

**REFINERY SUPPLY COMPANY
9133-A EAST 46TH STREET
TULSA, OKLAHOMA 74145**



"Serving the Oil & Gas Industry since 1923"

**OPERATING INSTRUCTIONS
PRESSURE HYDROMETER JAR**

CATALOG PART NUMBER 16852-000

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INSTRUCTIONS for 16852 PRESSURE HYDROMETER JAR NGAA METHOD

I. OVERVIEW

The purpose of this apparatus is to permit the determination of the specific gravity of liquefied petroleum gases, under vapor pressure conditions corresponding to the temperature of the liquid, by placing them in a transparent container, which also holds a specific gravity hydrometer.

The apparatus consists of a transparent Lucite tube held between aluminum end plates by stainless steel tie rods. Valves are provided for entrance of the sample, purging, and removal of the sample after test. The relief valve is set for 200 P.S.I. This pressure should not be exceeded.

Special specific gravity hydrometers that meet NGAA specifications are supplied separately (Catalog No. 16852).

To insert the hydrometer, remove the relief valve adapter from the top of the hydrometer jar, insert the hydrometer gently to avoid breakage and replace the adapter tightening it firmly by hand.

II. PROCEDURE

From N.G.A.A. Publication #2140, Rev. 1955, P. 10 "LPG Specific Gravity Test" (Hydrometer Method).

III. PURGING

The source of supply of the product to be tested shall be connected to valve A by suitable fittings in such a manner as to permit introduction into the pressure cylinder of a representative sample. These connections shall be free from leaks. Open valve B and purge sampling connections by slightly opening valve A, permitting the product to flow through valve B. When connections have been sufficiently purged, close valve B and valve C and open valve A, permitting the liquid to enter the pressure cylinder until it is completely full. If necessary, valve B may be slightly opened in order to permit complete filling of the pressure cylinder. When this operation has been completed, close valve A and open valve B permitting the contents of the pressure cylinder to be completely withdrawn and pressure reduced to atmospheric.

IV. SAMPLING

Close valve B and open valve A, filling the pressure cylinder to a level at which the enclosed hydrometer floats freely. This filling shall be accomplished without losses of vapors by venting through valve C. If necessary purging shall be repeated to cool the cylinder sufficiently to permit it's filling without venting. With all valves closed, the apparatus shall be examined for leaks and if leaks are detected, the sample shall be discarded.

V. GRAVITY DETERMINATION

Disconnect the cylinder and place it in water bath maintained at approximately 60F until the temperature of the contents has reached 60+- 0.5F as indicated by the thermometer enclosed in the hydrometer. In order to accelerate thermal adjustment the apparatus shall be occasionally removed from the water bath, gently inverted and replaced in water bath. Care must be exercised during the operation to prevent damage to the enclosed hydrometer. When the product in the pressure cylinder has reached a temperature of 60F the apparatus shall be removed from the water bath and the gravity observation made immediately. The hydrometer shall be read to the nearest 0.001, while it is not in contact at any point with the walls of the pressure cylinder. Observed specific gravity shall be recorded at "LPG Specific Gravity at 60/60 F".

NOTES

A. Specific gravity determinations should not be made at temperature other than 60F. If tests

have to be conducted at temperatures other than 60F for "Liquefied Petroleum Gases" may be used for correction.

B. If it is desired to convert specific gravity to degrees API the standard formula shall be used.

$$\text{Degrees API} = \frac{141.5}{\text{Specific Gravity At 60F/60F}} = 131.5$$

VI. PRECAUTIONS

This hydrometer jar is made of heavy wall Lucite tubing for operating pressures up to 200 P.S.I. at 60F, however, the following precautions should be observed:

1. Examine cylinder for cracks at frequent intervals. Replace if cracks of any appreciable depth are found.
2. Do not keep face near jar while it is being filled.
3. Do not leave jar filled with LPG products. If temperature of product in jar rises, its vapor pressure may increase sufficiently to put excess stress on the Lucite tubing.
4. Always observe pressure on storage supply before connecting to hydrometer jar. Do not connect pump discharges that are above rated pressure.
5. Fill slowly to avoid sudden application of pressure to hydrometer.

CAUTION IN THE USE OF LUCITE CYLINDER

Because certain compounds attack Lucite and cloud the inner surface of the cylinder making readings of the hydrometer difficult or impossible, users are cautioned to clean thoroughly the cylinder after each use. Use naphtha for cleaning. Do not use acetone, carbon tetrachloride or toluene.

Tests show no attack by Ethane, Ethylene, Propane, Propene, Propylene, Butane, ISO-Butane, Butanes, Butylene, ISO-Butylene, Pentane and ISO-Pentane. Ketones and Alcohols are the most destructive compounds. Some attack is also noted by Styrene, Toluene, Xylene, Benzene, Butadiene and Acetaldehyde.

Component ID	Component Description	Qty Needed
35420-000	REPLACEMENT CYLINDER, LUCITE	1.00
35422-000	PRESSURE GASKETS FOR 16852	1.00
P26-22	ADAPTER, RELIEF VALVE	1.00
P26-23	TOP F/PRESSURE HYDROM JAR	1.00
P26-24	BOTTOM F/ VALVE 16852	1.00
P26-3	ROD, PRESSURE HYDROMETER JAR	6.00
P26-6	BASE F/PRESSURE HYDRO JAR	1.00
P292-SS	NEEDLE VALVE, 1/4" STAINLESS	3.00
P805	O-RING	1.00
P806-WP	RELIEF VALVE	1.00

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PRODUCT WARRANTY

REFINERY SUPPLY CO. INC. shall warranty its products to be free of material and workmanship defects for a period of **90 DAYS** from shipping date. Refinery Supply liability for defective equipment shall be limited to the repair or replacement of said equipment.

REFINERY SUPPLY CO. INC. will be liable only if the defect is reported immediately.

REFINERY SUPPLY CO. INC must give written permission for any product under warranty to be returned for repair or replacement. The warranty will be null and void if the equipment was subject to alteration, misuse, neglect, modification, and improper installation or repaired by unauthorized persons not approved by Refinery Supply Co.

REFINERY SUPPLY CO. INC. will not be liable for expenses, loss or damages directly or indirectly arising from use of the products or for any liability from their use either separately or in combination with other equipment, material or any other cause.