



THE KINGDOM OF SAUDI ARABIA  
IMPORT GUIDE No 02

## ***Energy Efficiency Labelling***

*Important Note : this Import Guide is intended to give Bureau Veritas Customers essential information as reference related to existing legislation implemented in the Kingdom of Saudi Arabia.*

### **I. Scope:**

The following electrical appliances shall have an energy efficiency labelling with a valid license to use such label:

#### **A. Electrical Appliances:**

- ) Air conditioners units with capacities up to and including 65,000 Btu/h (19 kW) under SASO 2663: single-package of window type, single split-system non-ducted air conditioners using air-cooled condensers, single split-system ducted air-conditioners using air-cooled condensers, and heat pumps using air-cooled condensers or using electric resistance for residential, commercial and industrial sector as applicable in accordance with SASO standards.

The standard applies to units designed to operate with the following voltages:

- AC single phase circuits of 220 V or 230 V,
- DC single phase up to 400V,
- Designed for dual voltage (including DC) up to 400V,
- Voltage range including above values, and three phase circuits of 380 V or 400 V
- At frequency of 60 Hz

The following units are excluded from the scope of SASO 2663:

- Units covered by SASO 2874
- Evaporative coolers
- Mobile (windowless) and portable units with exhaust air duct
- Individual assemblies not constituting a complete refrigeration system such as condensing units for separate use
- Models that have been granted exemption by SASO due to specific design for applications such as air-conditioners that are not intended for human comfort

- ) Air-conditioners up to 600V under SASO 2874:

- Electrically operated air conditioners
- Condensing units
- Chillers (if water cooled chillers, voltages up to 15000V are included)
- Absorption chillers
- Electrically operated variable refrigerant flow (VRF) air conditioners
- Close control air conditioners and condensing units serving computer rooms

- ) Refrigerators, refrigerator-freezers, and freezers that are electrically operated on a 60 Hz alternating current, with a nominal supply voltage of 230 V, including built-in appliances:

- Refrigerators and refrigerator-freezers with a gross (total) capacity up to 1100 liters (39ft<sup>3</sup>)
- Freezers with a capacity up to 850 liters (30 ft<sup>3</sup>)

Excluding:

- Electrically operated refrigerators employing an absorption refrigeration system and for commercial refrigerators, refrigerators-freezers and freezers
- Refrigerating appliances primarily powered by energy sources other than electricity, such as liquefied petroleum gas (LPG), kerosene and bio-diesel fuels
- Battery-operated refrigerating appliances that can be connected to the mains through an AC/DC converter, purchased separately

- Custom-made refrigerating appliances, made on a one-off basis and not equivalent to other refrigerating appliance models
  - Refrigerating appliances for tertiary sector application where the removal of refrigerated foodstuffs is electronically sensed and that information can be automatically transmitted through a network connection to a remote control system for accounting
  - Appliances where the primary function is not the storage of foodstuffs through refrigeration, such as stand-alone ice- makers or chilled drinks dispenser
  - ) AC operated single phase electrical washing machines for clothes (including dual function washing-drying machines), up to and including 25kg.
  - ) AC single-phase/three phases clothes dryers up to 25kg (excluding spin extractors and combined washer-dryer)
  - ) Water heaters including:
    - AC single phase/three phases water heaters up to 70kW with capacities up to 2000 Liters
    - Gas fired water heaters with capacities up to 300 Liters
    - Electric storage water heaters
    - Instantaneous electric water heaters
    - Heat pump water heaters
    - Solar water heaters (combined or not with additional energy supply)
    - Fuel gas water heaters
    - Storage tanks
- Excluding:
- Water heaters using solid fuels
  - Water heaters designed for making hot drinks and or food only

Applicable Standards for energy efficiency:

Product	Standard	Title
AC	SASO 2681	Non-ducted air conditioners and heat Pumps -Testing and rating for performance (based on ISO 5151)
	SASO 2682	Ducted air-conditioners and air-to-air heat pumps - Testing and rating for performance (based on ISO 13253)
	SASO 2663	Energy Labelling and Minimum Energy Performance Requirements for Air-Conditioners
	SASO 2874	Air conditioners - Minimum energy performance requirements and testing requirements
Refrigerator	SASO 2664 (until July 1 <sup>st</sup> 2018)	Energy Performance, Capacity and Labelling of Household Refrigerators, Refrigerator-Freezers and Freezers (test method based on ISO 15502)
	SASO 2892 as of July 2018	Refrigerators, Refrigerator-Freezers, and Freezers Energy Performance, Testing and Labeling Requirements
Washing machines	SASO 2692 (until July 1 <sup>st</sup> 2018)	Energy Labelling Requirement of Clothes Washing Machines for Household Use
	SASO 2693 (until July 1 <sup>st</sup> 2018)	Method for Measuring the Performance of Clothes Washing for Household Use
	SASO 2683 (until July 1 <sup>st</sup> 2018)	Clothes Washing machines for household use- Methods for measuring the performance (based on IEC 60456)
	SASO 2885 as of July 2018	Electrical Clothes Washing Machines - Energy and Water Performance Requirements and Labelling
Clothes dryers	SASO 2883	Electrical Clothes Dryers - Energy Performance Requirements and Labelling
Water Heaters	SASO 2884	Water Heaters - Energy Performance Requirements and Labelling
-	M.A-156-16-03-05	Saudi Technical Regulation for energy efficiency

**B. Rotating electrical machines:**

Efficiency class (SASO 2893), the standard applies to the following only:

Single speed, three phase, 60Hz, induction motors that:

- J Have a rated voltage between  $U_N$  50V and 1000V (applies also to motors rated for two or more voltages and/or frequencies)
- J Have a rated output power between  $P_N$  0.75kW and 375 kW
- J Have either 2 or 4 or 6 or 8 poles
- J Are rated for duty type S1 (continuous duty)
- J Are marked with any ambient temperature within the range of -20°C to +60°C (Including smoke extraction motors with a temperature class of up to and including 300 °C )
- J Are marked with an altitude up to 4 000 m above sea level
- Z Motors completely integrated into a machine are not covered (for example pump, fan and compressor) that cannot be practically tested separately from the machine even with provision of a temporary end-shield and drive-end bearing. This means the motor shall: a) share common components (apart from connectors such as bolts) with the driven unit (for example, a shaft or housing) and; b) not be designed in such a way as to enable the motor to be separated from the driven unit as an entire motor that can operate independently of the driven unit. That is, for a motor to be out of scope of this standard, the process of separation shall render the motor inoperative.
- Z Motors with integrated frequency-converters (compact drives) are not covered when the motor cannot be tested separately from the converter.

The following motors "Exempted motors" are included in the scope (i.e. will have to register in the SASO system) but they are exempted from achieving the efficiency requirement:

- J Brake motors when the brake is an integral part of the inner motor construction and can neither be removed nor supplied by a separate power source during the testing of motor efficiency.  
*Note: Brake motors with a brake coil that is integrated into the flange of the motor are covered as long as it is possible to test motor efficiency without the losses of the brake (for example by dismantling the brake or by energizing the brake coil from a separate power source).*  
When the manufacturer offers a motor of the same design with and without a brake the test of motor efficiency may be done on a motor without the brake. The determined efficiency may then be used as the rating of both motor and brake motor.
- J (TEAO, IC418) Totally enclosed air -over machines, i.e. totally enclosed frame-surface cooled machines intended for exterior cooling by a ventilating means external to the machine.
- J Submersible motors specifically designed to operate wholly immersed in a liquid.
- J Motors with cooling methods other than IC0Ax, IC1Ax, IC2Ax, IC3Ax or IC4Ax (see IEC 60034-6);
- J Motors built for a restricted space (high-output design, i.e. smaller frame sizes than usual in national standards);
- J Motors specifically built for operation in explosive environments according to IEC 60079-0 (due to safety requirements and possible design constraints of explosion proof motors such as increased air-gap, reduced starting current, enhanced sealing);
- J Motors for special requirements of the driven machine beyond the requirements of the IEC 60034 series of standards (such as motors for heavy starting duty, special torque stiffness and/or breakdown torque characteristics, large number of start/stop cycles, very low rotor inertia);
- J Motors for special characteristics of the grid supply beyond the requirements of the IEC 60034 series of standards (such as motors with limited starting current, increased tolerances of voltage and/or frequency);
- J Motors with liquid cooling on account of their higher power density compared with air cooled motors of the same frame size;
- J Smoke extraction motors with a temperature class higher than 300 °C.

Non-IEC motors (e.g. NEMA) that are compliant with the minimum energy efficiency standards according to the IEC classification are acceptable.

Requirements:

- If applicable, the rated efficiency and the IE code shall be marked on the product's rating plate (e.g. "IE3-95%" ...)

- When applicable, the minimum efficiency of the rotating machines shall be IE3 at least as of 01/01/2017 (IE1 and IE2 are not acceptable)

Rotating machines	SASO 2893	Rotating Electrical Machines – Part 30-1: Efficiency classes of line operated AC motors (IE code)
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**C. Lighting products:**

All lighting products shipped as of January 1<sup>st</sup> 2019 shall have a valid SAU IECEE certificate.

All lighting products covered by the following standards shall have a valid Energy Efficiency label as required by the applicable standard.

Lighting products	SASO 2870	Energy efficiency, functionality and labelling requirements for lighting products part 1
	SASO 2902	Energy efficiency, functionality and labelling requirements for lighting products part 2

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