperwork must be filled out for each sample container.

8. **Prepare the proper shipping papers.** Remember, each shipping container must have shipping papers filled out on it and filled out completely. Attached to this article, you will find a typical shipping paper that is just that. It is typical. You can design your own shipping paper, but you must have papers that are filled out for each sample container.

As a note of interest, if you have a product in your sample container that meets more than one hazard classification (for instance, sour gas is not only a flammable gas but it is also a poison), it must have both labels on the carrying case. It must also have that as a part of the paperwork.

Each package containing sample containers offered for shipment or transported in your own vehicle must have the owner's name and address on them.

The person shipping the container must furnish and attach the labels prescribed for in the shipping papers.

General requirements for transporting compressed gas cylinders is covered in 173.301. Three of those specific requirements are 1) gases shipped together must be compatible, 2) pressure in the sample container at 70° F. shall not exceed the surface pressure of the sample container, and 3) pressure in the sample container at 130° F. shall not exceed 125% of the surface pressure of that sample container.

Another note: It is against the law to transport or offer for transportation sample containers filled with a hazardous material that are not built to D.O.T. specifications. Any sample container that is offered for transportation must have the information that is required by the D.O.T. stamped on that sample container. If re-testing is required, a re-testing date must also be stamped on the sample container.

The rules that govern the transportation of sample containers also apply to a sample cylinder that is made overseas, or a foreign-made sample cylinder. If they are offered for transportation or transported by you in your own vehicle, you should be very cautious to be sure that they meet the requirements for the use of foreign cylinders. This information is a general overview of the regulations and should in no way be used as an interpretation by your company of the requirements for D.O.T. Title 49. Each company

must interpret the rules for themselves and adhere to those as best meets their needs. Since the Title 49 regulations are updated periodically, care should be taken to ensure that your company has the latest revision of the rules and complies to each one of those rules. Neither I or Welker Engineering Company is an authority on the transportation of sample containers; however, we disseminate this information for just that. Simply for your information - to make it as easy as possible for you to comply with the rules that govern the transportation and shipping of your samples from the field to the laboratory. If we can assist you further, please contact us.

1994 D.O.T. UPDATES

The information below is the newest requirements from the Texas Department of Public Safety about the transportation and shipping of sample cylinders.

This information is an update for my paper published in 1993, and is for your education only. You should have your legal department determine what is applicable for your company in your area.

1. Emergency telephone number must be manned when samples are on the road.
2. Emergency response information must be part of the shipping papers.
3. Shipping papers must be within the driver's reach.
4. Shipping papers.
Name of contents
Hazardous Class (Example - 2.1)
U.N. # (Examples: UN 1971 Methane, UN 1075 LPG)
5. Quantity must be on the papers, "Number of Cylinders".
6. Emergency Response Information, M.S.D.S., or Orange Book (must be newest version) must be with the driver.
7. Packages must be marked (labeled).
8. Packaging - 3E cylinder is a package in itself, but the valves must be protected.
Caps & Collars
Outside Package
Outside Package must be strong enough to contain the cylinders

9. Mixture of Gases

Examples:

H₂S P.I.H. (Poison Inhal. Hazard)
H₂S Hydrogen Sulfide is Flammable Gas
New Category & P.I.H.
Hazard Class 2.3 Special Provision 2
Hazard Zone B
200 to 1000 ppm is classified as P.I.H.

10. To carry H₂S, your vehicle must be placarded. Driver must have commercial driver's license and H.M. Endorsement. Driver must have hazardous materials training and medical card. Driver must keep a log (exception - 100 mile intra - 150 inter).

11. Placards and labels must have -

Poison Gas / Flammable Gas
2.3 2.1

12. Any amount of H₂S in some areas requires placard, etc.

13. If placards are required, the vehicle must have -

Safety Diamonds
Safety Flares
Fire Extinguisher

14. Label on cylinder and overpack.

15. If cylinders have residue only, the volume does not count toward 1001# for placarding.

16. If a cylinder has been cleaned and purged, put "empty" on the cylinder.

**THERE ARE NO EXCEPTIONS TO THE RULES.
EACH VALVE MUST BE PLUGGED OR CAPPED.**

TRANSPORTATION MANIFEST

FLAMMABLE GAS / LIQUID



SPECIAL HANDLING INFORMATION

#####

CONTAINER SERIAL #	PRODUCT	UN #
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

DATE: _____

SIGNATURE OF SHIPPER: _____