Analysis of the Household Refrigerating Appliances Implementing Measure Directive for Energy-related Products (ErP) formerly known as Energy-using Products (EuP)
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Introduction

The Eco-Directive for Energy-related Products (ErP) 2009/125/EC requires manufacturers and importers to demonstrate compliance with the Directive’s product category-specific requirements outlined in the Implementing Measures (IMs). The ErP Directive is CE Marking legislation, but differs from other European Union legislation as it is intended to encompass the entire life cycle of energy-related products.

The Directive’s Implementing Measures provide the specific compliance requirements, segmented by approximately 30 product categories with more product categories to be identified in the future.


The regulation EC/643/2009 establishes requirements for the placing on the market of electric mains-operated household refrigerating appliances with a storage volume up to 1,500 liters.

The first stage of this regulation comes into effect on July 1, 2010 and the last step on July 1, 2015.

Overview of the ErP Directive


According to the European Commission energy-related products are "any goods having an impact on energy consumption during use." Energy-related products include all energy-using products (televisions, microwaves, refrigerators), plus energy-conserving products (windows, insulation materials and water-using products, like shower heads).

The new ErP Directive encompasses both the products covered under the former EuP Directive – those that use, generate, transfer or measure energy – and those that can contribute significant energy savings during use such as shower taps and
The ErP Directive must be implemented in each member state’s national law by November 20, 2010.


The EU Directive entered into force in August 2007 (then known as the EuP Directive) and applies throughout the EU. The Directive aims to reduce the energy use and other negative environmental impacts throughout the life cycle of products powered by electricity, fossil or renewable fuels as well as energy-related products.

According to the EU’s Official Journal, energy-related products account for a large proportion of the consumption of natural resources and energy in the community. Furthermore, many energy-related products have a significant potential for being improved in order to reduce environmental impacts and to achieve energy savings through better design which also leads to economic savings for business and end-users. In addition to products which use, generate, transfer or measure energy, certain energy-related products, including products used in construction or some water-using products, could also contribute to significant energy savings during use.

The Directive means that manufacturers must take into account energy use and other environmental factors in the product design. The different requirements, affecting both producers and importers, will be published in each Implementing Measure. In order to CE mark products, and sell the products on the European market, the Directive requires adaptation of your products to meet the implementing measures that are currently being developed for different products. The first phase of the ErP Directive involves around 30 product categories and more are likely to be affected in the future. Examples of products in the first phase are; boilers, electric pumps, ventilation pumps, electric motors, water heaters, commercial refrigerator and freezers, domestic washing machines, vacuum cleaners, industrial ovens, simple set top boxes, domestic lighting, street and office lighting, televisions and external power supply.

**ErP Scope: Product, Market, Process**

The Directive applies to all products and/or product groups that require energy in order to function as intended (excluding vehicles that transport humans or goods) as well as energy-related products such as windows, insulation materials and water-using products, like shower heads. The products should fulfill the following criteria in order to be included in an action or to be self-regulating:
The product should represent a significant volume of sales and trade within the EU, namely, exceeding 200,000 market units across all manufacturers (this applies to the entire product group rather than individual products or models, or market volume of an individual manufacturer).

The product should, in view of the quantities put on the market and/or used, have a substantial environmental impact within the EU.

There should be significant opportunities for improving the product’s environmental impact without incurring unreasonable costs, in view of the fact that:

- There is no other relevant common legislation for dealing with the problem in a suitable manner and it cannot be solved by market forces.
- There is a large difference in the environmental performance of different energy-using products on the market with equivalent functions.

A special method is used to assess whether, and to what extent, different energy-related products fulfil these criteria, and to outline which requirements can be established for each specific product. The basic elements of the requirement are compiled by a number of groups of experts engaged by the European Commission, which then put forward proposals for product requirements. The Commission reviews these on a product-by-product basis and sends its proposals for product requirements in a custom document to all EU Member States. The Implementing Measures will be introduced for each product group either through national law or through a daughter directive under the Directive for Energy-related Products (ErP).

**ErP Adoption**

The first Implementing Measure adopted was for standby/off mode, simple set top boxes, street and office lighting, non-directional household lamps and external power supplies.

On July 22, 2009 the European Commission adopted four new regulations to improve the energy efficiency of industrial motors, circulators, televisions, refrigerators and freezers.

According to the European Commission’s website (http://ec.europa.eu/index_en.htm), the four new energy efficiency requirements will save about 190 Tera Watt-hours (TWh) per year by 2020, which is comparable to the combined annual electricity consumption of Sweden and Austria. To date, a total of nine Implementing Measures have been adopted.
ErP Timeline

Timeline: Eco design directive (ErP)

Measures adopted by the Commission in 2008
- Stand-by and off-mode issues

2008

2009

2010

Measures adopted by the Commission in 2009
- Simple set top boxes
- Small and office lighting
- Electromotors
- External power supplies
- Domestic lighting
- Refrigerators and freezers for household use
- Electric cookers
- TV

Measures to be submitted for Committee Vote and possible adoption by the Commission in 2010
- Dishwashers and washing machines
- Boilers
- Air condition
- General lighting II
- Fans
- Water heaters
- Computers
- Pumps

Product Categories with Implementing Measures in Development
- Tumble dryers, vacuum cleaners, radiators and fan-heaters; appliances for room-heating using hot-air; ovens for household and commercial use; cooking ranges and grills for household and commercial use; dishwashers, washing machines and tumble dryers for commercial use; coffee machines; network stand-by; UPS (uninterruptible power supply) for household use.

Product Categories self regulated by the industry
- Imaging equipment (copiers, faxes, printers, scanners); Complex set top boxes.

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Regulation 643/2009 for the Requirements for Household Refrigerating Appliances

When a product is placed on the market, the manufacturer or its authorized representative should declare conformity to all directives and regulations as defined by an applicable implementing measure (IM) normally in the form of CE marking and often including a technical file.

Regulation EC/643/2009 for domestic refrigerators and freezers was adopted in July 2009 and the first requirement comes into force on July 1, 2010.

Background

This regulation was originally published under European Directive 2005/32/EC establishing a framework for eco-design requirements of energy using products.

This directive has been superseded by European Directive 2009/125/EC which establishes a framework for Energy related Products to encompass the entire life cycle – all environmental factors should be considered in product design.

The annual electricity consumption of the Household Refrigerating Appliances in the European community was estimated to have been 122 TWh in 2005, corresponding to 56 million tons of CO$_2$ equivalent.

While the projected energy consumption of household refrigerating appliances will decrease by 2020, this reduction is expected to slow as a result of outdated requirements and energy labels. The cost-effective energy-savings potential would therefore not be achieved if no further measures are introduced to update the existing requirements.

The Regulation should quickly ensure the placing on the market of more energy-efficient products subject to the regulation.

The regulation covers

- Establishes eco-design requirements for the placing on the market of electric mains-operated household refrigerating appliances with a storage volume up to 1,500 liters.
- Shall apply to electric mains-operated household refrigerating appliances, including those sold for non-household use or for the refrigeration of items other than foodstuffs. It also applies to electric mains-operated household refrigerating appliances that can be battery-operated.
The regulation does not cover:

- Refrigerating appliances that are primarily powered by energy sources other than electricity, such as liquefied petroleum gas (LPG), kerosene and biodiesel 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 food through refrigeration, such as stand-alone ice makers or chilled drinks dispensers.

Household refrigerating appliances included

- Refrigerator
- Refrigerator-freezer
- Household refrigerating appliance
- Wine storage appliance
- Multi-use appliance
- Frozen-food storage cabinet
- Compression-type refrigerating appliance
- Absorption-type refrigerating appliance
- Other-type refrigerating appliance
- Fresh-food storage compartment
- Cellar compartment
- Chill compartment
- Ice-making compartment
- Frozen-food storage compartment
- Frozen-food storage compartment
  - one-star compartment
  - two-star compartment
  - three-star compartment
- Food-freezer compartment
- Wine-storage compartment
Household refrigerating appliances categories

Household refrigerating appliances are classified in categories as shown below. Each category is defined by the specific compartment composition and is independent of the number of doors and/or drawers.

<table>
<thead>
<tr>
<th>Class</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Refrigerator with one or more fresh-food storage compartments</td>
</tr>
<tr>
<td>2</td>
<td>Refrigerator-cellar, cellar and wine storage appliances</td>
</tr>
<tr>
<td>3</td>
<td>Refrigerator-chiller and refrigerator with a 0-star compartment</td>
</tr>
<tr>
<td>4</td>
<td>Refrigerator with a 1-star compartment</td>
</tr>
<tr>
<td>5</td>
<td>Refrigerator with a 2-star compartment</td>
</tr>
<tr>
<td>6</td>
<td>Refrigerator with a 3-star compartment</td>
</tr>
<tr>
<td>7</td>
<td>Refrigerator-freezer</td>
</tr>
<tr>
<td>8</td>
<td>Upright freezer</td>
</tr>
<tr>
<td>9</td>
<td>Chest freezer</td>
</tr>
<tr>
<td>10</td>
<td>Multi-use and other refrigerating appliances</td>
</tr>
</tbody>
</table>

Household refrigerating appliances that cannot be classified in categories 1 to 9 because of compartment temperature are classified in Category 10.

Important dates

A revised energy label is expected in 2010; a draft has been available for comment since February 2010.

For compression refrigerators only:

Starting **July 1, 2010**, appliances must have an energy index better than 55, effectively removing products worse than an A rating. Note there will now not be a discontinuity between A and A+/A++ classes on the calculation of the index.

Starting **July 1, 2012**, appliances have to have an energy index better than 44, effectively removing products worse than an A+ rating depending on the exact revalorization of the new energy label.

Starting **July 1, 2014**, appliances must have an energy index better than 42 to be placed on the market.
Verification Procedure for Market Surveillance Purposes

For the purposes of compliance with the requirements of the Regulation, measurements shall be made using a reliable, accurate and reproducible procedure that takes into account the generally recognized state of the art measurement methods, including methods set out in documents the reference numbers.

The following procedures are applicable to regulation 643/2009:

- If anti-condensation heaters that can be switched on and off by the end-user are provided, they shall be switched on and — if adjustable — set at maximum heating;
- If ‘through-the-door devices’ (such as ice or chilled water/drinks dispensers) which can be switched on and off by the end-user are provided, they shall be switched on during the energy consumption measurement but not operated.

Multi-use appliances and compartments shall be set to the coldest nominal storage temperature during energy measurements as claimed for continuous normal use according to the manufacturer’s instructions. The energy consumption of a refrigerating appliance shall be determined in the coldest configuration, according to the manufacturer’s instructions for continuous normal use for any “other compartment.”

The following parameters shall be established:

- Overall dimensions, which are measured to the nearest millimeter
- Overall space required in use which, is measured to the nearest millimeter
- Total gross volume(s), which is measured to the nearest whole number of cubic decimeter or liters
- Storage volume(s) and total storage volume(s), which are measured to the nearest whole number of cubic decimeters or liters.

For the purposes of checking conformity with the requirements, Member State authorities shall test a single household refrigerating appliance. If the measured parameters do not meet the values declared by the manufacturer, the

<table>
<thead>
<tr>
<th>Compression type refrigerating appliances</th>
<th>Absorption-type and other-type refrigerating appliances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application date</td>
<td>Energy efficiency index (EEI)</td>
</tr>
<tr>
<td>July 1, 2010</td>
<td>EEI &lt; 55</td>
</tr>
<tr>
<td>July 1, 2012</td>
<td>EEI &lt; 44</td>
</tr>
<tr>
<td>July 1, 2014</td>
<td>EEI &lt; 42</td>
</tr>
</tbody>
</table>
measurements shall be carried out on three additional household refrigerating appliances. Otherwise, the model and all other equivalent household refrigerating appliance models shall be considered not to comply.

Intertek’s ErP Services
The ErP Directive is an expansive environmental legislation. Intertek’s experts in environmental legislation and product compliance have untangled the ErP Directive for you. See contact details on the bottom of the page.

We can assist you throughout the entire ErP compliance application process – including independent testing, environmental management systems support and other requirements for specific products – helping you to reach European markets smoothly.

Intertek’s ErP solution for household refrigerating appliances:

ErP Compliance Verification: Receive full verification of the household refrigerating appliances Implementing Measure and we will deliver a test report for your product’s technical file and Statement of Compliance for legal CE Marking.

Intertek’s other ErP solutions:

ErP Training & Consulting: Learn what your quickest and most cost-efficient compliance options are. We’ll tell you if, when, and how ErP will affect your product.

ErP Software Analysis: Let Intertek perform an analysis of your product’s ecological profile according to the ErP directive specifications.

ErP Pre-Compliance Verification: Learn how your product measures up against proposed and future ErP regulations for R&D purposes, compliance planning and to determine market readiness.

For more information, visit www.intertek.com/ErP or call 1-800-WORLD LAB.
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