



Guidelines for Front Runner Public Procurers

Storage refrigerators and freezers

[Maike Hepp](#), November 2019



Why follow Topten/ProCold criteria?

- Topten (www.topten.eu) is a European web portal helping professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All storage refrigerators and freezers displayed on www.topten.eu 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**.

How much can you save?

On www.topten.eu storage refrigerator and freezer cabinets are divided in the following categories:

STORAGE REFRIGERATORS	STORAGE FREEZERS
counter refrigerators	counter freezers
refrigerators 1-door	freezers 1-door
refrigerators 2-doors	freezers 2-doors
refrigerator-freezers	

Considering the models listed on Topten and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions {

- Lifetime expectation: 8 years
- Electricity cost: 0,20 €/kWh

	VOLUME (litres)	REFRIGERANT	ENERGY (kWh/year)	ELECTRICITY COSTS (€ in 8 years)	SAVINGS (€ in 8 years)
Topten model	198	R290	456	730	



STORAGE COUNTER REFRIGERATORS	Inefficient model	150	R134a	900	1440	49% energy/unit 710 €/unit
STORAGE REFRIGERATORS 1-DOOR	Topten model	462	R600a	285	456	79% energy/unit 1701 €/unit
	Inefficient model	450	R134a	1348	2157	
STORAGE REFRIGERATORS 2-DOORS	Topten model	964	R290	529	846	75% energy/unit 2495 €/unit
	Inefficient model	900	R134a	2088	3341	
STORAGE COUNTER FREEZERS	Topten model	86	R600a	761	1218	35% energy/unit 649 €/unit
	Inefficient model	100	R134a	1167	1867	
STORAGE FREEZERS 1-DOOR	Topten model	465	R290	1165	1864	69% energy/unit 4040 €/unit
	Inefficient model	450	R404a	3690	5904	
STORAGE FREEZERS 2-DOORS	Topten model	1050	R290	2795	4472	53% energy/unit 4979 €/unit
	Inefficient model	900	R404a	5907	9451	
STORAGE REFRIGERATOR-FREEZERS	Topten model	513	R290	2373	3797	36% energy/unit 2107 €/unit
	Inefficient model	450	R404a	3690	5904	

Comparing models with similar net capacity, the Topten models allow electricity savings, in 8 years, from around 700 €/unit, for storage counter refrigerators, to nearly 4700 €/unit for storage freezers 1-door. Best models on www.topten.eu consume 30% to almost 80% less energy than inefficient models.

The example in **Figure 1** shows that for 1-door storage refrigerators, a Topten appliance can save about 80% of electricity costs over the product's lifetime of 8 years. Even with a higher purchase price, the total price of purchase and electricity costs is significantly lower for the highly efficient appliance.

In addition, all Topten models use the natural refrigerants R290 (propane) or R600a (isobutane) with global warming potential (GWP) below 4.

Their global warming potential is 1'000 - 4'000 times lower than that of previous refrigerants like R134a or R404A and they already comply with all coming stages of the EU f-gas regulation.



R404A has a GWP of 3990 and will be banned in refrigerated cabinets in 2020 and R134a has a GWP of 1430 and will be banned in refrigerated cabinets in 2022.

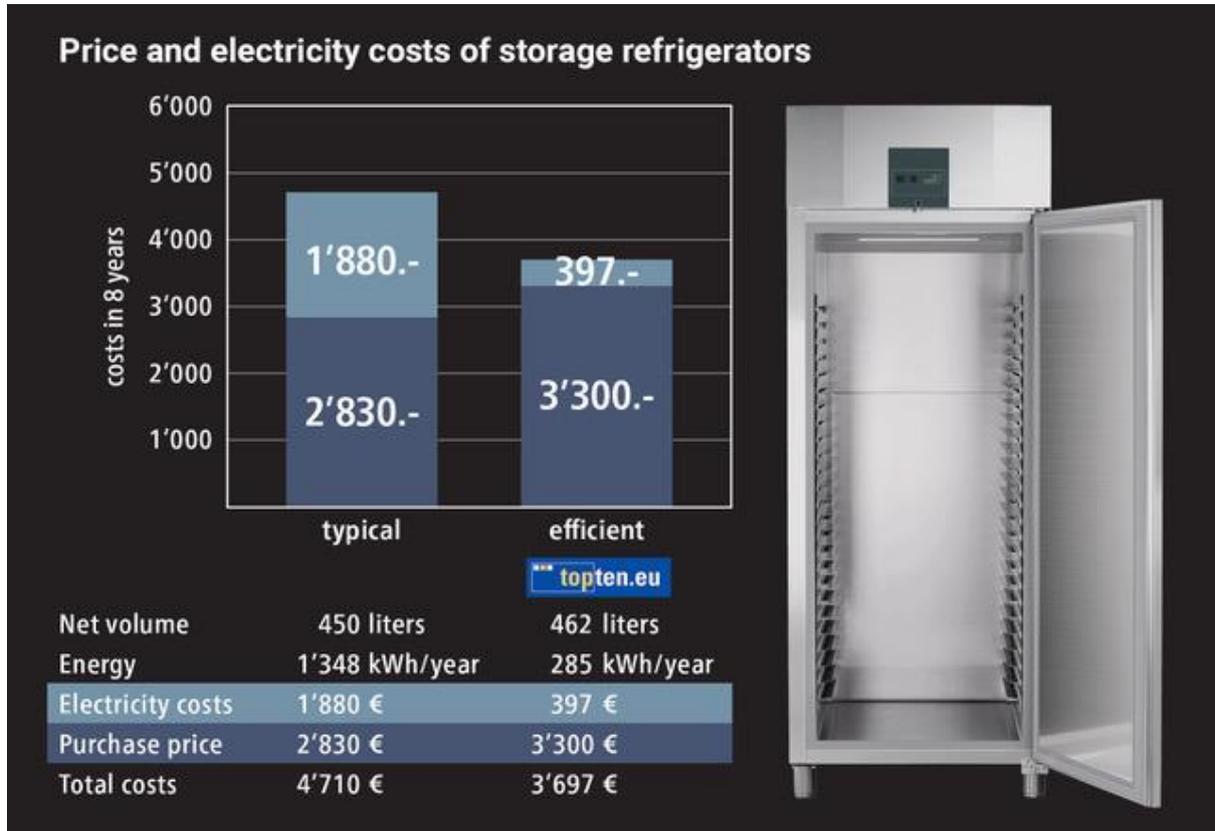


Figure 1: Storage refrigerator 1-door: the choice of an efficient appliance saves 1'400 € in electricity costs over the lifetime of 8 years.



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 www.topten.eu/pro.

SUBJECT: HIGHLY ENERGY-EFFICIENT STORAGE REFRIGERATORS AND FREEZERS

TECHNICAL SPECIFICATIONS

1. Energy class

Storage refrigerators and freezers cabinets must have at least the following energy efficiency class, declared according to European Energy Label.

CATEGORY	ENERGY CLASS
Storage counter refrigerators	A
Storage refrigerators 1-door	A
Storage refrigerators 2-doors	C
Storage counter freezers	B
Storage freezers 1-door	C
Storage freezers 2-doors	C
Storage refrigerator-freezers	D

Verification

Bidders must supply the energy label and technical data according to EU Regulations No. 2015/1094 and No. 2015/1095.

2. Refrigerants

Storage refrigerator and freezer cabinets must use refrigerants with global warming potential below 4 such as R290 (propane), R600a (isobutane) or R744 (CO₂). This means they are compliant with all coming stages of the EU F-Gas regulation No. 517/2014.

Verification

Bidders must supply the information on refrigerants according to EU regulation No. 2015/1095.

BACKGROUND FACTS

According to EU Regulation No. 517/2014 refrigerators and freezers for commercial use (hermetically sealed equipment) that contain HCFs with global warming potential of 2500 or more will be banned from 1 January 2020 and those that contain HFCs with global warming potential of 150 or more will be banned from 1 January 2022. Therefore the refrigerant R404A which has a global warming potential of



3990 will be banned in refrigerated cabinets in 2020 and the refrigerant R134a which has a global warming potential of 1430 will be banned in refrigerated cabinets in 2022.



Since 1 July 2016, the EU energy label for professional refrigerated storage cabinets is mandatory. It shows:

- the energy efficiency class;
- the annual electricity consumption in kWh per year;
- the net volume of chilled compartments;
- the net volume of freezer compartments;
- the climate class (3, 4 or 5) together with the associated dry bulb temperature (in °C) and the relative humidity (in %).

Document: EU regulation No. 2015/1094.

On 1 July 2019, the second label became valid, adding classes A+ to A+++.

Energy efficiency class	A+++	A++	A+	A	B	C	D	E	F	G
Energy efficiency index	< 5	5-10	10-15	15-25	25-35	35-50	50-75	75-85	85-95	95-115

Class G products have not been permitted on the market since January 2018. Class F products are banned since 1.Juli 2019 (with the exemption of heavy-duty products).

NOTES ON IMPLEMENTATION

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

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

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use	Energy consumption in kWh/year x n° units	Electricity cost: 0,20 €/kWh*	
Maintenance			
Recycling and disposal			

* This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.



Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information please contact your national Topten team (find the links on www.topten.eu/pro).

