

## Class 2 – Compressed Gases (49 CFR 173.115)

**Division 2.1 - Flammable Gas** – A material that is a gas at 20° C or below and 101.3 kPa of pressure (ambient temperature and pressure), i.e. the material has a boiling point of 20° C at sea level and:

- Is ignitable when in a mixture of 13 percent or less by volume with air.
- Or has a flammability range with air of at least 12% regardless of the lower limit.

**Division 2.2 - Non-Flammable/Non-Poisonous Compressed Gas** – A material or mixture that exerts in the packaging an absolute pressure of 280 kPa (40.6 psi) or greater at 20° C and does not meet the definition of Division 2.1 or 2.3. This includes compressed gas, liquefied gas, pressurized cryogenic gas, compressed gas in solution, asphyxiant gas and oxidizing gas.

**Division 2.3 – Gas Poisonous by Inhalation** – A material that is a gas at 20° C or below and 101.3 kPa of pressure (ambient temperature and pressure), i.e. the material has a boiling point of 20° C at sea level and:

- Is known to be so toxic to humans as to pose a hazard during transportation
- Or in the absence of adequate data on human toxicity, is presumed to be toxic to humans because when tested on laboratory animals it has an LC<sub>50</sub> value of ≤ 5,000 ml/m<sup>3</sup>

LC<sub>50</sub> is the concentration that will cause death to 50% of a sample population of laboratory animals under specified conditions.

The following list contains some examples of compressed gases, **but is not all inclusive**:

Division 2.1 Flammable	Division 2.2	Division 2.3 Poisonous
Aerosols	Aerosols	Ammonia, anhydrous
LPG (propane)	Carbon dioxide	Boron trichloride
Acetylene	Most refrigerant gases (R124, R133, etc)	Boron trifluoride
Butane	CO <sub>2</sub> fire extinguishers	Hydrogen sulfide
Some refrigerant gases (R152a, R1132a, etc)	Helium	Carbon monoxide
Ethylene	Nitrogen	Compressed coal gas
Hydrocarbon gases	Nitrous Oxide (also an oxidizer)	Cyanogen
Hydrogen	Oxygen (also an oxidizer)	Chlorine
Lighters	Rare gases and nitrogen mixtures	Phosgene
Methane	Xenon	Silicon tetrafluoride

If there is a question as to whether the material you wish to ship is a compressed gas, or what division compressed gas it is, email the Division of Research Safety (DRS) Chemical Safety Section (css@uiuc.edu) or call 4-7213 and ask to have a determination made.

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