Government of India
MINISTRY OF POWER

सत्यमेव जयते

BUREAU OF ENERGY EFFICIENCY
Ministry of Power, Govt. of India
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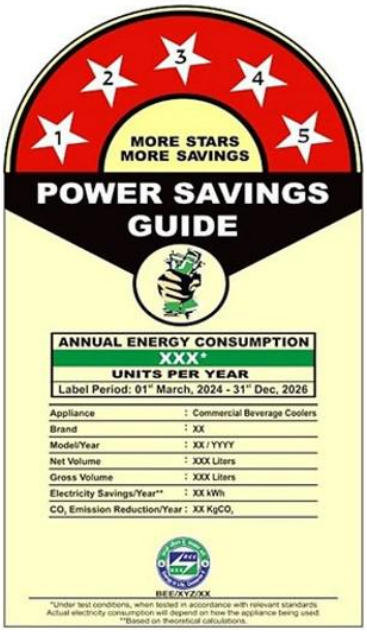
Standards and Labeling program for Commercial Beverage Cooler (Visi Cooler)



Standards & Labeling Program for Commercial Beverage Cooler

The Bureau of Energy Efficiency (BEE) is an agency of the Government of India, under the Ministry of Power, established in March 2002 under the provisions of the Energy Conservation Act, 2001. Standards & Labeling (S&L) Program for equipment and appliances was initiated in 2006 with the main objective to provide the consumers an informed choice about the energy and cost-saving potential of the star labeled appliances/equipment being sold in the Indian market.

The program targets display of energy performance labels on high energy end-use appliances and equipment and lays down minimum energy performance standards. This scheme prescribes the criteria for each type of appliance to be rated between 1-star and 5-star, with 1-star being the least efficient and 5-star being the most efficient. Star rating on a product allows a common consumer to compare the operating cost and environmental impact of similar products. This also allows them to make informed choices and see the potential operating costs and greenhouse gas impacts.

The S&L program has covered 35 appliances till January 2024 out of which 16 are under mandatory regime while the remaining 19 are under voluntary regime. The scheme has resulted in overall electricity saving of 81.64 billion units translating to an abatement of 58 million tonnes of CO_2 emission in FY 2022-2023.

Savings from S&L program in FY 2022-2023

Electricity Saved
81.64 Billion Units

Cost Saving
INR 54,323 Crores

CO_2 Emission Reduction
58 million Tonnes

Launch of S&L Program For Commercial Beverage Cooler

India is witnessing a substantial surge in the demand for commercial beverage coolers, commonly known as Visi Coolers, which are integral to the retail landscape for storing bottled or canned beverages. Unlike domestic refrigerators, these coolers lack a freezer, ensuring uniform cooling of all contents to a specified temperature. Transparent glass doors facilitate the customers to conveniently peek into the cooler, making them an ideal choice for various businesses, including grocery stores and restaurants.

The refrigeration sector accounted for 24% of energy consumption and 25% of carbon emissions in 2017. As per India Cooling Action Plan's projections there is a potential of 2-fold growth in the commercial refrigeration sector in the next decade which will further increase the energy demand of the sector. Recognizing the potential for energy savings, the BEE aims to bring commercial beverage coolers under the S&L program.

The program will regulate energy consumption through Minimum Energy Performance Standards (MEPS) and introduce comparative energy use labeling with star ratings based on Annual Energy Consumption (AEC). The labeling program aims to eliminate inefficient products from the market, ensuring the availability of energy-efficient commercial beverage coolers for businesses and reducing monthly electricity consumption. BEE is set to bring commercial beverage cooler under the ambit of S&L program from 1st March 2024 in Voluntary Phase.

Commercial Beverage Cooler Market

The surge in India's commercial beverage cooler market from 0.31 million units in FY 2016-17 to 0.37 million units by FY 2021-22 with a CAGR of 3.58% is propelled by the escalating demand for cold beverages in diverse settings such as homes, offices, restaurants, and bars. The increasing importance of readily available chilled beverages aligns with evolving consumer preferences and a heightened emphasis on refreshing drink options, thereby driving the demand for commercial beverage coolers nationwide.

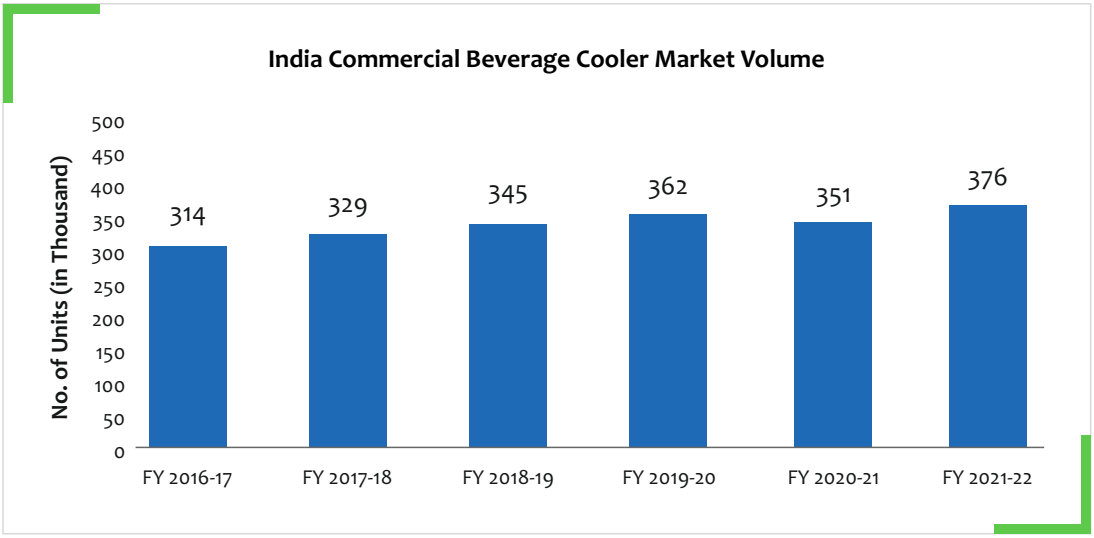


Figure 1: Commercial Beverage Cooler Market (2016-2021)

Product Categorization

The Indian commercial beverage cooler market exhibits segmentation based on gross capacity, door type, and placement. In terms of gross capacity, the market is categorized into <250L, 250L-600L, 600L-1100L, 1100L-1500L and >1500L.

Door variations include single, double, and triple door models, while placement options consist of floor- standing and tabletop units. Notably, a predominant portion of the market comprises models with a capacity of 250-600L, featuring a single door and a floor-standing design.

Import Export Scenario

India engages in both importing and exporting commercial beverage coolers, with a noticeable emphasis on imports, especially from countries like China, Thailand and Malaysia. Notably, Imports of commercial beverage coolers are more than exports.

Star Labeling Criteria

AEC (Annual Energy Consumption in kWh/Year) which is a derivative of TEC (Total Energy Consumption in kWh/24hours) has been adopted as a labeling criterion in order to be consistent with existing BEE programs for other refrigeration appliances and to notify consumers of the estimated annual energy consumption under standard test conditions.

Star Rating Bands

The commercial beverage cooler must adhere to the labeling criteria outlined in Table 1 to be eligible for the star labeling program.

Valid from 1st March 2024 to 31st December 2026

Star Label	Minimum	Criteria	Maximum
1 Star	(2.75*Veq) + 496.13	< AEC ≤	(3.30*Veq) + 496.13
2 Star	(2.29*Veq) + 496.13	< AEC ≤	(2.75*Veq) + 496.13
3 Star	(1.83*Veq) + 496.13	< AEC ≤	(2.29*Veq) + 496.13
4 Star	(1.46*Veq) + 496.13	< AEC ≤	(1.83*Veq) + 496.13
5 Star		AEC ≤	(1.46*Veq) + 496.13

Table 1: Star Rating Table for Commercial Beverage Cooler

AEC (kWh/year) = Total Energy Consumption (kWh/24hrs) x 365 days

There is no negative tolerance for the Star Rating Bands. All tested products must meet the minimum threshold for each Star Rating Band. The scope for manufacturing tolerance and other variations shall be accounted by the manufacturer while determining the Star Rating of a particular model.

Potential Energy Saving & CO_2 emission reduction

The implementation of the star label for commercial beverage cooler is anticipated to yield significant energy savings of 11.67 billion kWh between 2024 and 2034, accompanied by a potential reduction in Co_2 emissions amounting to 8.35 million tons of CO_2 in the same time period.

Schedule - 37

Commercial Beverage Cooler

1. SCOPE

1.1 This schedule specifies the requirement for participating in the energy labeling program for vertical floor or table mounted, single and multidoor type Commercial Beverage Coolers (commercially known as Visi Cooler), overall height between 0.5 m and 2.2 m covered under the scope of ISO 22044:2021/IS 2167:2024, being manufactured, imported and sold in India.

For the purpose of this schedule, the star rating shall be based on equivalent volume (Litres) and annual energy consumption measured as per the methodology specified in ISO 22044:2021 / IS 2167:2024 with deviations as mentioned in section-4.2 of the schedule.

1.2 This schedule does not apply to commercial beverage coolers with pre-installed Energy Management Device (EMD).

2. REFERENCE STANDARD

This schedule shall be read in conjunction with the following standards with all amendments.

Reference Standard	Title of the Standard
ISO 22044:2021 / IS 2167:2024 (subject to be publish by BIS)	Commercial beverage coolers-classification, requirements and test conditions

3. TERMINOLOGY

For the purpose of this schedule, the following definitions in addition to those given in ISO 22044:2021/IS 2167:2024 with as amended from time to time shall apply.

3.1. Annual Energy Consumption (AEC) - Energy consumption per year, calculated as follows

AEC = TEC*365

3.2. Climate class: Classification of the test room climate according to the dry bulb temperature and relative humidity

3.3. Commercial Beverage Cooler - Refrigerated cabinets to sell and / or display pre-packaged beverage products that are non perishable, designed to chill products loaded at ambient temperature to the defined storage temperature class within a specified time and for which the customer is allowed direct access to the products.

3.4. Equivalent Volume (Veq) - Reference volume corrected for compartment classification differences and shall be calculated as specified in Annexure C of ISO 22044:2021/IS 2167:2024

$$Veq = \text{Measured Gross Volume } (V_G) \times \frac{25-Tc}{20} \times Cc$$

Tc is the average compartment classification temperature.

Cc is the climate class factor.

3.5. **Gross Volume** – Volume within the inside walls of the commercial beverage cooler, including internal fittings, doors or lids, if any, with these being closed and with the load limit being taken into account if the commercial beverage cooler has no door or lid.

3.6. **Label** – Any written, printed, marked, stamped or graphic matter affixed to or appearing upon, commercial beverage cooler.

3.7. **Label Period** – Validity period of the annual energy consumption under the star rating plan specified in the schedule.

3.8. **Models or Family of Models** – It is the range of models of a particular brand, to which a single set of test reports is applicable and where each of the models has the same relevant physical characteristics, annual electricity consumption, energy efficiency level and performance characteristics.

3.9. **Net volume** – Storage volume inside the appliance which can be used for storage of products.

3.10. **Permitee** – A person or agency to whom permission has been granted to affix label under clause 7.

3.11. **Star Rating or Star Level** – means the grade of energy efficiency displayed on the label of the commercial beverage cooler based on annual energy consumption standard under the star rating plan specified in the schedule.

3.12. **Star Rating Band** – The Star rating band is a range of annual energy consumption which is arrived at by an established tests method and calculations and is used for determining the number of stars to be displayed on the Star Label.

3.13. Total Energy Consumption (TEC) – Calculated by multiplying the power consumption of the device or system a 24-hour period, as per ISO 22044:2021 / IS 2167:2024.

3.14. Trader or Seller – In relation to any labeled commercial beverage cooler means a person who sells or distributes any such commercial beverage cooler and includes the shopkeeper, trader, manufacturer, and permittee who has been given permission to affix label on such commercial beverage cooler.

4. TESTING GUIDELINES

4.1. Performance Testing Parameters

For the purpose of determining the star level, the commercial beverage cooler shall meet the requirements of all the tests defined in Table 2.

S. No.	Nature of Test	Test Standards and Clause References
1	Total Energy Consumption (kWh/24hrs)	Clause 6.3.11.3.6 of ISO 22044:2021 / IS 2167:2024
2	Gross Volume (Litres)	Annexure C, Clause C3 of ISO 22044: 2021 / IS 2167:2024
3	Net Volume (Litres)	Annexure B of ISO 22044:2021 / IS 2167:2024
4	Half reload recovery test at Cc3	Clause 6.3.11.3.5 of ISO 22044:2021 / IS 2167:2024

Table 2: Performance Testing Parameters

4.2. Deviation from ISO 22044:2021/IS 2167:2024:

The testing method and procedure to determine star levels, shall be as per ISO 22044:2021 / IS 2167:2024 as amended from time to time (if any) with following deviations.

1. Energy consumption test should be conducted at Cc2 climate class (32.2°C/ 65% RH).

2. For measurement of equivalent volume as per Annexure C, compartment temperature classification should be at K4 classification temperature (Tc = +5°C).

3. Half reload recovery test should be conducted at Cc3 climate class (40.6°C/ 75% RH).

4. Test for energy consumption, half reload recovery should be carried out either using M- can as specified in clause 6.3.3.1 of ISO 22044:2021/IS 2167:2024 or 500 ml PET bottles filled with 33% Propylene Glycol/ 67% water mixture (based on weight percentage).

5. For the purpose of this schedule, all above mentioned tests should either be conducted with vertical or horizontal air flow.

5. STAR RATING PLAN

The commercial beverage cooler shall be rated from star one to star five based on their Annual Energy Consumption (AEC). To qualify for award of star labeling, the commercial beverage cooler must meet the labeling criteria as mentioned in Table 3. For calculation of AEC and Equivalent Volume (Veq) values, the total energy consumption test shall be conducted at Climate Class - Cc2 as per clause 6.3.11.3.6 and Annexure C of ISO 22044:2021.

Valid from 1st March 2024 to 31st December 2026

Star Label	Minimum	Criteria	Maximum
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4 Star	(1.46*Veq) + 496.13	< AEC ≤	(1.83*Veq) + 496.13
5 Star		AEC ≤	(1.46*Veq) + 496.13

Table 3: Star Rating Table for Commercial Beverage Cooler

AEC (kWh/year) = Total Energy Consumption (kWh/24hrs) x 365 days

Veq= Measured Gross Volume (V_G)x $\frac{25\text{-}Tc}{20}$ X Cc

Tc is the average compartment classification temperature.

- *Tc*= +5.0 °C for K4 beverage coolers.

Cc is the climate class factor.

- *Cc* = 1.05 for Cc2 (32.2°C/ 65%RH) beverage coolers.

There is no negative tolerance for the Star Rating Bands. All tested products must meet the minimum threshold for each Star Rating Band. The scope for manufacturing tolerance and other variations shall be accounted by the manufacturer while determining the Star Rating of a particular model.

6. TEST REPORTS

The result of the tests carried out in laboratory accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) or International Laboratory Accreditation Cooperation (ILAC) or Asia Pacific Accreditation Cooperation (APAC) or equivalent bodies for ensuring consistency in quality of the equipment as well as the scope of the relevant Indian standards shall be reported in the prescribed format mentioned in the Annexure-I appended to this Schedule.

Accreditation of the test labs should be based on ISO 22044:2021/ IS 2167:2024 taking into consideration the deviations given in sub section - 4.2 of this schedule. The Lab should clearly mention the deviation from ISO 22044:2021/IS 2167:2024 in their test report.

7. LABEL DESIGN AND MANNER OF DISPLAY

7.1 Placement of label and QR code

With an intent to authenticate the star rating approval issued for a model of commercial beverage coolers, BEE will share the printable/readable version of the dedicated QR code for each model along with approval letter with manufacturers. The QR code is recommended to be placed just below the star label being affixed on each unit of the commercial beverage coolers. The QR code will contain the information as mentioned in Sub Clause 7.4 of the Commercial Beverage Cooler Schedule. On every commercial beverage cooler, label along with QR code shall be displayed at the point of sale and such label shall be affixed in the following manner:

a) The placement of label along with QR code shall be affixed on the front side of the left top corner of commercial beverage coolers.
b) Self-adhesive label along with QR code affixed on the front side of the exterior of the packing.

7.2 Material and Shape

The label shall be a non-perishable material and shall be of durable cardboard or be self- adhesive and shall be cut to one of the outlines.

7.3 Sample Label

A typical sample of the printed star label and the color, shape and design to be affixed on each commercial beverage cooler shall be as shown in Annexure-B.

7.4 Particulars to be Displayed on the Label

On every commercial beverage cooler (approved for star rating), the following particulars shall be displayed on its label, namely:

A. Product Name: Commercial Beverage Cooler
B. Name of manufacturer or importer or brand
C. Model Name/Number
D. Year of Manufacturing
E. Annual energy consumption in units per year (kWh/Year)
F. Gross Volume (Liters)
G. Net Volume (Liters)
H. Star Rating Level
I. Electricity savings/year (kWh)
J. CO_2 Emission Reduction ($kgCO_2$)
K. Label period
L. Logo of the Bureau of Energy Efficiency
M. Unique series code

8. FEES

A. The applicant shall deposit a security fee of INR 1,00,000/- (Rupees One Lakh only) for each registration as security deposit. However, applicants registered as small-scale industries (SSI units), shall deposit INR 25,000/- (Rupees Twenty-Five Thousand only) provided that they submit the valid SSI registration certificate.

B. Application fee payable on application for each model seeking permission to affix label is INR 2000/- (Rupees Two Thousand only).

C. No application fee is payable on application for renewal of permission to affix label on the model.

D. The labeling fee for affixation of label on each unit (Commercial Beverage Coolers) is to be Rs. 5/- (Rupees Five only) for 1st year, Rs. 10/- (Rupees Ten only) for 2nd year and Rs. 15/- (Rupees Fifteen only) for the 3rd year onwards till it become mandatory. In mandatory regime, the labeling fee will be Rs. 35/- (Rupees Thirty-Five only).

9. CHECK TESTING

A. Testing for compliance of Commercial Beverage Cooler covered under the S&L program with respect to BEE performance standards will be carried out in laboratories that are NABL accredited.

B. The samples will be picked up by BEE or its designated agency for testing as per the following sampling plan:

i Samples will be picked up at random from manufacturer's authorized dealer/ retailer/ e-market platform.

ii In case the sample drawn for the first check testing fails, the Bureau or its designated agency shall conduct a second check testing for which it shall buy twice the quantity of samples for the same model. If the first set of sample fails, only then second check testing will be done.

iii The permittee/user of the label would be accordingly informed about the failure of the first check testing and shall be advised to deposit the cost of the samples, cost of check testing and transport for the second check testing in advance.

iv If permittee fails to deposit/pay the expenses, Bureau shall continue the verification by check testing and stop further processing of application received for new appliance/ equipment of the respective permittee.

v Second set of samples will be picked up at random from the market for second check testing and both samples must pass the test.

vi BEE or its designated agency shall inform the date of second check testing to the permittee to witness the second check testing. If the permittee is unable to witness the testing, the Bureau shall proceed with testing in the presence of BEE/Designated Agency personnel and the test result shall be binding on the permittee.

vii If any one of the samples fail during second check testing, the Commercial Beverage Cooler will be in non-compliance with prescribed BEE standards and

viii Bureau/Designated Agency shall proceed with the following actions:

i). Direct the permittee, under intimation to all the State Designated Agencies, that the permittee within a period of two months from the date of issuance of such intimation, shall-

- Withdraw all the stocks from the market to comply with the directions of the Bureau; and
- Change the particulars displayed on advertising material.
- Correct the star level displayed on the label of the appliance/equipment or remove the defects and deficiencies found during testing from the existing and new stock;

ii) Publish, for the benefit of the consumers, the name of the permittee, brand name, model name or model number, logo and other specification in any national or regional daily newspaper and in any electronic or in any other manner as it deems fit within two months;

iii). The permittee within ten days of the conclusion of the period of two months from the date of issuance of intimation shall send the action taken report to the Bureau/Designated Agency with respect to action taken in compliance with the direction.

ix Every permittee, trader and seller shall comply with other terms and conditions as specified under Disseminating Star Labeling in Household Appliance (DISHA) - Operation Manual on Standards and Labeling program.

ANNEXURE - A

Form for Reporting Test Results

1. General information

1	Laboratory Name			
2	Address			
3	Date of Receipt			
4	Lab accreditation number			
5	Validity period of accreditation			
6	Test standard followed			
7	Test Report No.		Date of testing	
8	Tested by		Reviewed by	

2. Details of the sample tested

1	Brand Name	
2	Model Name	
3	Model No.	
4	Month and Year of manufacturing	
5	Manufacturer Serial Number (if any)	
6	Type (floor or table mounted)	
7	Number of Doors	
8	Test Voltage (V)	
9	Test Frequency (Hz)	
10	No of shelves	
11	Net Volume (L)	
12	Gross Volume (L)	
13	Annual Energy Consumption (as per manufacturer declaration) (kWh/year)	
14	External dimensions at installation (feet or castors to be included in height and set to minimum height if adjustable)	

3. Test Condition Details

1	Ambient Temperature (°C)	
2	Relative Humidity (%)	
3	Distance of product from back of the wall	
4	Ambient sensor location	
5	Type of cabinet / description and configuration (Including for example, open/closed; presence of night cover/ curtain and/or external and internal lighting etc.)	
6	The international number of the refrigerant (according to ISO 817)	
7	Refrigerated shelf area (m^2)	
8	Total display area (m^2)	
9	Test room climate class for which the commercial beverage cooler is intended and in which the test has been conducted as per Cc2 for energy consumption test and Cc3 for half reload recovery test	
10	Temperature class in which the test has been made (K4)	
11	Total number of M-can or PET bottles loaded	

4. Test Results

1	Measured Gross Capacity/Volume (L) (Vmeasured)	
2	Net Volume (L)	
3	Equivalent Volume (L) (V_{eq})	
4	Total Energy Consumption (kWh/24hrs)	
5	Annual Energy Consumption (kWh/year)	
6	Stabilized Average M-can or PET bottle Temperature (^{o}C)	
7	Stabilized Minimum M-can or PET bottle Temperature (^{o}C)	
8	Stabilized Maximum M-can or PET bottle Temperature (^{o}C)	
9	Measured half reload recovery time (Hours)	

ANNEXURE - B

1. Material & Dimension of Label

The label shall be self–adhesive and shall be designed as set out in sample label.

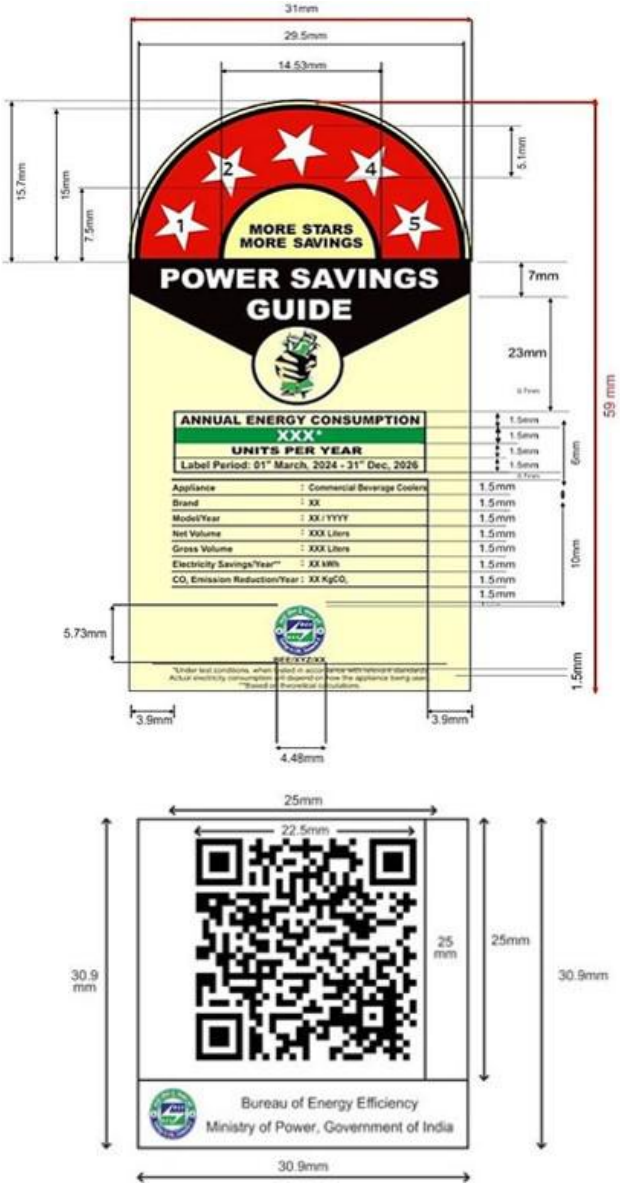

Figure 2: Material and Dimension of Star Label for Commercial Beverage Cooler

2. Color Scheme of Label:

The label shall be printed as per the following specification in the following colors on a white background:

i. Red: Pantone warm red
ii. Yellow: Pantone 116
iii. Black: Pantone Black
iv. Green: Pantone 340

Note: The color tone at the background of Annual Energy Consumption Display (Green) will be similar as followed for the Bureau of Energy Efficiency Logo.

The following color scheme for Bureau's logo, namely:

A. BLUE – Hue(H)-2390 Saturation(S):64% Brightness(B):59%
B. Luminance or lightness(L) :28, chromatic components -a:24 b:54
C. Red(R):54 Green(G):55 Blue(B):151
D. Cyan(C):97% Magenta(M):95% Yellow(Y):6% Black(K):1%
E. Web color code - #363797
F. GREEN – Hue(H)-1500 Saturation(S):10% Brightness(B):67%
G. Luminance or lightness(L) :61, chromatic components -a: -53 b:32
H. Red(R):0 Green(G):170 Blue(B):87
I. Cyan(C):81% Magenta(M):10% Yellow(Y):90% Black(K):1%
J. Web color code - #00AA56

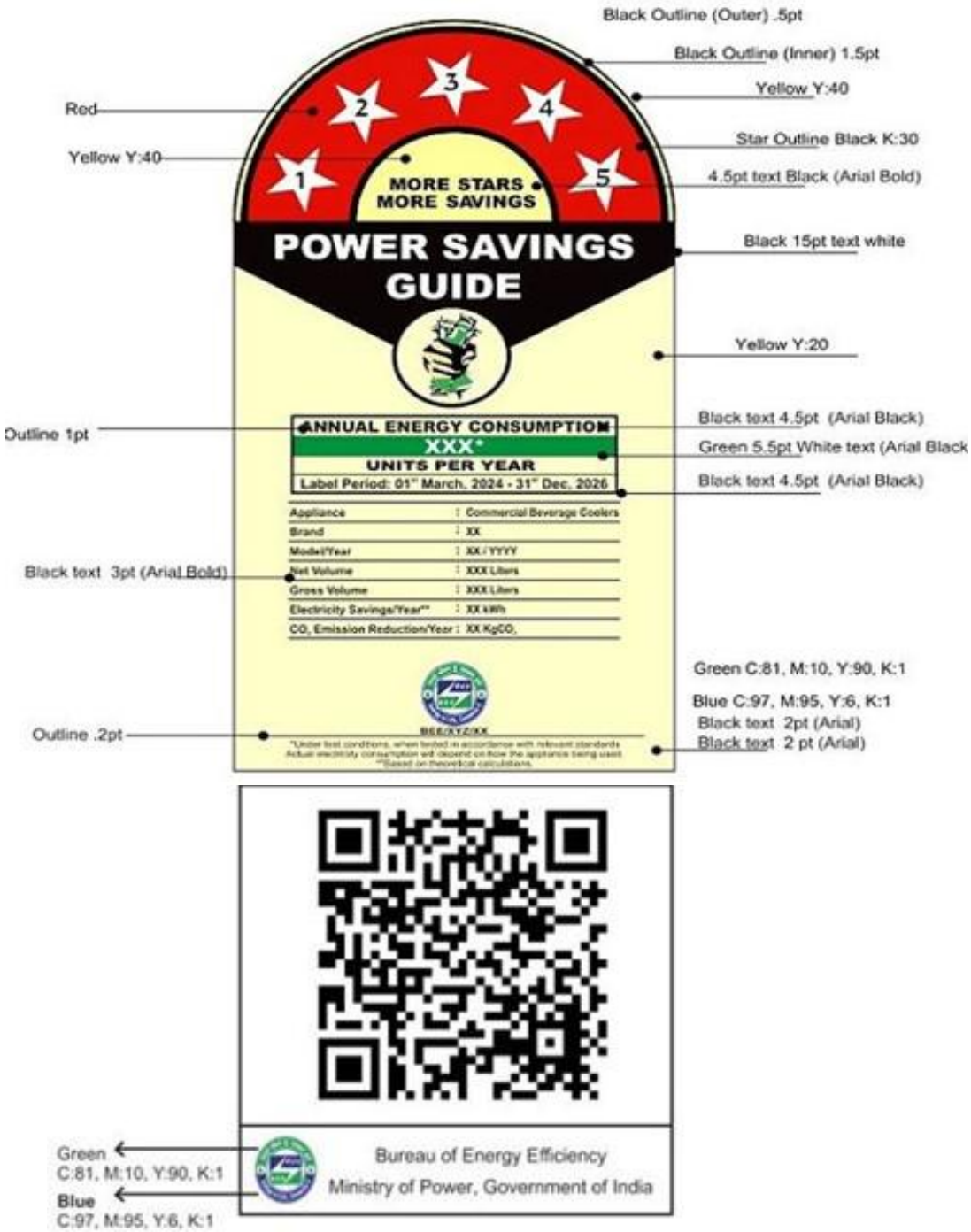

Figure 3: Color Scheme of Star Label for Commercial Beverage Cooler

3. Sample Label:

An example of a printed star label along with QR Code for a commercial beverage cooler is shown in following label.

BEE's Key Endeavours

Standards & Labeling Program (S&L)

Demand Side Management (DSM)

Energy Conservation Building Code (ECBC)

Perform, Achieve and Trade (PAT)

Energy Efficiency in Micro Small and Medium Enterprises (MSMEs)

Electric Vehicle Energy Efficiency

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