



# ENERGY SAFETY PRACTICES



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# What is LPG?



# What is LPG?

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LPG stands for Liquefied Petroleum Gas, either propane or butane or a mixture of both. These gases occur naturally in crude petroleum or natural gas.

In the Philippines, LPG is essentially a mixture of butane and propane.



# Sources

## 1. Field Gas

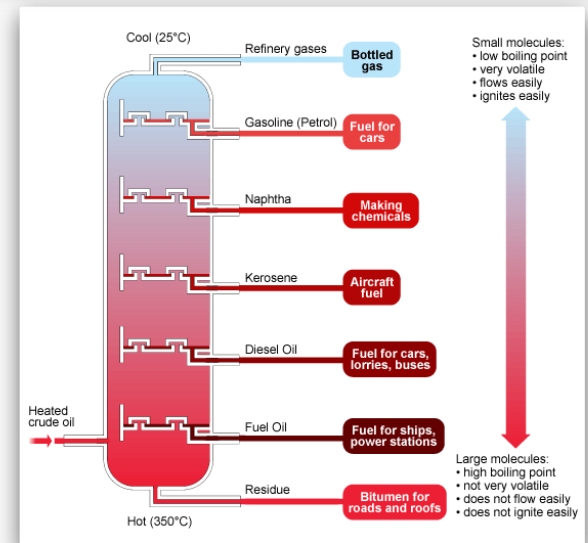
Associated Gas (w/ crude petroleum)

Unassociated Gas (mixed w/ natural gas)



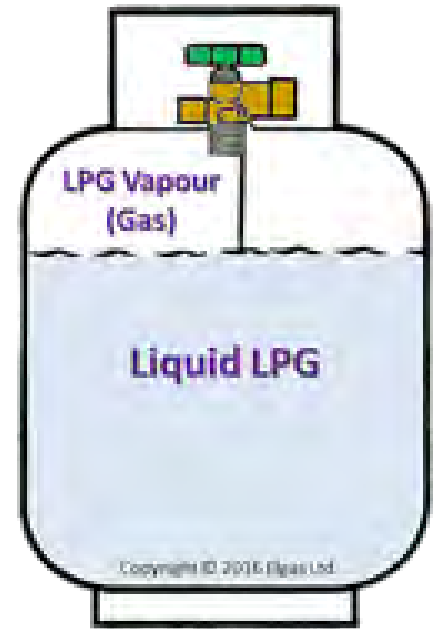
## 2. Refinery Gas

The result of processing crude oil by distillation, in the same manner that other liquid fuels, such as kerosene, gasoline and diesel, are extracted.



# Characteristics of LPG

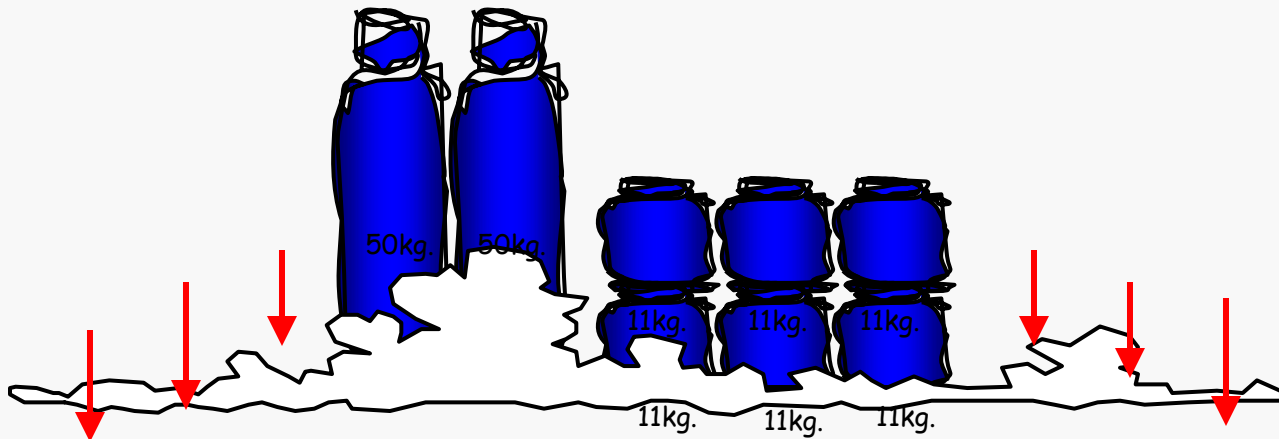
LPG is liquid inside the cylinder, but immediately transforms to a gaseous state when released. It is liquefied so that it can be stored economically and transported easily.



# Characteristics of LPG

## LPG VAPOR is HEAVIER than AIR

LPG vapor, when released to the atmosphere is heavier than air. LPG vapor will then tend to deposit itself on the lowest portion in the area.



# Characteristics of LPG

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## PURE LPG IS COLORLESS AND ODORLESS

LPG is as clear as water in the liquid form. As LPG evaporates, it looks like steam, but quickly becomes invisible.

Pure LPG has no smell. For safety purposes, **ethyl mercapthan** is added so any leaks can be detected by scent.



# Characteristics of LPG



LPG is non-poisonous and environment friendly.

LPG dissolves natural rubber.





# The Household LPG Family



## BASIC CONSUMER RIGHTS



# CONSUMER TIPS



# Consumer Tips



Buy cylinders with proper markings, e.g., brand name, tare weight.



# Consumer Tips

- Check if the security seal is intact and firmly affixed to the valve.



*The brand name/logo in the cylinder and the seal must be the same*



# Consumer Tips

Determine the gross weight of LPG in filled cylinders by adding the Tare Weight (T.W.) and net weight of 11.0 kgs.



$$\begin{array}{r} 12.3 \\ + 11.0 \\ \hline \text{Gross weight } 23.3 \end{array}$$



# Consumer Tips

## How to Detect Underfilling

Tare Weight

Net Weight

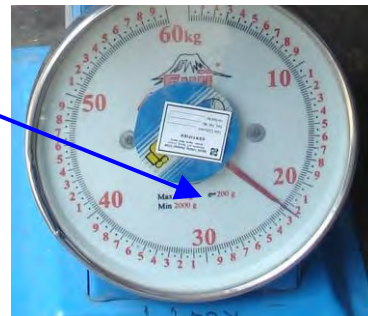


+ 11.0 kg.

Gross Weight **23.0 kg.**

22.4 kg.

**-0.6 kg.**



# Consumer Tips

Each time you buy an LPG  
Look for a weighing scale.



Check if scale is sealed and calibrated.



# Consumer Tips

## In purchasing LPG:

- Be sure that the cylinder is in good condition.



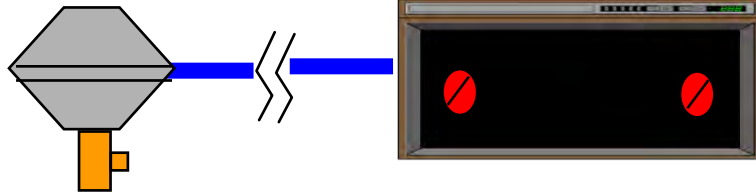
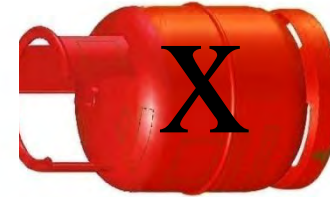


# SAFETY TIPS



# Safety Tips

- Do not invert the LPG cylinder or let it lie horizontally on the floor.

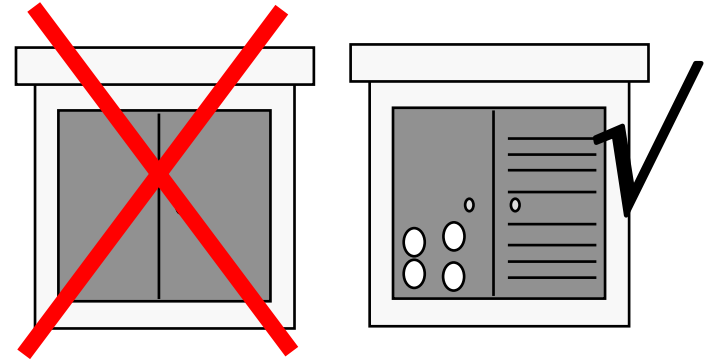


- Use only LPG resistant rubber hoses with clamps and regularly check for wear, cracks and leaks using soapy and water.



# Safety Tips

- Do not store LPG cylinders in enclosed kitchen cabinets.



- Keep LPG cylinders away from electrical points and other sources of fire/ ignition.



# Important Reminder

## IF YOU SMELL GAS IN YOUR KITCHEN:



- Open all doors and windows to improve ventilation.
- Do not switch on/off electrical switches or connect/disconnect electrical plugs.



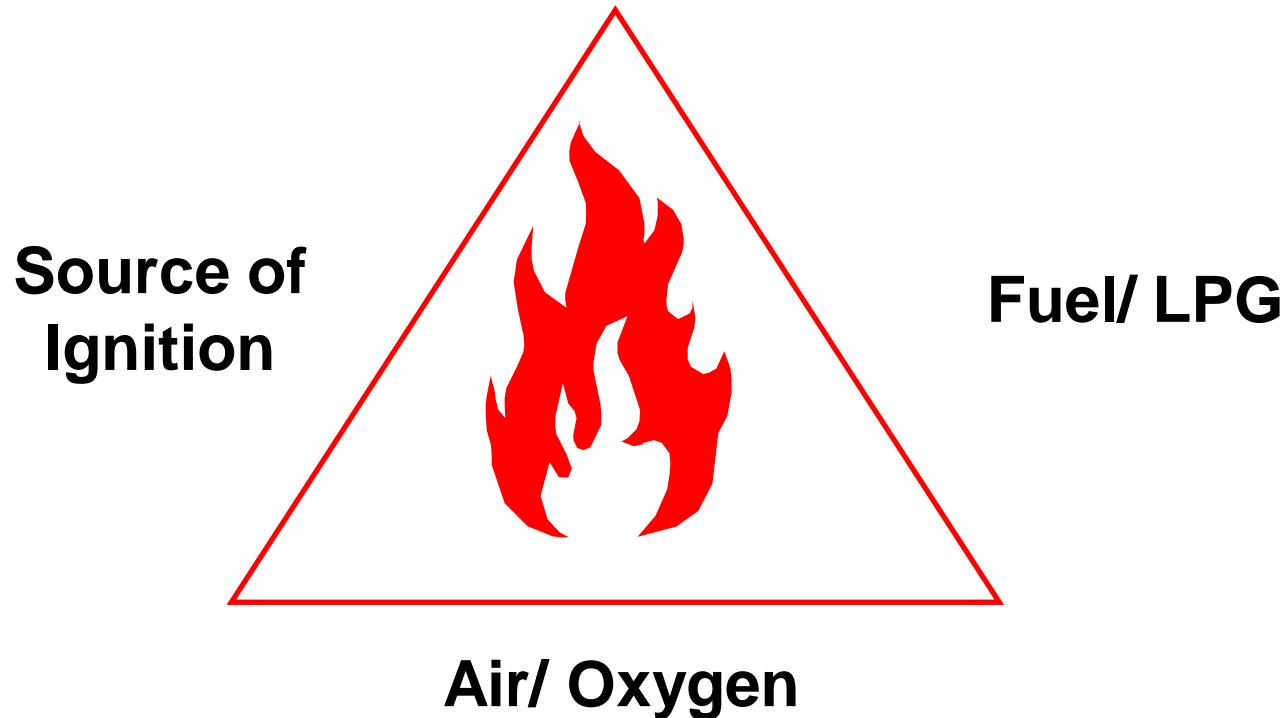
# Important Reminder

- If leak is on cylinder, move cylinder out to open and ventilated place.
- Seek help from retail outlet where LPG was purchased or call the proper authorities.



# Important Reminder

## Triangle of Fire

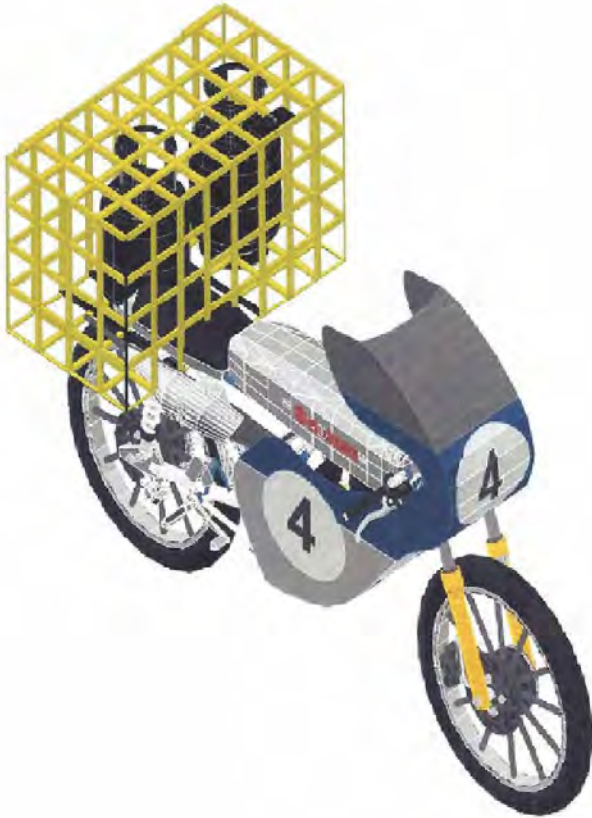


***LPG will burn either in the liquid or vapor phase.  
Combustion will require the three elements  
represented by each side.***



# LPG Transport Standards

DC 2013-09-0022



# LPG-REFILLED CANISTER







## Portable Butane Camping Stove

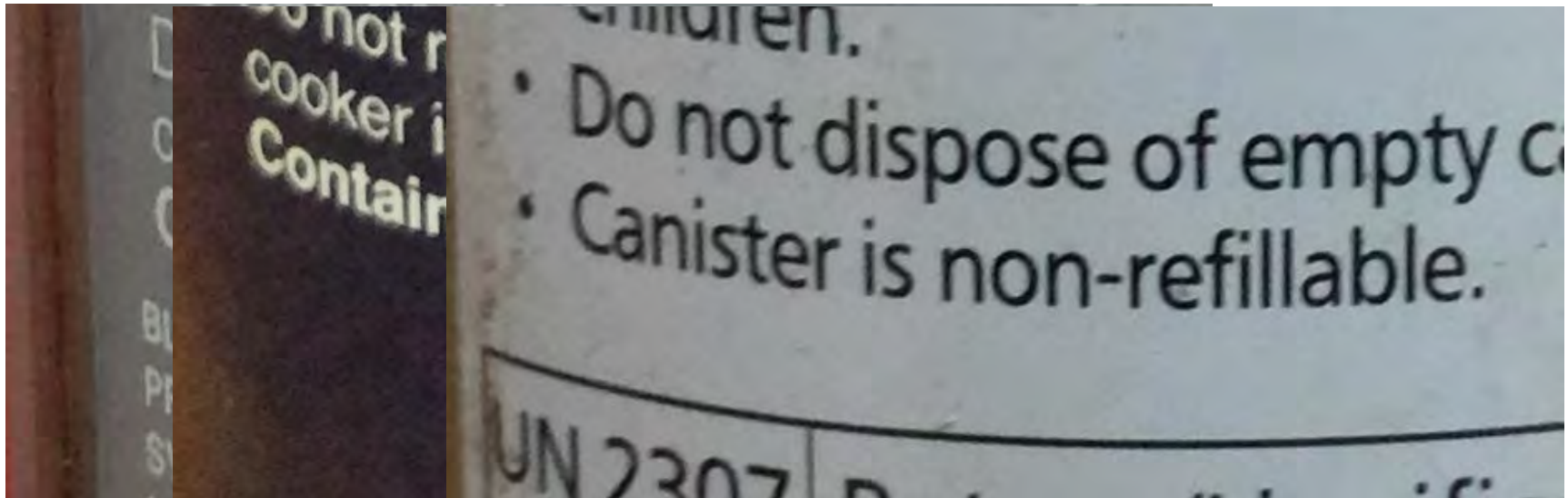




## Characteristics Available in the Market

- **Cassette type**
- **Of mostly tin material**
- **Joints are soldered or bent**
- **One-time use (disposable)**
- **Containing butane**





# Refilled with LPG



# Retailed in the Local Market



**...previously refilling are done in facilities like this**

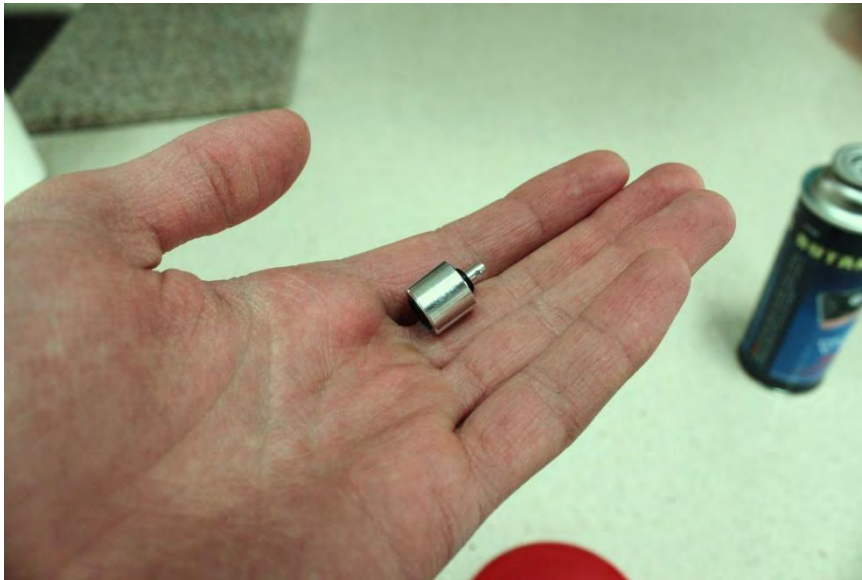




...and it became modernized...

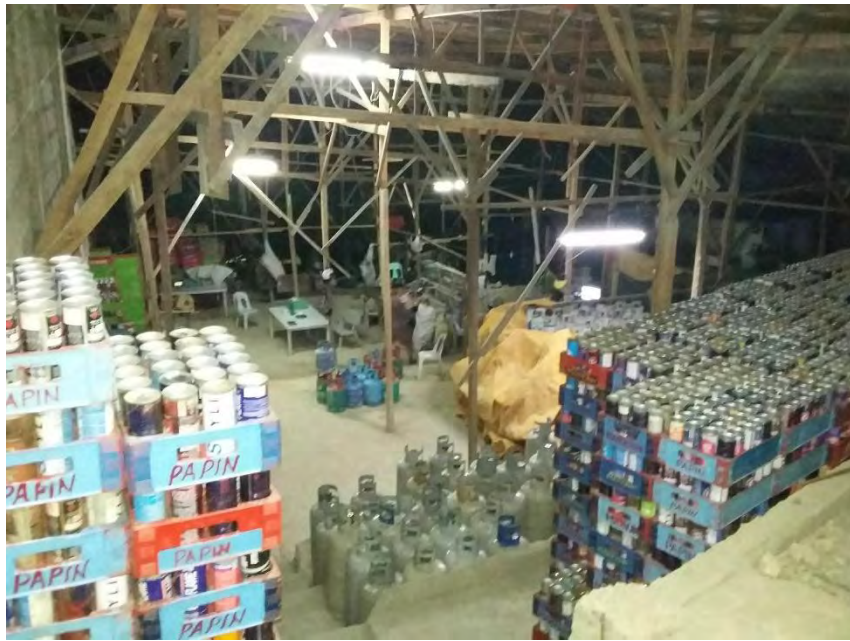


# Household refilling by decanting LPG from cylinder to canister









# SAFETY CONCERNS



# Safety Valve



**Butane Canister**

**LPG Cylinder**



**Snap-on Valve**



**POL Valve**

Quality of valve material and composition

Non-presence of pressure relief valve



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# **Butane is not the same as Household LPG**

**LPG in the Philippines is composed of a mixture of propane and butane; and**

**LPG has a higher pressure (480 – 1050 kPa) than pure butane (485 kPa max)**





**mostly soldered joint**  
**welded joint**



**A container fabricated from prescribed steel plates consisting of a cylindrical shell and two forged ends or pressed ends which are welded on to the shell or drawn halves circumferentially welded together.**

**- PNS 03-1992**







**INJURIES  
SUFFERED  
FROM  
TIN CANISTER  
EXPLOSION**



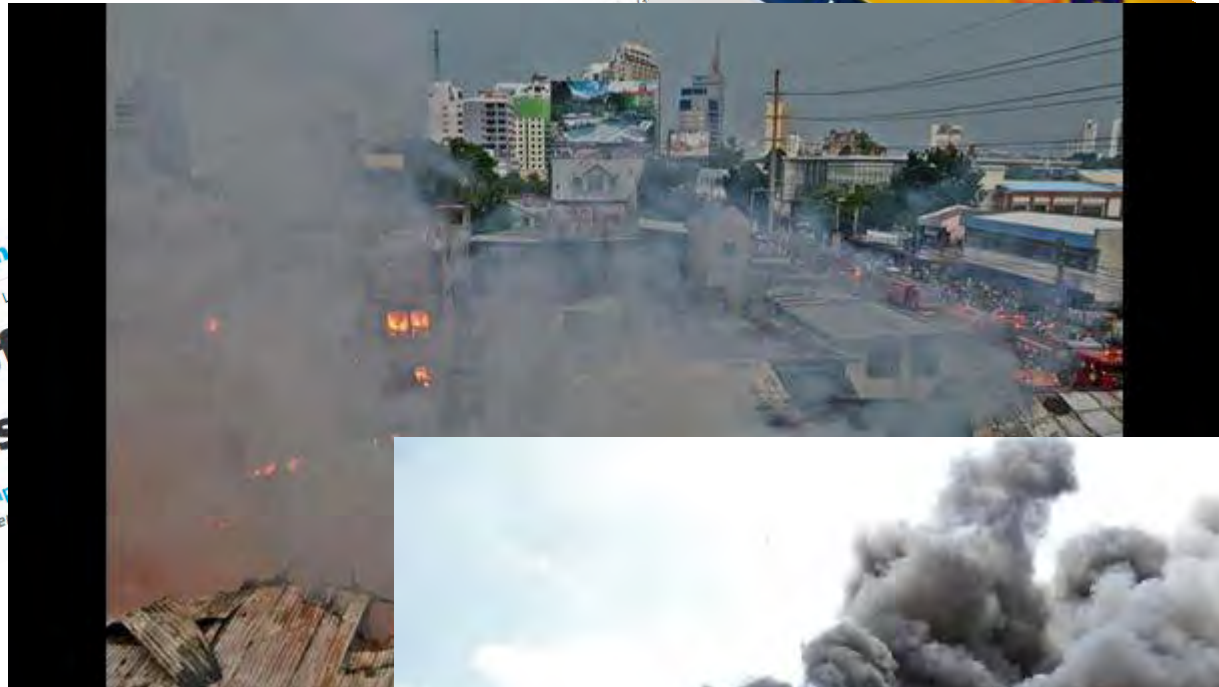


# Accidents/Incidents Reported

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- **At least six (6) fire incidents were reported in the Visayas and Mindanao caused by “explosion” of LPG-refilled canisters. Though no lives were lost, millions of pesos worth of properties were destroyed and injuries suffered;**
- **Due to its popularity with low-income households, future fire incidents are expected**





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MOBILE | PORK BARREL SCAM | FOOD  
Damage hits P1 million  
butane gas  
By Christell Fabima M. Tutud (The Freeman)  
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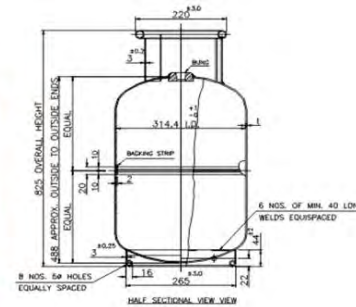




# PNS ALLOWED LPG CONTAINERS

- **PNS 03:2014**

- Transportable and Refillable Welded Steel  
Cylinders for Liquefied Petroleum Gas  
(LPG)



- **PNS ISO 11119-3:2014**

- Refillable Composite Gas Cylinders and  
Tubes



# CANISTER TRANSPORT



# Important Reminder

## LPG ANTI-LEAK DEVICE



# Important Reminder

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The **so-called LPG anti-leak device** is actually a mechanically operated gadget technically termed ***“excess flow limiter”***.

A steel ball automatically blocks off the passage of gas when there is a sudden surge thru the regulator, about 40% to 50% of the normal flow. It does not activate in the presence of pinholes and small cracks on your LPG hose.

The use of this device on household installation can even result in complete disregard for the most basic and simplest safety practices.



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***“The more informed a consumer or buyer is,  
the more difficult it is to sell them.”***

***- Joe Pulizzi in “Get Content,  
Get Customers”***







# **Salamat!**

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