



Propane Safety

A workshop for the Region 11 Rally in Casa Grande

Propane Filling: Most common methods for your safety

Filling by volume

Open the small bleeder valve and fill until liquid propane spews out

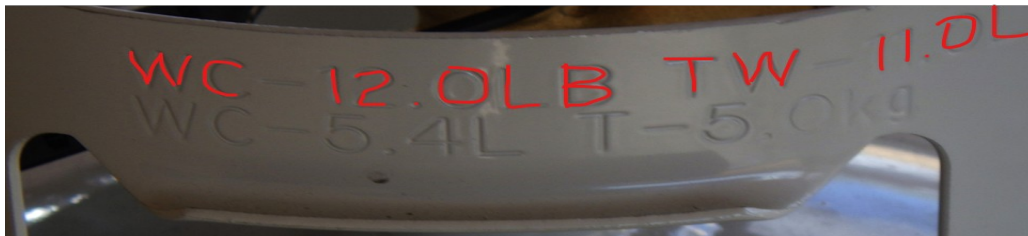
Environmental concerns

Filling by weight (pounds in US; kilos in CA)

TW + propane capacity; set scale to resulting amount and fill until scale tips

TW: Tare weight; weight of cylinder without propane

WC: Water capacity; $WC \times 0.42 =$ propane capacity of your cylinder



What is not safe: filling by the gallon

Propane Charging: Most common methods for your money

Charging by the gallon: Usually your best bet

Less common: Filling by pound

Charging by flat rate: Can be good, but only if cylinder is completely empty

Prefilled cylinders for barbecue: A less than perfect deal

Generally available only in 20 lb / 5 gallon size. No 30 or 40 pound common on RVs

Use if no filler is nearby

Use if cylinder is damaged or out of date



Other stuff: US

OPD valves in US and CA: Internal float valve



Not permitted for use by professional fillers in US: OPDs installed, but never inspected

Propane expansion

Propane liquid expands 270 times as it changes from a liquid state to vapor state. (One gallon of liquid = 270 gallons of vapor if released to the atmosphere.)

The 80% fill: Allows for expansion of propane at warmer temperatures

Already factored into both filling methods

A 30-pound cylinder can be filled to 30 pounds, not to (30 X 0.8).

RV cylinders produce propane vapor, not liquid

Not all cylinders produce liquid and are thus not for use on RVs. (Forklifts, for instance, use liquid, not vapor.)

Propane (LPG) vs butane

Boiling points (liquid to vapor):

Propane -44° F / -42° C

Butane 32° F / 0° C

Burn temps in air (not pure oxygen):

Propane 1967° C / 3572° F

Butane 1970° C / 3578° F

Cylinder recertification for transportable cylinders

US DOT, Original: 12 years; Visual recertification: 5 years

CA: Every 10 years; visual recertification

US: ASME vs. DOT: permanently installed vs. transportable; different filling procedures

CA: Transport Canada TC marking

Other markings: WCW (water capacity weight; pounds, kilos); DT (dip tube: length in inches, mm)

Transporting propane cylinders: Upright, open to air on side or bottom

Do not transport in enclosed areas like moho compartments, truck beds

Ethyl mercaptan: stink

Governmental oversight for filling in the United States: States, not fed

National Fire Safety Association (NFPA) 58: Liquefied Petroleum Gas Code

Governmental oversight of cylinder design: DOT (portable) or ASME (permanent)

CA Governmental oversight for filling: Provincial based on national code

CA Governmental oversight for cylinder design: National code

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