



# GrAgram

By Department of Legal Metrology



## NET CONTENT



**ATMANIRBHAR BHARAT**  
**SWAYAMPURNA GOA**



### ***Publication Details***

Editor-in -Chief:

Shri. Arun Panchwadkar, Controller Legal Metrology, Goa

Editorial Board:

Shri. Gulam Gulburg

Shri. Nitin Purushan

Shri. Demu Mapari

Shri. Vikas Kandolkar

Shri. Bhupendra Dessai

Kum. Swezel Colaco

Graphics & Design:

Shri. Rajat Karapurkar

Shri. Keshavraj Govenkar

GOAgram - A Legal Metrology magazine is published and printed by the Department of Legal Metrology Goa. This magazine is circulated for benefit of stake holders of the Legal Metrology Department. The views expressed are of opinion of the authors and not necessarily of the department or of the government. Any information or content etc., is subjected to originals.

Not for sale, intended for internal circulation only.



**Shri. Arun Panchwadkar**  
**Controller Legal Metrology, Goa**

## ***Editorial***

Dear Readers,

Net quantity checking has become a cornerstone of quality control, ensuring that every product sold matches the stated quantity on its label. In an era of rising consumer expectations and heightened competition, ensuring that every package is correctly labelled and contains the promised quantity is a critical step toward building trust and securing long-term success.

In this issue, of GOAgram, we delve into the importance of net quantity verification and its impact on consumer confidence, exploring how various industries—from FMCG giants to beverage companies—are upholding precision, quality, and transparency in their products.

Globally, different regions have developed their own sets of regulations to govern net quantity labelling. The International Organization of Legal Metrology (OIML) plays an essential role in setting global standards for measurement and net quantity checks, which are adopted by many member countries. In India, the concept of Net Quantity is primarily governed by the Legal Metrology (Packaged Commodities) Rules, 2011, which fall under the Legal Metrology Act, 2009.

Net Quantity refers to the amount of product contained in the package, excluding the weight of the packaging material (like bottles, boxes, etc.). It is usually mentioned on the label as "Net Quantity" or "Net Weight". The net quantity must be clearly printed on the package in terms of weight (kg/g), volume (liters/ml), or count (e.g., number of pieces) and it should be expressed in Standard Units of Measurement (SI units). Besides net quantity, the label must include mandatory declarations as specified by the law in force.

For businesses, properly monitoring and maintaining net quantities is a crucial aspect of the manufacturing quality assurance process. Legal metrology officials play a vital role in this ecosystem. They provide guidance on acceptable tolerances and ensure compliance through periodic inspections and audits. Officers use calibrated instruments (e.g., electronic balances, volumetric measuring tools) to verify the net quantity. Incorrect net quantity or misleading labels can lead to action being initiated against the company as per the law.

As we look ahead, net quantity verification will remain a vital component of fair and responsible business practices, ensuring that consumers continue to receive products they can trust—products that meet the promise of both quality and quantity.

At the heart of this trust lies Legal Metrology, which not only sets the framework for accurate measurement but also ensures that every product not only meets regulatory standards but also upholds the fundamental promise of fairness in the marketplace.





Honorable Chief Minister, Dr. Pramod Sawant inaugurating the expanded distillation facility of M/s. John Distilleries Pvt. Ltd., Cuncolim Industrial Estate, joined by Mr. Paul P. John, Chairman and esteemed MLAs, marking a new milestone in growth and progress.







Shri. Ramesh Verma, IAS, Secretary Legal Metrology Goa at Paul John Visitor Centre (John Distilleries ), Cuncolim Industrial Estate



Shri. Ramesh Verma, IAS, Secretary Legal Metrology Goa with Shri. Arun Panchwadkar, Controller, Legal Metrology and Shri. Michael D'Souza, Master Distiller (John Distilleries) and other officials



# **Gravimetric Testing for Packaged Goods**

## *A Scientific Approach to Quantity Verification*

Gravimetric testing is a widely recognized and preferred method for determining the net quantity of contents in packaged goods. This method relies on precise weight measurements to verify whether the contents of a package conform to the declared net weight. By using this method, regulatory authorities, such as the Department of Legal Metrology and manufacturers can minimize discrepancies thus ensuring that consumers receive the correct quantity as advertised on the packaging.

One of the key advantages of gravimetric testing is its reliance on verified working standards, which are used to determine the net quantities of products. Additionally, the gravimetric method allows for identifying potential errors in net quantity, which, if present, can be addressed appropriately. This method also avoids the destructive testing that would otherwise damage products.

In India, the Department of Legal Metrology carries out net quantity verification as per the procedure laid down in the 'Sixth Schedule' of the Legal Metrology (Packaged Commodities) Rules, 2011.

To ensure accurate results, the scale used in gravimetric testing must meet certain criteria. Specifically, the Maximum Permissible Error (MPE) of the weighing scale must be no greater than 20% of the MPE permitted for the package. If the scale meets this requirement, it can be used for determining the net contents of the package. However, if the scale's MPE exceeds the 20% threshold, it cannot be used for the gravimetric test, and another scale with greater accuracy must be used. This ensures that the test results are reliable and within the acceptable error margins.



Legal Metrology Officials, Goa conducting Net Content Check at manufacturer Premises.

The following steps apply when gravimetrically testing any packaged product:

- **Identify and Define the Inspection Lot:** Inspection lot refers to a specific subset of the total production lot that will undergo testing. It is important to note that the inspection lot size may differ from the production lot defined by the manufacturer/packer. Action is taken only on the packages within the defined inspection lot.
- **Select a Random Sample:** To ensure the sample is representative of the inspection lot; packages are selected at random from various points in the lot, including the top, bottom, centre, right, left, front, and rear sections. This random sampling ensures that the sample reflects the overall consistency of the packaging. The sample size is determined as per the Fifth Schedule of the Legal Metrology (Packaged Commodities) Rules, 2011.

| Sr No | Inspection lot Size | Sample Size (n) |
|-------|---------------------|-----------------|
| 1     | 100 to 500          | 50              |
| 2     | 501 to 3200         | 80              |
| 3     | More than 3200      | 125             |

- **Determine the Tare Weight:** The tare weight refers to the weight of the empty packaging itself. If empty packages are available, one package is selected, and its weight is measured. If the tare weight is less than or equal to three-tenths of the MPE for the commodity, it is assumed to be accurate. If the tare weight exceeds this threshold, the weight of five empty tare packages is measured to calculate an average tare weight. The difference between the maximum and minimum tare package weights is compared with the allowable MPE. If the variance is within acceptable limits, the tare weight is averaged from the five samples. In the absence of empty tare packages, the net weight and tare weight are determined by opening one/more package from the sample, as the case may be.
- **Record Inspection Data:** The data should be recorded as per the 'Seventh Schedule' of the Legal Metrology (Packaged Commodities) Rules, 2011. The inspection report should include critical information such as the product identity, packaging description, lot code, location of the test, the labelled net quantity of the packages and any other relevant details.

- **Determination of Gross Weight and Package Errors:** The gross weight of the package is determined by adding the tare weight to the net weight of the contents.

$$\text{Gross weight} = \text{Tare weight} + \text{Net weight.}$$

The gross weight, not the actual net weight, should be used to assess package errors. This ensures that an average tare weight is consistently applied across all packages in the sample.

**Package error** is calculated by subtracting the gross weight from the declared net weight of the package:

$$\text{Package error} = \text{Declared Net weight} - \text{Gross weight}$$

- **Evaluate Compliance with Maximum Permissible Error (MPE):** After calculating the package error, compliance with the MPE requirement must be verified. To meet the standards outlined in the Legal Metrology (Packaged Commodities) Rules, 2011, the following conditions must be met:
  1. The corrected average net quantity should be greater than or equal to the declared net quantity.
  2. Number of packages showing an error more than the maximum permissible error but less than twice the maximum permissible error should be in compliance with Table prescribed in fifth schedule of the Legal Metrology (Packaged Commodities) Rules, 2011.
  3. No packages should show a deficiency exceeding twice the MPE.
  4. Furthermore, each package must bear a label that includes all the required declarations as stipulated by the Legal Metrology Act, 2009 and the Metrology (Packaged Commodities) Rules, 2011.

Upon completion of the gravimetric testing, the data sheet containing the results is handed over to the manufacturer or packer. Non-compliant packages are seized and prosecution is initiated as per the Legal Metrology Act, 2009.

The Gravimetric method ensures that consumers receive the correct quantity as declared on the package and provides a systematic way to verify packaging accuracy through scientifically defined procedures. This approach not only helps prevent fraudulent practices but also enhances consumer trust in packaged commodities.



## ***Indospirit Beverages: Ensuring Legal Metrology Compliance and Consumer Trust***

As a leading player in the liquor manufacturing industry in Goa, we at Indospirit Beverages recognize the importance of adhering to the legal and regulatory requirements surrounding metrology, ensuring that every aspect of our production, packaging, and labeling processes complies with the applicable laws. Our commitment to Legal Metrology compliance is a testament to our dedication to consumer trust, transparency, and product quality.

We recognise that liquor manufacturing is heavily regulated by Excise, Legal Metrology and FSSAI. Therefore, we meticulously adhere to local Excise laws, FSSAI guidelines and Legal Metrology rules that govern the production and sale of alcoholic beverages, particularly when it comes to net quantity checks.

We understand that the accuracy of our measurements is critical in maintaining the quality of our products and delivering fair value to our consumers. We perform routine calibrations and verifications through the Legal Metrology Department on all equipment involved in the manufacturing of wine & IMFL, including tanks, weighing scales and online check weighers.

We fully comply with the Legal Metrology (Packaged Commodities) Rules, 2011, ensuring that all packaging for our alcoholic beverages meets the required legal standards. Our labeling process is designed to provide consumers with clear, accurate, and truthful information, guaranteeing transparency and fairness at every point of sale. In accordance with the regulatory requirements, we submit the label of new brand for approval prior to commencement of production. This notification serves as formal intimation of our expanded product offerings.



Each label of our alcoholic beverage carries the exact volume of liquid as declared, and the alcohol content (ABV in percent) is accurately indicated, following approved testing methods. Our bottling operations are set up to consistently meet or exceed the legal requirements for the declared volume of liquor in each bottle. We employ rigorous quality control measures at every stage of production. Our products undergo comprehensive testing to verify that they comply with both quality standards and legal metrology specifications. All quantities are verified with precision before products are shipped to the market through determination of Net Content for each nozzle.

At the core of our operations is the commitment to consumer protection, which is closely linked to the Legal Metrology framework. By ensuring that all our products are measured, packaged, and labeled accurately, we safeguard our customers from misleading claims and unfair trade practices.

To maintain our commitment to compliance, we welcome regular inspections by state authorities who verify the accuracy of our packaging, labeling, and measurement systems. We are always prepared for audits, demonstrating our proactive approach to maintaining regulatory standards.

Compliance with Legal Metrology regulations is not just a responsibility for our legal and quality teams; it is a part of our organization culture. We provide regular training and awareness programs for our employees, particularly those involved in production, to ensure that everyone is aware about legal metrology requirements and follows best practices.

Legal metrology laws are designed to prevent deceptive practices. As a responsible manufacturer, we actively support fair trade practices by ensuring that our products are marketed and sold in compliance with legal metrology guidelines. We also work closely with regulatory bodies to ensure that any changes in the metrology landscape are quickly addressed, and our practices remain in line with evolving laws.

Indospirit Beverages Private Limited is committed to fully meeting the requirements of Legal Metrology. From maintaining accurate measurements, labeling, and packaging, to ensuring state-specific compliance and consumer protection, we prioritize adherence to regulatory standards. By doing so, we not only comply with the law but also foster a culture of transparency, fairness, and trust with our customers, reinforcing our reputation as a responsible and ethical industry leader.



**Shri. Harvinder Singh**  
**Plant Head**  
**Indospirit Beverages Private Limited**

## ***Weighing In: Ensuring Fair LPG Deliveries and Consumer Safety***

The safety and reliability of liquefied petroleum gas (LPG) cylinders, commonly used for cooking and heating, has been one of the hot issues concerned by all circles of society, and is also one of the key supervising points of the relevant administrative departments of the government.

While LPG is a vital resource, it is crucial that consumers receive the correct quantity of gas in each cylinder to avoid both financial loss and potential safety hazards. The Department of Legal Metrology has long advocated for citizens to actively engage in the process of checking the net content and safety of LPG refills upon delivery.

Pre-delivery checks play a pivotal role in ensuring that consumers receive exactly what they pay for. These checks help pilferage of gas during transportation from dealers to customer's doorsteps and ensure that safety standards are met. Leading Oil Manufacturing Companies (OMCs), as part of their standard operating procedures (SOPs), have already made it mandatory to perform weight checks and leak tests before delivering LPG to consumers. However, many consumers remain unaware of these essential checks, which can lead to discrepancies in gas delivery and safety.





To ensure that consumers are not cheated or put at risk, the government has implemented strict rules for the measurement and delivery of LPG cylinders. The relevant administrative departments, such as the Legal Metrology Department, have been tasked with enforcing these rules and ensuring that the proper quantity of LPG is provided to consumers.

Over the years, the Legal Metrology Department has uncovered several instances where LPG delivery vehicles flouted norms regarding the net content of LPG cylinders. To safeguard consumers, the officials of the Department frequently carry out net content checking of LPG cylinders at the dealer godowns and delivery vehicles, as per the procedure laid down in Rules 19 and 20 of the Legal Metrology (Packaged Commodities) Rules, 2011.

The LPG cylinders are serially numbered by the officials of the Department. A working standard electronic balance is generally used to determine the weight of the cylinders. The gross weight of LPG cylinders and the tare weight mentioned on every cylinder are recorded in a computerised data sheet. The net weight and the extent of error are calculated. Legal action is initiated against the agency as per the provisions of the Legal Metrology Act, 2009 if any discrepancies are found.

LPG is an essential part of daily life, but ensuring that consumers receive what they pay for, and that safety measures are followed, requires collective vigilance. As a consumer, it's essential to verify the weight and safety of your LPG cylinder before accepting delivery. The following steps will help ensure you receive the correct quantity and are protected from fraudulent or unsafe practices:

- Before anything else, ensure that the cylinder's seal is intact. A broken or tampered seal is a clear indication that the cylinder may have been compromised.
- Always ask to have the cylinder weighed in your presence to ensure it is in line with the prescribed net content. For domestic cylinders, the standard net LPG weight should be 14.2 kg and 19 kg, for commercial LPG cylinders. Your LPG delivery person is required to carry a weighing scale of accuracy class III ( $e=10g$ ) with them.

While weighing is the most straightforward method of measuring the LPG content, there are several challenges associated with this process; variations in the self-weight of the cylinders can cause errors in the weighing process. Furthermore, a new and concerning practice of illegally filling gas cylinders with water to make up for short weight is presenting a significant challenge for enforcement officers.

By conducting weight and leak checks, verifying the stamped weight on cylinders, and reporting any discrepancies, consumers can protect themselves from unfair practices and ensure that their LPG usage is both safe and reliable. If the cylinder supplied to you is underweight, you are entitled to lodge a complaint with the Legal Metrology Department on **9403301977**

## **Nestlé India: Ensuring Accuracy for Good Food, Good Life**

Legal Metrology's primary function is to regulate and standardize the measurement systems used in trade. This includes ensuring that products such as weighing scales, fuel dispensers, electricity meters, medical devices, and more, adhere to stringent measurement standards. Nestlé India Ltd. works closely with the Department of Legal Metrology Goa to ensure measurements used in our production processes are accurate and reliable, thereby fostering fair trade practices and protecting consumers. We pride ourselves on keeping the consumer at the center of our operations in the FMCG sector, providing reliable products and services at fair prices.

Accurate measurement is crucial for economic efficiency. Our state-of-the-art production facilities in Goa use sophisticated weighing instruments to monitor raw material quantities. Our internal systems conform to international standards, laws, and regulatory requirements. Legal Metrology authorities conduct rigorous checks during their visits to verify and stamp our weighing and measuring instruments.



As the world's largest food and beverage company, we understand and adhere to our roles and responsibilities. Our employees receive comprehensive training to ensure safe and compliant products. We are dedicated to maintaining transparency, fairness, and quality in every aspect of our business, upholding the principles of Legal Metrology.

We remain committed to delivering safe, reliable products that meet consumer expectations, contributing to a healthier, more sustainable future for all.



**Sanjay Bhandari**  
**Head- Corporate Affairs, West**  
**Nestle India Limited**

## Ensuring Compliance in Edible Oil Packaging

In a nation with vast consumption of edible oils and fats, ensuring accurate packaging and fair trade practices is a regulatory priority. The Legal Metrology (Packaged Commodities) Rules, 2011 serve as the backbone for ensuring that every package sold in the market contains the declared quantity. This article outlines the procedural framework adopted by Legal Metrology Authorities to verify the net quantity of edible oils and fats, ensuring both regulatory compliance and consumer protection.

- Manufacturing units
- In-transit consignments
- Carrying and Forwarding Agents (CFA)
- Retail markets

Under Rule 6 of the LMPC Rules, 2011, every package of edible oil must display the net quantity in terms of standard units of weight or volume (such as litres or kilograms). This declaration must be unambiguous, prominently placed, and legible to the average consumer.

The Net Content determination is carried out as per procedures laid in Fifth and Sixth Schedule of the Legal Metrology (Packaged Commodities) Rules, 2011. All observations and measurements are recorded in the Seventh Schedule Form, including gross, tare, and net weights along with remarks.

Where edible oils are declared in volume (litres) but assessed by weight, the following standard specific gravity conversion factors are applied:

- Soft Oils (e.g., sunflower, soybean): 910g/L at 30°C
- Palm-based oils, Vanaspati, others: 893g/L at 50°C
- Ghee: 900g/L at 45°C

As per Rule 6 of the Legal Metrology (Packaged Commodities) Rules, 2011, the unit sale price of edible oils and fats must be declared in weight. An additional declaration in volume may be made but is not mandatory



Accurate net quantity measurement in edible oil packaging is more than just a technical requirement; it is a legal, ethical, and commercial necessity. The ongoing vigilance and enforcement of these rules, along with education for both businesses and consumers, will continue to strengthen the integrity of the edible oil packaging industry in India.



## Gallery of Enforcement Work







For Feedback and Suggestions  
**DEPARTMENT OF LEGAL METROLOGY, GOA**  
Legal Metrology Bhavan, Porvorim - Goa, 403521  
email id : [con-lega.goa@nic.in](mailto:con-lega.goa@nic.in)  
Contact No : 0832-2412037/2416432  
Quick response No : **9403301977**

