

Introducing the New Energy Efficiency Requirements

of the Commercial Refrigerators and Freezers with a direct sales function

September 9, 2026



Disclaimer

Disclaimer

This presentation is intended to ensure that all relevant bodies are aware of the elements of the draft standards. This document and all presented information shall not be considered as an official reference.

Agenda

Introduction of the Saudi Standards, Metrology and Quality Org (SASO)

Introduction of the Saudi Energy Efficiency Centre (SEEC)

Commercial Refrigerators and Freezers with a direct sales function Requirements

Discussion

Introduction of the Saudi Standards, Metrology and Quality Org (SASO)

The Saudi Standards, Metrology and Quality Org (SASO)

Vision & Mission

A global QI leader enhancing KSA's competitiveness and improving quality of life.

Leading the national QI ecosystem through effective partnerships, technical expertise, and high-quality services to enhance the competitiveness of products and services and ensure product safety.

SASO Values

- Excellence
- Transparency
- Collaboration
- Reliability
- Innovation

Technical Regulations

Technical regulations are one of the core pillars established by SASO to achieve high levels of safety and quality in products circulating in the Saudi market.

The General Technical Regulations for Energy Efficiency.

Standards

A standard is a recognized document that provides rules, guidelines, or requirements to ensure consistency, quality, and safety.

14 standards covering energy efficiency requirements for various products.

Certification

Certification services ensure that products comply with Saudi standards and technical regulations before entering the market, supporting consumer safety and market confidence.

- SABER Platform
- SLS Energy Efficiency System



For access to all Saudi standards, please visit "WASIF Store"

Introduction of the Saudi Energy Efficiency Centre (SEEC)

The Saudi Energy Efficiency Center (SEEC) was established in 2010 as the custodian of energy efficiency in Saudi Arabia

Description

Inter-agency effort to launch the Saudi Energy Efficiency Program (SEEP) in 2012

Developed ~100 initiatives at different stages (feasibility, design, execution) (2012-Now)

Industry

Scope:

Steel, cement, petrochemicals, and other industrial sectors



Vision & Mission

SEEC seeks to be an **international reference in the field of energy efficiency**, by working with local and international stakeholders.

Objectives

Rationalize and increase the energy efficiency in production and consumption in order to preserve the KSA natural resources and enhance the economic and social welfare of KSA population.

Next slide

Buildings

Scope:

Building envelope, ACs, white goods, lighting products



Transport

Scope:

Light Duty Vehicles (LDVs), and Heavy Duty Vehicles (HDVs)



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The Saudi Standards & Saudi Energy Efficiency Centre teams has developed 30 energy efficiency standards and regulations

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Product Standards and Regulations Developed



Air Conditioners

- SASO 2663 (EER)
- SASO 2663 (SEER)
- SASO 2874 (Large capacity AC's)



Lighting

- SASO 2870
- SASO 2902
- SASO 2927 (Street lighting)



Thermal-insulating Materials

16 thermal insulation material



Clothes dryers
(SASO 2883)



Water heaters
(SASO 2884)



Refrigerators and freezers
(SASO 2892)



Washing machines
(SASO 2885)



Dishwashers
(SASO 3029)



Standby & off-mode regulation



Electronic Displays
(SASO 3171)



Commercial Refrigerators and Freezers
(SASO XXXX:20XX)

Today's Focus

Commercial Refrigerators and Freezers with a Direct Sales Function Requirements

Overview of the standard updates

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Technical Working Group members

Government Entities	   
Manufacturers	  
Labs and Organizations	   
Major Users	     

Summary of major clauses

- **Scope** of Commercial Refrigerators and Freezers with a Direct Sales Function.
- **Testing** standards.
- Minimum Energy Performance Standard (**MEPS**)
- **Testing** Requirements
- **Acceptance** criteria
- **Energy Efficiency Index (EEI)** calculation
- **Labels** design

Scope and Exclusion

Scope

standard specifies the **Minimum Energy Performance Standard (MEPS)** and testing requirements of electric mains-operated refrigerating appliances with a direct sales function, including appliances sold for refrigeration of items other than foodstuffs., including:

Supermarket cabinets (refrigerator or freezer).	Gelato scooping cabinets	Vending machines
Ice-cream freezers	Beverage coolers	

Exclusion

- (a) Refrigerated appliance with a direct sales function that **are only powered by energy sources other than electricity.**
- (b) Refrigerating appliances with a direct sales function that **do not use a vapor compression refrigeration cycle.**
- (c) **The remote components**, such as the condensing unit, compressors or water condensed unit, to which a remote cabinet needs to be connected in order to function.
- (d) **Food processing** refrigerating appliances with a direct sales function.
- (e) Refrigerating appliances with a direct sales function specifically tested and approved **for the storage of medicines or scientific samples.**
- (f) Refrigerating appliances with a direct sales function **for the sale and display of live foodstuffs**, such as refrigerating appliances for the sale and display of living fish and shellfish, refrigerated aquaria and water tanks.
- (g) **Saladettes.**
- (h) Horizontal **serve-over counters with integrated storage** designed to work at chilled operating temperatures.
 - (i) Refrigerating appliances with direct sales function **that have no integrated system for producing cooling and function by ducting chilled air that is produced by an external air chiller unit**; this does not include remote cabinets nor does it include category 6 refrigerated vending machines, as defined in Annex B, table 6C.
 - (j) **Corner/curved and carousel cabinets.**
 - (k) **Vending machines** that are designed to **work at frozen operating temperatures.**
 - (l) **Vending machines** for confectionery and snacks that are not refrigerated **(category 5) as per EN/IEC 63252:2020**
 - (m) **Serve-over fish counters** with flaked ice.
 - (n) **Professional** refrigerated storage cabinets, **blast cabinets, condensing units and process chillers.**
 - (o) **Wine storage** appliances and minibars.

Testing requirements to meet Minimum Energy Performance Standard (MEPS)

Public - عام

Testing Standard

- **EN ISO 23953-2:2023** “Refrigerated display cabinets – Part 2: Classification, requirements and test conditions (ISO 23953-2:2023)”.
- **EN 16838:2024** “Refrigerated display scooping cabinets and pozzetto for gelato – Classification, requirements, performance and energy consumption testing”.
- **EN/IEC 63252:2020** “Energy consumption of vending machines”.
- **EN/ISO 22043:2020** “Ice-cream freezers - Classification, requirements and test conditions”.
- **EN/ISO 22044:2022** “Commercial Beverage coolers - Classification, requirements and test conditions”.

MEPS

The Minimum Energy Performance (MEPS) requirement is based on the rated Energy Efficiency Index

MINIMUM ENERGY PERFORMANCE STANDARD (MEPS)	
Type	EEI
Ice-cream freezers	EEI ≤ 50
Refrigerated drum vending machines	EEI ≤ 100
All other refrigerating appliances	EEI ≤ 80

Other requirements and Acceptance Criteria

Testing Requirements

- The ambient conditions shall correspond to Set 1, except for Ice-cream freezers and Gelato scooping cabinets which shall be tested in ambient conditions corresponding to Set 2, as set out in the table.
- Where a compartment can be set to different temperatures, it shall be tested at the lowest operating temperature.
- Vending machines with compartments with variable volumes shall be tested with the net volume of the compartment with the highest operating temperature adjusted to its minimum net volume.
- For Beverage coolers, the specified cooling speed shall be according to the half reload recovery time.

AMBIENT CONDITIONS				
	Dry bulb temperature, °C	Relative humidity, %	Dew point, °C	Water vapor mass in dry air, g/kg
Set 1	25	60	16.7	12.0
Set 2	30	55	20.0	14.8

Acceptance criteria

Parameter	Verification tolerances
Tested gross volume (V_{gross}) or net volume (V_{net})	$\geq 0.97 \times \text{rated value}$ or 1 L lower — whichever is the greater value — than the rated value.
Tested Total Display Area (TDA)	$\geq 0.97 \times \text{rated value}$
Tested daily energy consumption (E_{daily})	$\leq 1.10 \times \text{rated value}$

Energy Efficiency Index (EEI) Calculation

EEI calculation

- **Determination of the Energy Efficiency Index (EEI)**

$$EEI = 100 \times \frac{AEC}{SAEC}$$

Where:

AEC: Annual Energy Consumption of the refrigerating appliance.

- **Determination of the Annual Energy Consumption (AEC)**

$$AEC = 365 \times E_{\text{daily}}$$

E_{daily}: the energy consumption of the refrigerating appliance with a direct sales function over 24 hours, expressed in kWh/24h and rounded to three decimal places and measured according to the temperature conditions of Table 6 for the relevant temperature class.

- **Determination of the Standard Annual Energy Consumption (SAEC)**

SAEC: Standard Annual Energy Consumption of the refrigerating appliance.

- For refrigerating appliances with a direct sales **function with all compartments having the same temperature class**, and for Vending machines, the SAEC is calculated as follows:

$$SAEC = 365 \times P \times C \times (M + N \times Y)$$

Energy Efficiency Index (EEI) Calculation

EEI calculation

- For refrigerating appliances with a direct sales function **with more than one compartment having different temperature classes**, with the exception of Vending machines, the SAEC is calculated as follows:

$$SAEC = 365 \times P \times \sum_{c=1}^n C_c \times (M + N \times Y_c)$$

Where:

- **c** : is the index number for a compartment type ranging from 1 to n, with n the total number of compartment types.
- **P** : A correction factor that accounts for the differences between integral and remote cabinets.
- **C** : A correction factor that accounts for the difference in operating temperature.
- **M and N**: Modelling parameters that take into account the volume-dependence of the energy use
- **Y**: the equivalent volume/net volume/sum of the compartments depends on the type of ref.

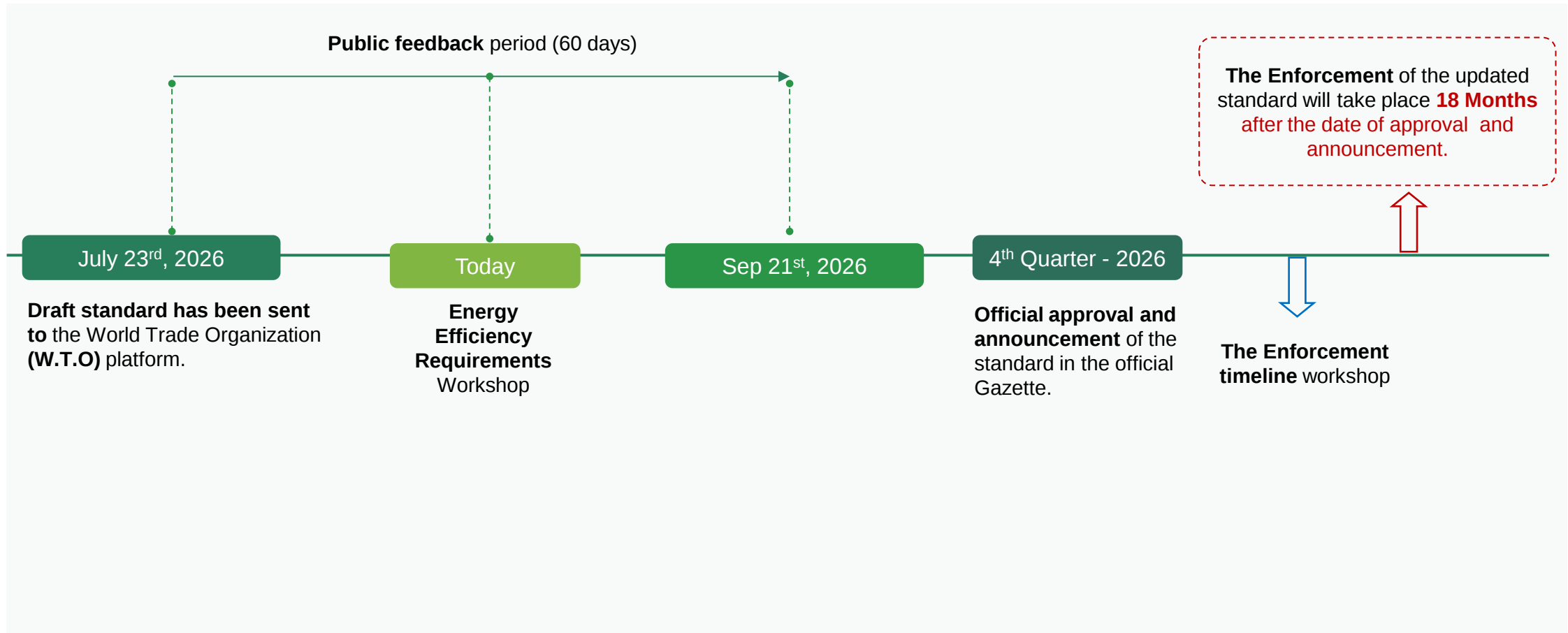
Energy Efficiency Classes

ENERGY EFFICIENCY INDEX (EEI) CLASSIFICATION			
Bar color	Energy efficiency class (Arabic)	Energy efficiency class (English)	EEI
Dark green	أ	A	EEI ≤ 10
Green	ب	B	10 < EEI ≤ 20
Light green	ج	C	20 < EEI ≤ 35
Yellow	د	D	35 < EEI ≤ 50
Orange	هـ	E	50 < EEI ≤ 65
Red	و	F	65 < EEI ≤ 80
Dark Red	ز	G	EEI > 80

Categorizing Commercial Refrigerators into 6 Label Types

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Next steps



Discussion

Next steps

For any queries and feedback , please contact Amarer@seec.gov.sa , **no later than Sep 21st , 2026** , in the following format:

Company name	Slide number	Comment and justification

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Thank You



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Saudi Standards

كفاءة η

المركز السعودي لكفاءة الطاقة
Saudi Energy Efficiency Center