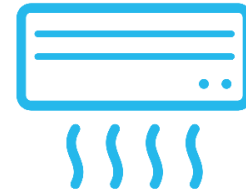


Procurement guidelines for general appliances

Split air conditioners

May 2021



Introduction

About the Procurement Guidelines

These guidelines supply technical criteria that can be directly inserted into procurers' tenders and are calibrated to the most **energy-efficient** products in Argentina's local markets. They are meant only for electric and gas appliances with an **Energy Efficiency Label**.

Following these guidelines ensure the acquisition of products that consume less energy and emit **fewer greenhouse gases** throughout their lifetime.

About Topten Argentina

Toptenargentina.org is an online consultation tool that presents the most energy-efficient appliances available in Argentina's market. It offers the consumer the necessary information in order to incorporate the variable of energy consumption when buying new equipment. It is also an instrument that serves to make manufacturers and politicians aware of the importance of energy efficiency.

The website was launched in 2015 by [Fundación Vida Silvestre Argentina](#), an environmental NGO from the WWF network. It is the local version of the international [Topten initiative](#) (launched in Switzerland in 2000), and is part of the [Topten Latin-America group](#).

All air conditioner sets displayed on Topten Argentina **meet the criteria** contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the [Topten selection criteria](#).

Why use this guide?

How much can you save in energy?

Considering split air conditioner sets listed on toptenargentina.org and the assumptions listed below, it is possible to achieve the savings indicated in Table 1.

Assumptions:

- Mode of use: Cooling
- Frequency of use: 500 hours / year
- Lifetime expectation: 15 years
- Electricity cost¹: 6,00 \$ / kWh

Table 1: Comparison in energy consumption between a Topten air conditioner and an inefficient model – Cooling

	Topten model	Inefficient model	Topten model	Inefficient model
Air conditioner type	Hot-cold split	Hot-cold split	Hot-cold split	Hot-cold split
Energy class in cooling	A	C	A	C
Cooling capacity (kW)	2,60	2,60	6,30	6,40
Energy Efficiency Index	3,45	3,01	3,81	3,01
Energy consumption (kWh/year)	377	432	827	1063
Use cost (electricity in 15 years)	\$ 33.913	\$ 38.870	\$ 74.409	\$ 95.681
Savings	13% energy / unit 4.957 \$ / unit		22% energy / unit 21.272 \$ / unit	

The energy consumption of an air conditioner (both hot-cold and cold models) is mainly determined by its frequency of use, capacity, and Energy Efficiency Index:

- **Daily usage** is directly proportional to the equipment consumption.
- The amount of energy used rises alongside the equipment's **cooling capacity**.
- Finally, while comparing two air conditioners with the same capacity and frequency of use, the one with a bigger **Energy Efficiency Index** consumes electricity the least.

As shown in Table 1, the bigger the equipment's capacity and the lower its IEE, the bigger savings are obtained when switching to a Topten model. This is also valid for cold split units.

¹ The price per kWh is obtained by making an average between the rates of electricity companies from different provinces. Calculations are made for Urban Users with Small Demands (monthly consumption between 450 and 500 kWh/month). In addition, an average tax of 35% is considered, which includes IVA at 21%, IIBB of 5%, and a Municipal tax that can range from 1% to 10% according to each case.

It is important to note that **energy consumption** is measured **for cooling** only, according to the IRAM² standard for energy efficiency labelling (IRAM 62406:2007). Although a more recent version of the standard defines energy consumption **for heating**, it still hasn't been implemented through the market³.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are **updated regularly**. The newest versions are always available at <https://toptenargentina.org/>.

Energy efficiency class

According to their **energy efficiency class**, declared in agreement with the Energy Label, air conditioners must comply with at least the following conditions:

Table 2: Procurement criteria for the acquisition of energy-efficient models – Energy efficiency class

Type	Energy efficiency class for cooling	Energy efficiency class for Heating
Hot-cold split	A	A
Cold split	A	-

The energy efficiency classes for air conditioners are determined according to the IRAM standard for energy efficiency labelling (IRAM 62406:2007), going from A to G⁴. A more recent version of the standard changes the scale, adding higher classes. However, as it hasn't been fully implemented through the market yet, **a wide range of models fall under the energy class A (cold split) and A/A (hot-cold split)**. In order to ensure the acquisition of the most energy-efficient air conditioners within these classes, **additional criteria** are required.

Energy Efficiency Index

According to their **Energy Efficiency Index** for cooling (IEE), declared in agreement with the Energy Label, air conditioners must comply with conditions presented in Table 3.

² Argentine Institute of Standardization and Certification.
³ For more information, refer to Notes on implementation.
⁴ For more information, refer to Notes on implementation.

Table 3: Procurement criteria for the acquisition of energy-efficient models – Energy Efficiency Index

Type	Energy Efficiency Index for cooling
Hot-cold split	> 3,24
Cold split	> 3,24

Energy consumption

In order to limit the energy consumption of air conditioners, alongside CO2 emissions derived from the use of electricity, the procured models must abide by an **energy cap**.

Classifying them by their Energy Efficiency Index, hot-cold air conditioners must comply with the following conditions:

Table 4: Procurement criteria for the acquisition of energy-efficient models – Energy cap – Hot-cold split models

Type	Energy Efficiency Index for cooling	Energy consumption (kWh / year)
Hot-cold split	3,24 – 3,27	≤ 420
	> 3,27	-

Inverter technology

Air conditioners with **inverter technology** consume **less energy**, compared to traditional ones. As their compressor can regulate its voltage, current, and frequency, it can operate without stopping. The results are both enhanced energy efficiency, and the temperature inside the room being maintained for a longer time.

All hot-cold air conditioners must have Inverter Technology.

Verification

Bidders must supply the **Energy Label** and technical data, as it is stipulated in the resolution N° 319/1999 from the former Ministry of Industry, Commerce and Mining⁵. Information about the equipment’s capacity, energy efficiency class, IEE, and energy consumption, can be found in the mentioned Energy Label.

⁵ Link to the disposition: <http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=57667>.

Notes on implementation

Energy efficiency class for cooling

According to the IRAM 62406:2007 standard, the air conditioner's **energy efficiency class for cooling** is established based on an **Energy Efficiency Index (IEE)**. Table 5 shows the class assigned to different ranges of IEE, for both hot-cold and cold models:

Table 5: Energy efficiency class for air conditioners - Cooling

Energy Efficiency Index	Energy efficiency class for cooling
IEE > 3,20	A
3,20 ≥ IEE > 3,00	B
3,00 ≥ IEE > 2,80	C
2,80 ≥ IEE > 2,60	D
2,60 ≥ IEE > 2,40	E
2,40 ≥ IEE > 2,20	F
2,20 ≥ IEE	G

The Energy Efficiency Index can be calculated as the quotient between the cooling capacity and the electrical input power of the appliance. Both of them are measured following the methods defined in the IRAM 62406:2007 standard.

During April 2015, resolutions N° 814/2013 and N° 228/2014 from the former Secretary of Energy⁶ established **class A in cooling** as **minimum standard of energy efficiency** for the commercialization of air conditioners. Since then, lower efficiency classes had been prohibited from entering the market.

Energy efficiency class for heating

According to the IRAM 62406:2007 standard, the air conditioner's **energy efficiency class for heating** is established based on a **Performance coefficient (COP)**. Contrary to the IEE, this coefficient is not listed on the Energy Label.

Table 6 shows the class assigned to different ranges of COP, for hot-cold models only:

⁶ Link to the disposition N° 228/2014: <http://servicios.infoleg.gob.ar/infolegInternet/anexos/230000-234999/231223/norma.htm>.

Link to the disposition N° 814/2013: <http://servicios.infoleg.gob.ar/infolegInternet/anexos/220000-224999/221800/norma.htm>.

Table 6: Energy efficiency class for air conditioners - Heating

Energy Efficiency Index	Energy efficiency class for heating
COP > 3,40	A
3,40 ≥ COP > 3,20	B
3,20 ≥ COP > 3,00	C
3,00 ≥ COP > 2,60	D
2,60 ≥ COP > 2,40	E
2,40 ≥ COP > 2,20	F
2,20 ≥ COP	G

The Performance coefficient can be calculated as the quotient between the heating capacity and effective input power of the appliance. The previous are measured following the methods defined in the IRAM 62406:2007 standard.

During August 2014, resolutions N° 814/2013 and N° 228/2014 from the former Secretary of Energy⁷ established **class C in heating** as **minimum standard of energy efficiency** for the commercialization of air conditioners. Since then, lower efficiency classes had been prohibited from entering the market.

Energy Label

The **Energy Efficiency Label** for air conditioners provides information on their energy consumption, based on the use of the efficiency classes (scale: A to G).

The label is attached to the equipment and has the form presented in Figure 1.

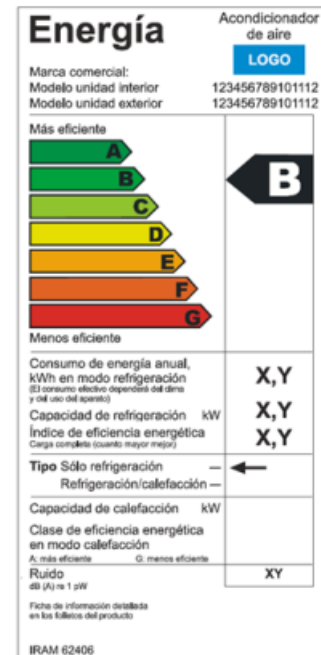


Figure 1: Energy efficiency label for split air conditioners. The example corresponds to a cold split model.

⁷ Link to the disposition N° 228/2014: <http://servicios.infoleg.gob.ar/infolegInternet/anexos/230000-234999/231223/norma.htm>.

Link to the disposition N° 814/2013: <http://servicios.infoleg.gob.ar/infolegInternet/anexos/220000-224999/221800/norma.htm>.

IRAM 62406:2019 standard

A new version of the IRAM standard for energy efficiency labelling was released in 2019 (IRAM 62406:2019 standard). Some of the main changes included in this actualization are listed below:

- **Change in the scale** of the energy efficiency classes for cooling (split models only). With the new standard, air conditioners can rate between **class A+++** and **class D**.
- Actualization of the method used for determining energy consumption in cooling mode (split models only). By using a **Seasonal Energy Efficiency Index (IEEE)** and adjusting the test conditions, it is possible to adequately measure the energy consumption of **inverter models**.
- Inclusion of the **Performance coefficient (COP)** in the Energy Label.
- Establishment of a method for calculating the **energy consumption in heating mode**.

The IRAM 62406:2019 standard still needs to be fully implemented, so the older version still remains among air conditioners in the market.

Life cycle costs

To increase savings and reduce environmental impact, procurers should evaluate **life cycle costs** when tendering for air conditioners. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Table 7: Example of a breakdown costs table, to be filled in by bidders

	Information details	Different unit costs (\$)	Total cost (\$)
Delivery			
Installation			
Use*			
Maintenance			
Recycling and disposal			

*In order to estimate the **cost of use**, procurers must take into account their appliance **frequency** of use, its **lifetime** expectation or replacement rate, its energy **consumption** (as it is specified in the energy label), and the local **electricity costs**, among other possible factors. A step-to-step explanation can be found in toptenargentina.org.

It's important to note that **prices** for electricity are **highly variable**. They not only depend on the distribution company and the amount of energy consumed by the user, but they can also change significantly over time. Therefore, it is recommended that procurers make their **own estimates** of the energy consumption of an appliance, using the **tariff table** corresponding to their situation.

Advice and support

For further assistance in using the information presented in this guideline, please contact Argentina's Topten team (<https://toptenargentina.org/site/contact>).

Acknowledgements

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