Office Luminaires

Voluntary labels can pave the way to the next level in energy saving

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eLight

topten.eu

Co-funded by the Intelligent Energy Europe Programme of the European Union

European Climate Foundation

WWF

Introduction

Eva Geilinger

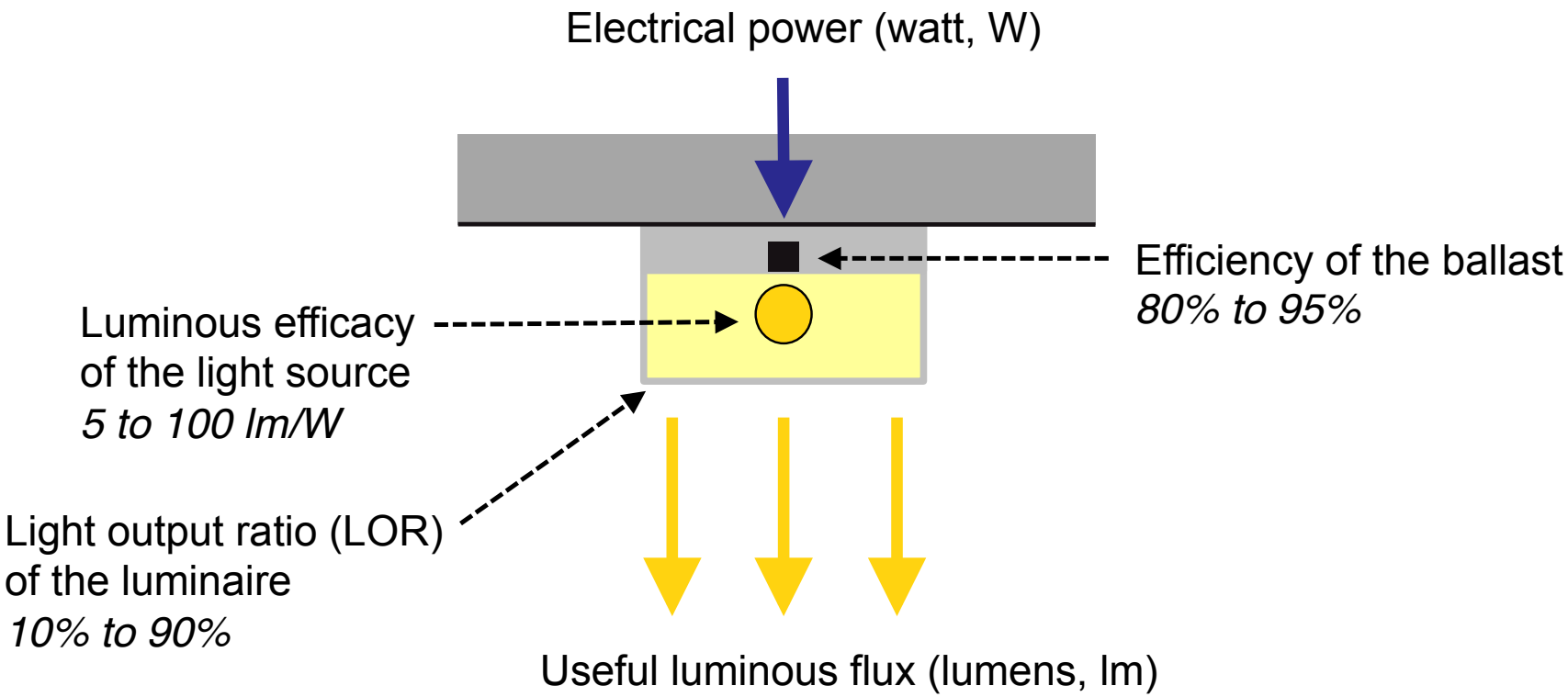
Master Studies in Environmental Sciences at Swiss Federal Institute of Technology (ETH) Zurich

Project manager for Topten International Services since 2009

Main expertise:
- Lighting
- Commercial/Professional Refrigerators

Daily work:
Research on best available technology,
Luminaire testing and evaluation,
Coordination of a rebate programme … etc.

The Luminaire Efficiency Factor (LEF)

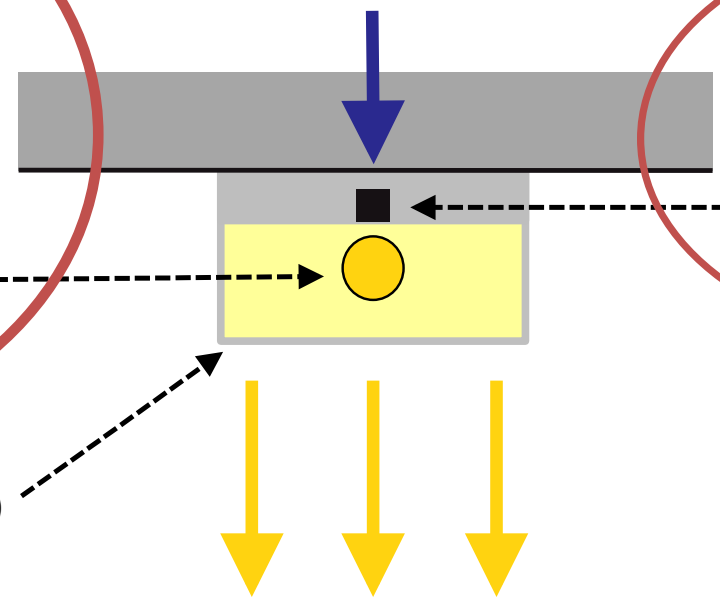


The Luminaire Efficiency Factor (LEF)

Energy label for household lamps since 1999

Minimum requirements since 2009, last stage 2017

Minimum requirements since 2002



Analysis of Relux Data (2013)

	Ceiling-mounted	Recessed	Suspended	Floor-standing
Top 10% of luminaires	> 67 lm/W	> 62 lm/W	> 70 lm/W	> 72 lm/W
Top 20% of luminaires	> 60 lm/W	> 53 lm/W	> 62 lm/W	> 63 lm/W
50% - Median	> 37 lm/W	> 30 lm/W	> 39 lm/W	> 33 lm/W
Poorest 20% of luminaires	< 22 lm/W	< 17 lm/W	< 24 lm/W	< 16 lm/W
Poorest 10% of luminaires	< 16 lm/W	< 12 lm/W	< 17 lm/W	< 10 lm/W
Factor top 10% to poorest 10%	**4**	**5**	**4**	**7**

Note that luminaires with halogen and incandescent lamps were excluded in this analysis!

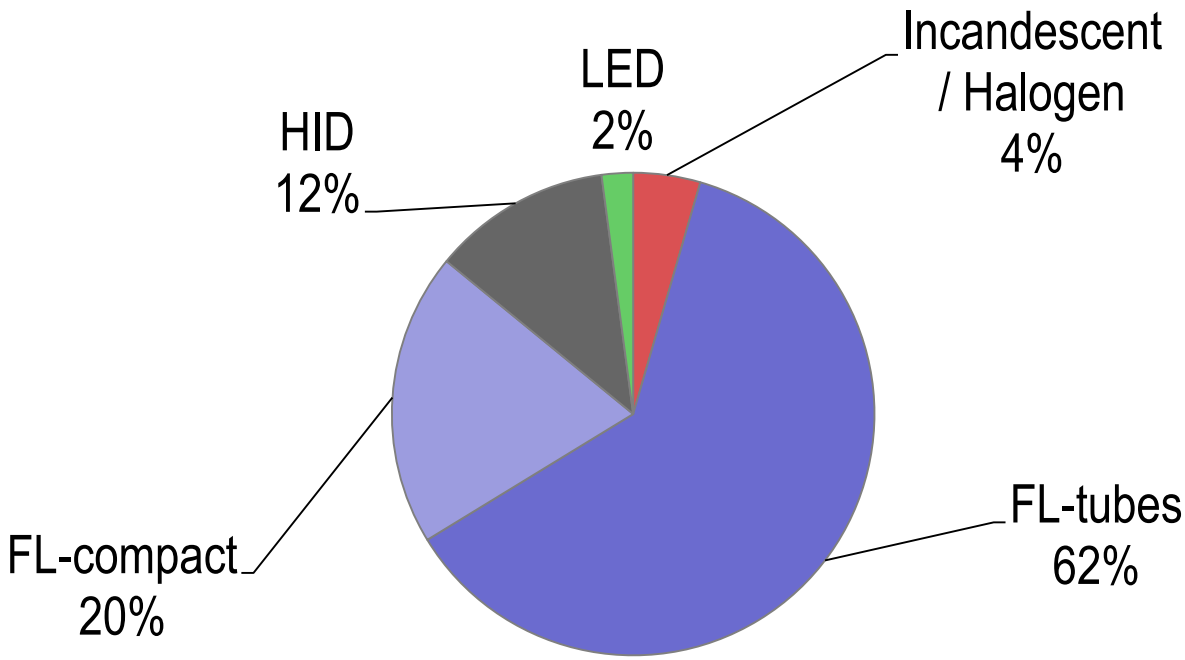
Analysis of Relux Data (2013)

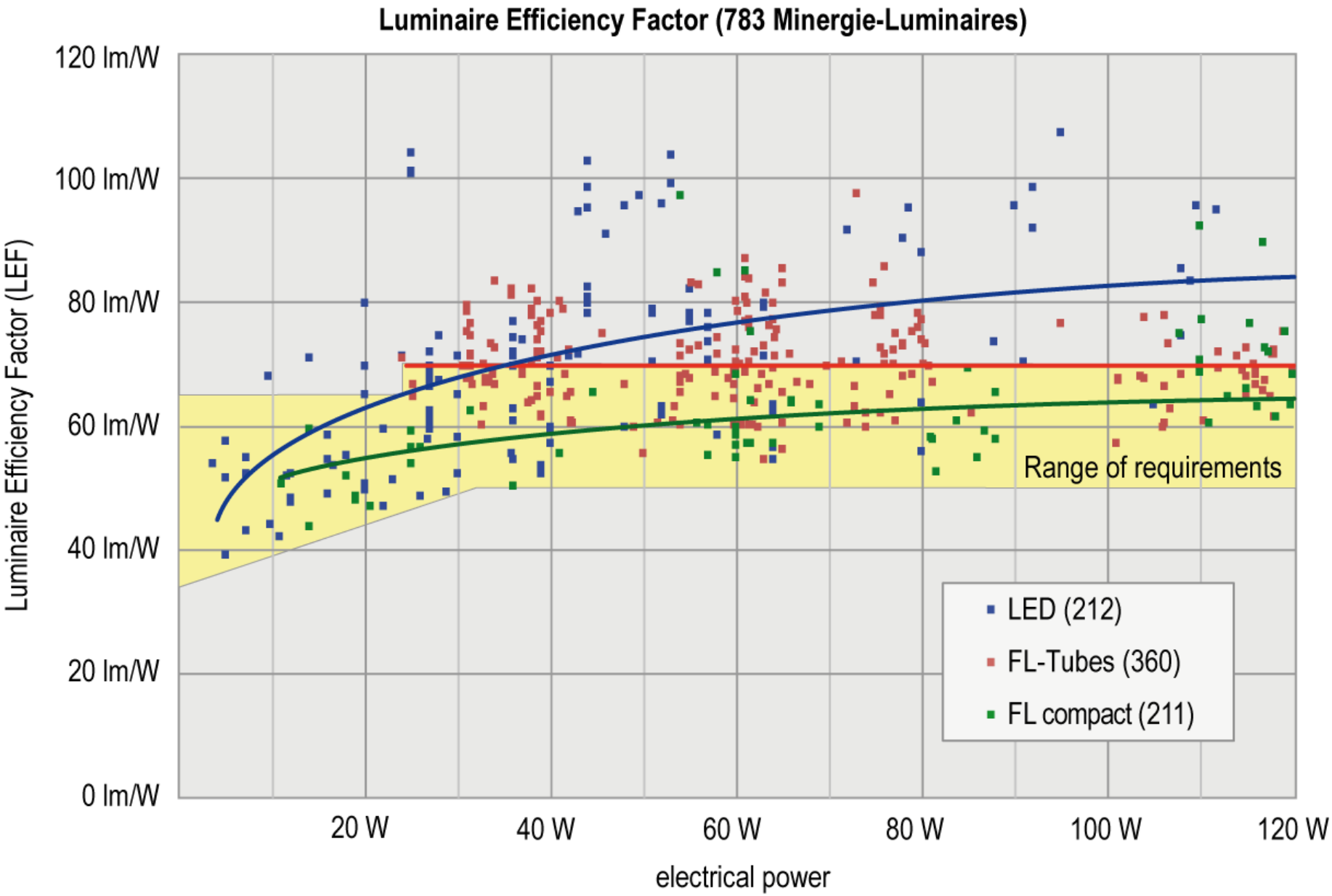
	FL-compact	FL-tube	LED
Top 10% of luminaires	> 46 lm/W	> 66 lm/W	> 77 lm/W
Top 20% of luminaires	> 39 lm/W	> 56 lm/W	> 70 lm/W
50% - Median	> 23 lm/W	> 33 lm/W	> 55 lm/W
Poorest 20% of luminaires	< 13 lm/W	< 19 lm/W	< 35 lm/W
Poorest 10% of luminaires	< 10 lm/W	< 11 lm/W	< 23 lm/W

→ Efficiency of LED luminaires is today 1.5 or 2 times higher than FL-tubes or FL-compact, respectively.

Analysis of Relux Data (2013)

- After data cleansing 175‘000 useful data sets
- Biggest part FL-tubes, only very small part LED (3’760)




Luminaire Efficiency Factor (783 Minergie-Luminaires)
120 lm/W
100 lm/W
80 lm/W
60 lm/W
40 lm/W
20 lm/W
0 lm/W
Luminaire Efficiency Factor (LEF)
20 W
40 W
60 W
80 W
100 W
120 W
electrical power
Range of requirements
LED (212)
FL-Tubes (360)
FL compact (211)

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Topten for consumers: Find the best products in your country on national Topten websites

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European countries

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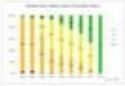
News

Topten publishes its **TV market monitoring 2007-2012**, showing the developments leading to 39% class A / A+ sales in Europe in 2012. (July 2013)



Swiss appliance sales data 2004 - 2012 have been published: 100% class A driers and 56% of A+++ washing machines sales reflect a highly efficient market (July 2013).

Topten Global Report 2012: how Topten supports market transformation towards better energy efficiency (May 2013)

Selecting the most energy efficient products: The Topten manual summarizes the programme and its mechanisms (November 2012)

News Archive

Topten: global project for the most energy efficient products

Topten is an independent international program to create a dynamic benchmark for the most energy efficient products.

In 20 countries around the world, Topten presents the best products on national markets for an increasing range of electric products. Topten is neutral, rigorous and transparent in that there is no influence from manufacturers or retailers and the selection methodology is explained online. Apart from consumer information, Topten aims at providing policy recommendations based on its overview on the high efficiency product market.

» more

www.topten.eu - Best products of Europe

Online in China, 18 European countries, USA

INTELLIGENT ENERGY EUROPE

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- LED reflector lamps
- Compact fluorescent lamps
- Office Luminaires
  - Ceiling-mounted
  - Recessed
  - Suspended
  - Floor-standing
  - Desk
  - Wall-mounted
  - Spots
  - Wallwashers
  - Downlights

Best products in your country

Austria	Lithuania
Belgium	Luxemburg
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Finland	Portugal
France	Romania
Germany	Spain
Greece	Sweden
Italy	Switzerland

topten.info Global Topten network

pten publishes its TV market

showing the

class A /

Sv 2004 - 20 ss A dri ma eff more

To how To ormation to y. (May 2013)

The Regulatory Committee has approved the **Ecodesign regulation for vacuum cleaners**, including a power cap (1600W / 900W). (March 2013) » more

News Archive

Topten Focus (Registration)

Energy efficiency for consumers, in policy and procurement

Topten reveals the best products in Europe:
Topten is a web portal guiding consumers to the most energy efficient appliances and cars in Europe. Find the best products available in your country, with a simple click! » Fact sheet

Topten documentation:
All Topten policy recommendations and other publications related to energy efficient products can be accessed here.

Professional procurement:
Topten Pro gives purchasing guidance for public procurers and other professional buyers. It provides clear guidance on tender criteria to buy the most efficient product on the market.

Product Competition
Who Will Supply Europe's Most Energy Efficient Products?
Announcement and Rules

Co-funded by the Intelligent Energy Europe Programme of the European Union

European Climate Foundation

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Office Luminaires Suspended

MINERGIE® MODUL
S·A·F·E
Leuchten Luminaires

Brand	XAL	Regent	Neuco	Waldmann	XAL	Licht + Raum	Zumtobel	Zumtobel	Ribag
Model	Metric, 059-021513#P	Level cld, 80J40.D15.7	Eco p, F91 6540-A	Tycoon, 121454008-00086198	Planos, 058-521413#P	Ben, 10020391	Eleea, 42178787	Claris 2, 42158822	Scip, 140.280.3
Electricity costs (€ in 15 years)	333	342	293	284	279	173	186	281	288
Luminaire efficiency factor (lm/W)	98	86	83	82	81	81	80	80	80
Power (W)	73	76	65	63	61	36	39	60	64
Lamp category	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL
Lighting control	Dimming	On-Off	On-Off	On-Off	Dimming	Dimming	Dimming	Dimming	On-Off
Downward flux (%)	61	29.6	32	36.7	56	66	74	36.4	51

23/05/2013

Regent	Huco	Waldmann	Regent	Zumtobel	XAL
Sixteen, 917W.G1.M15.9	Evolux, 0-4410HB-1357D	Ataro, 121235003-00056225	Flow, 84W11.M15.7	Ecoos, 42177938	Mino, 056-621513#P
185	191	288	171	185	180
79	79	78	78	77	72
41	40	64	38	39	39
Linear FL	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL
Dimming	Dimming	On-Off	On-Off	Dimming	Dimming
72	43	33.7	69.6	72.5	100

Office Luminaires Suspended

MINERGIE® MODUL
S·A·F·E
Leuchten Luminaires

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Dow							74	36.4	51

				Regent	Zumtobel	XAL
				Flow, 84W11.M15.7	Ecoos, 42177938	Mino, 056-621513#P
				171	185	180
				78	77	72
				38	39	39
Linear FL	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL	Linear FL
Dimming	Dimming	On-Off	On-Off	Dimming	Dimming	Dimming
72	43	33.7	69.6	72.5	100	

- www.topten.eu
- Since 2012, today 71 luminaire lines of 18 brands.
- Scope: To show the 10 or so best luminaire lines in each class.
- Selection Criteria:
  - Minergie certified, plus meeting stricter efficiency criteria (based on The Blue Angel, tightened as products improve).

toplicht.ch

Deutsch Français Italiano

- Dokumentation
- Minergie-Leuchten
- Leuchtenliste
- Leuchten-Check
- Verfahren
- Reglement
- Messlabors
- Labelkommission
- Zur Zertifizierung
- Strassenbeleuchtung
- Infoplus

MINERGIE® MODUL
S·A·F·E
Leuchten
Luminaires

Minergie-Leuchten

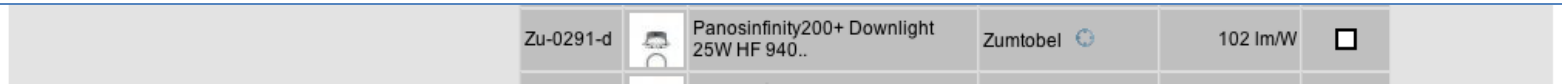
Leuchtenkategorie	alle	Hersteller	alle
Lampenkategorie	alle	Leuchtenname	alle
Lampenleistung	alle x alle	Regelung	alle

Suchen | Alle anzeigen

Total 860 Datensätze gefunden 1 2 3 4 5 Zeige 1 bis 200

Reg-Nr.	Bild	Name	Hersteller	Lichtausbeute	Vergleich
TG-0005-s		Xt-a floor led osa Stehleuchte 95W Sen..	Tobias-Grau	108 lm/W	☐
Hu-0024		Indilux-d-led Stehleuchte 4x0W d 41 W	Huco	107 lm/W	☐
Hu-0024-s		Indilux-led Stehleuchte 4x0W ds 41 W d..	Huco	107 lm/W	☐
TG-0006-s		Xt-a long led osa Stehleuchte 94 W Sen..	Tobias-Grau	105 lm/W	☐
TG-0007-d		Xt-a ceiling led osa Pendelleuchte dim..	Tobias-Grau	105 lm/W	☐
Zu-0295-d		Panosinfinity200+ Downlight 25W LF 940..	Zumtobel	105 lm/W	☐
Zu-0293-d		Panosinfinity200+ Downlight 25W LG 940..	Zumtobel	105 lm/W	☐
Zu-0296-d		Panosinfinity200+ Downlight 25W LF 930..	Zumtobel	104 lm/W	☐
Zu-0294-d		Panosinfinity200+ Downlight 25W LG 930..	Zumtobel	104 lm/W	☐
Zu-0301-d		Tecton led Deckenanbauleuchte 53W narr..	Zumtobel	104 lm/W	☐
Zu-0298-d		Tecton led Deckenanbauleuchte 44W narr..	Zumtobel	103 lm/W	☐
Zu-0291-d		Panosinfinity200+ Downlight 25W HF 940..	Zumtobel	102 lm/W	☐

- http://www.toplicht.ch/index.php?page=minergieleuchten
- Since 2007, today 860 luminaires of 27 brands
- Scope: top 15% products of the market (based on analysis of Relux data)
- Selection Criteria:
  - Minimum Luminaire Efficiency Factor (LEF)
  - Only electronic ballasts
  - Limited standby power
  - Limited Unified Glare Rating (UGR)
  - CRI, power factor, lamp life for LED
  - Tested in accredited laboratory



The Blue Angel
Active in climate protection.

Here you see a list of all Blue Angel eco-labelled products and services from A to Z:

Products and Services from A to Z

List of Basic Criteria

NEW PRODUCT GROUPS

Hair Dryers

Hair care appliances are basic items that can be found in most German households. Blue Angel eco-labelled hair care appliances achieve power savings of up to 30 percent compared to standard appliances. (...)

Energy-Conscious Data Centers

The Blue Angel eco-label may be awarded to resource-conscious companies committed to the implementation of a long-term strategy to improve the energy and resource efficiency of their data center with respect to the IT services to be delivered and conducting regular monitoring to optimize the data center operations. (...)

Showering in a Climate-Friendly Way

In Germany, the average amount of water used per person per day for personal hygiene is 44 litres which is approximately one third of the total water use. Almost all of the 44 litres is heated before use. Those who make efficient use of hot water can save energy and improve their CO2 balance.

Welcome to the Blue Angel

The Blue Angel is the first environment-related label for products and services in the world. Since 1978 it has set the standard for eco-friendly products and services selected by an independent jury in line with defined criteria. The Blue Angel is only awarded to products and services which - from a holistic point of view - are of considerable benefit to the environment and, at the same time, meet high standards of serviceability, health, and occupational protection. The Blue Angel considers itself as a market-conform instrument of environmental policy designed to distinguish the positive environmental features of products and services on a voluntary basis. Companies use the label to professionally promote their eco-friendly products in the market. Thus, it is an ecological beacon showing the consumer the way to the ecologically superior product and promotes environmentally conscious consumption.

34 Newsletter | **Jubilee: 35 years of Blue Angel**

If you wish to be kept informed about the Blue Angel please register for our newsletter.

Subscribe Newsletter

- http://www.blauer-engel.de/
- Conditionally adopted by Eco-Label Jury in December 2012, planned to start in 2013
- Scope: approx. top 10% products of the market (30-50% of Minergie certified luminaires meet the LEF requirements), with additional environmental criteria
- Selection Criteria:
  - Minimum Luminaire Efficiency Factor (LEF)
  - Limited standby power
  - Life time, switching cycles for LED
  - Modularity (ballasts, LED-downlights) and provision of spare parts
  - Ultraviolet and electromagnetic radiation, mercury in fluorescent lamps
  - Tested in accredited or supervised manufacturer testing laboratory

ENERGY STAR Certified Light Fixtures

Want more information? Access the full product list in Excel , API, and other formats.
Switch to Advanced View »

Compare up to 4 items

Sort by:
Light Output (lumens)

Fixture Type

- Accent/Track Lighting (181)
- Ceiling/Vent Fan and Lights (16)
- Recessed Lighting (1272)
- Under-Cabinet and Cove Lighting (182)
- Portable Lighting (table/desk/floor lamps) (50)
- Chandeliers (201)
- Bath Vanity Lights (1513)

Show More

Indoor/Outdoor

- Indoor (5095)
- Outdoor (1709)

Technology

- Fluorescent (3560)
- Halogen (6)
- LED (1880)

Special Features

- Dimmable (1374)
- Motion Sensor (13)
- Photo Sensor (7)

1 - 20 of 5446 Records Found

1 2 3 4 5 ..

Westek - LBB108XYZZZZ

ENERGY STAR Partner:
AmerTac (American Tack and Hardware)

Fixture Type:
Under Cabinet Shelf Mounted Task Light

Technology: LED

Total Input Power (watts): 3.0

Light Output (lumens): 92

Energy Efficiency - Measured outside the Fixture: Energy Efficiency - Measured at the Source:
30.3 30.3 (lm/W)

AFX - ELL9YY

ENERGY STAR Partner: AFX Lighting Inc.

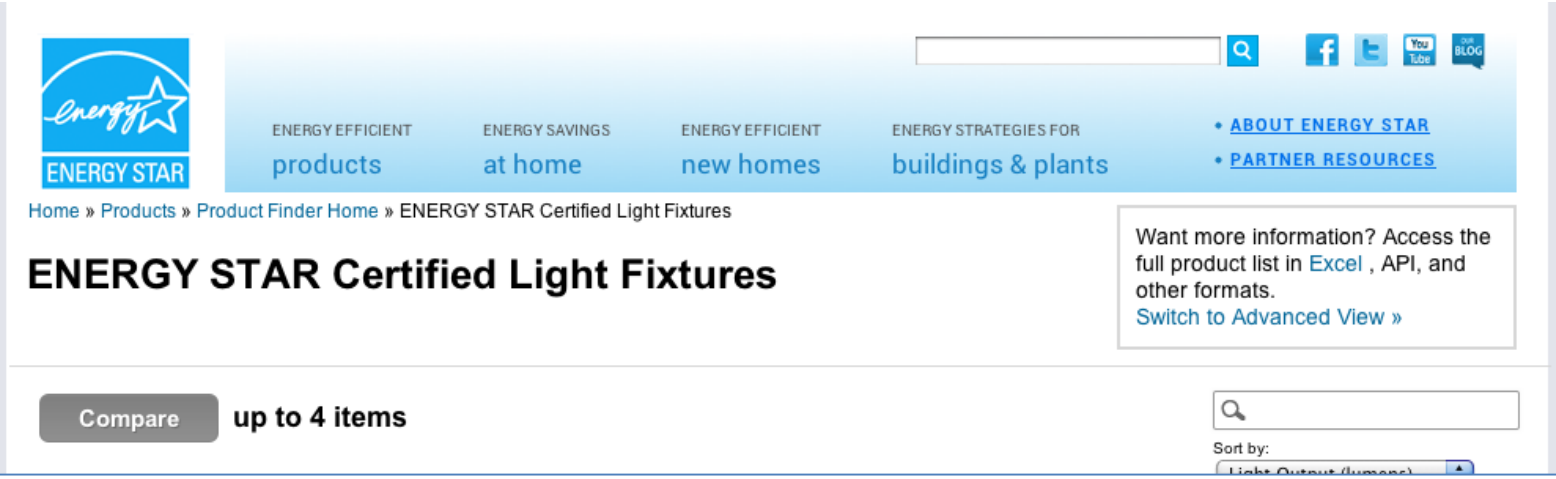
Fixture Type:
Under Cabinet Shelf Mounted Task Light

Technology: LED

Total Input Power (watts): 3.0

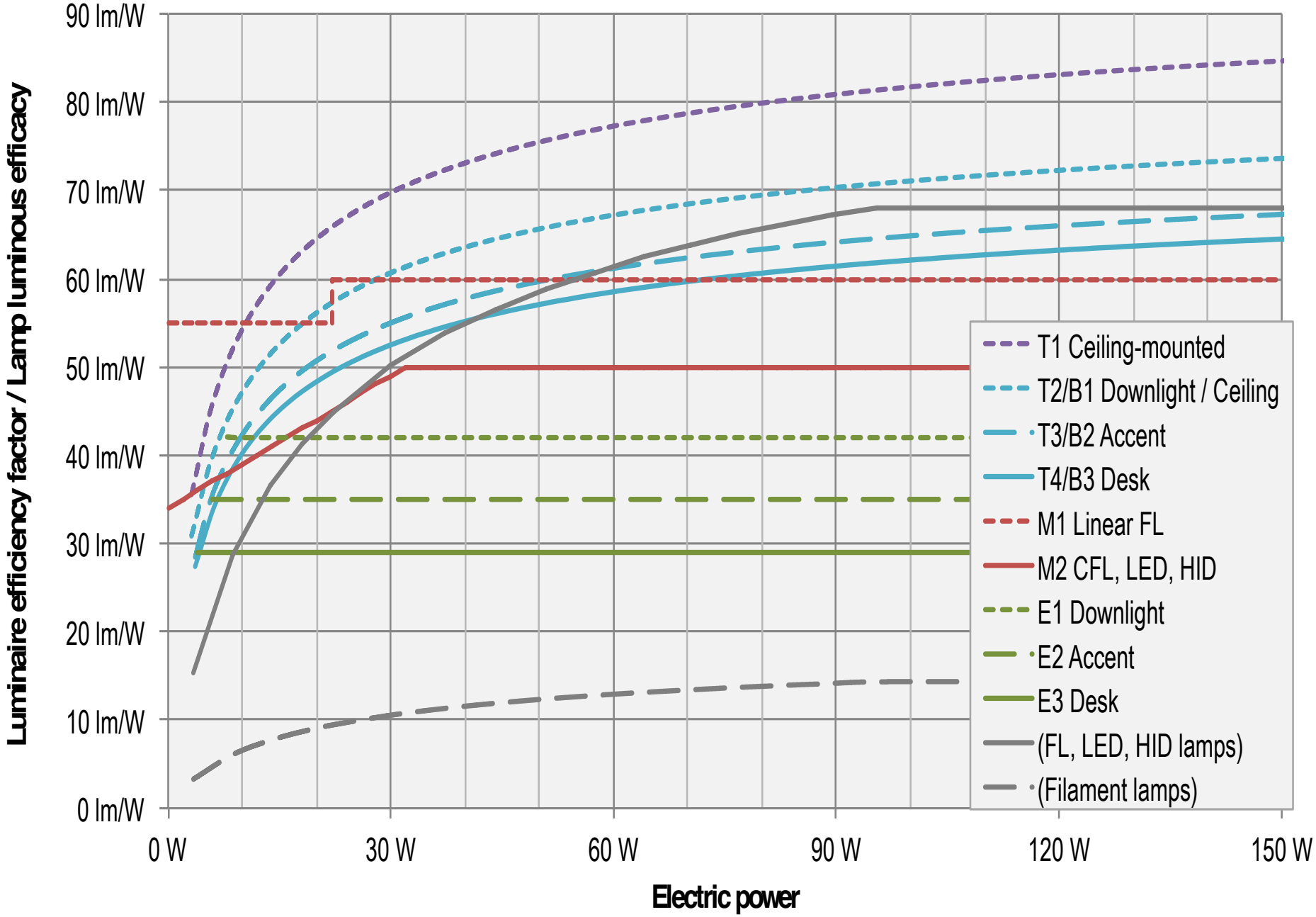
Light Output (lumens): 115

Energy Efficiency - Measured outside the Fixture: Energy Efficiency - Measured at the Source:
46.1 46.1 (lm/W)

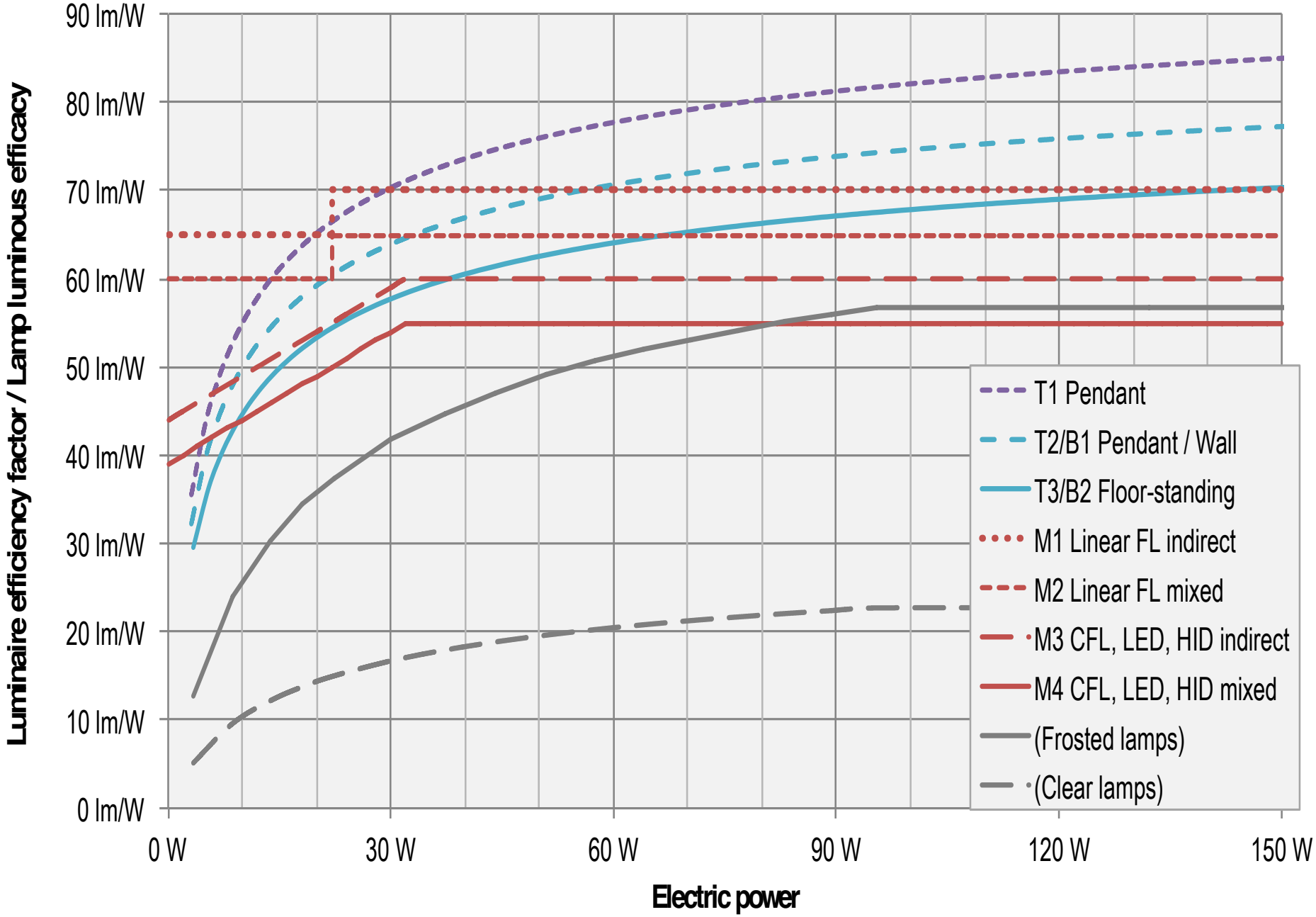


- http://www.energystar.gov
- Since 2008, today 7350 luminaires of 159 brands
- Scope: the better 50% products of the market, only directional luminaires
- Selection Criteria:
  - Minimum Luminaire Efficiency Factor (LEF)
  - Limited standby power
  - CRI, lumen maintenance, power factor for lamps, plus color angular uniformity, color maintenance for LED
  - 3 years warranty
  - And many more ... (ballast performance, thermal performance, product labeling & packaging etc.)

Minimum requirements for luminaires and lamps (DIRECTIONAL)

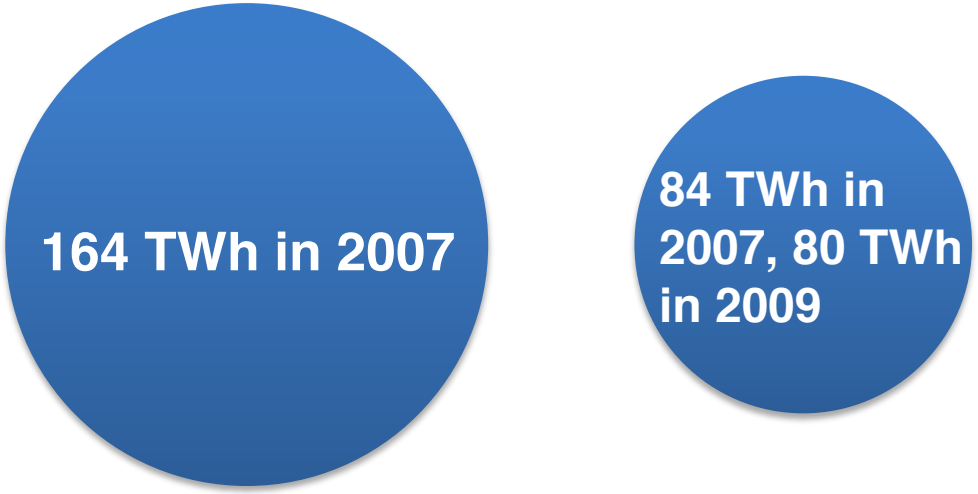


Minimum requirements for luminaires and lamps (NON-DIRECTIONAL)



Office lighting

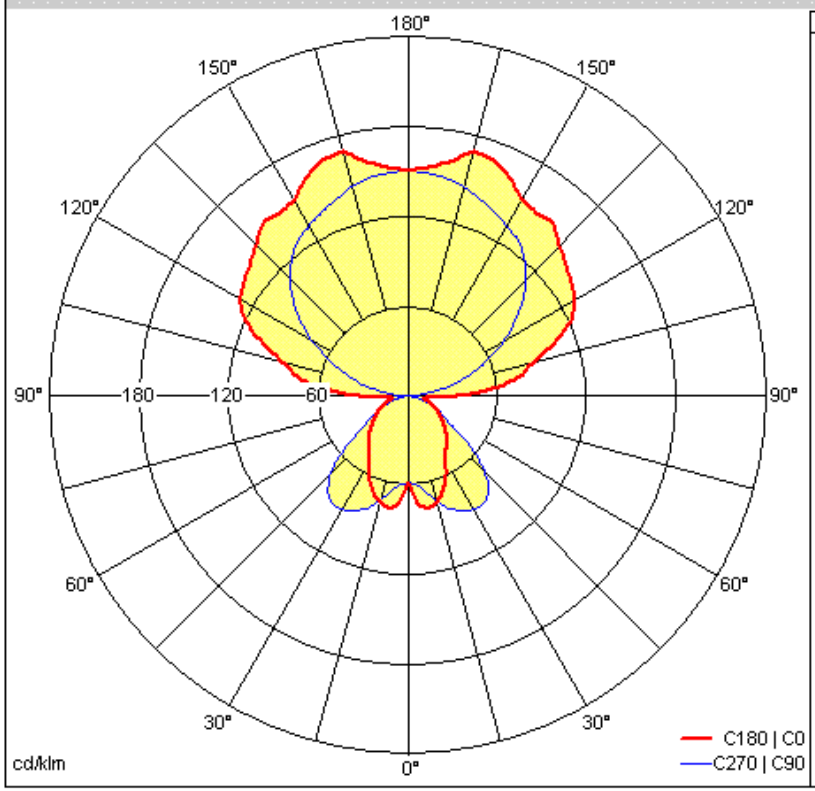
Household lighting



Energy Efficiency Status Report 2012. European Commission, Joint Research Centre, Institute for Energy and Transport.

Photometric data is provided for office luminaires

D13079U3



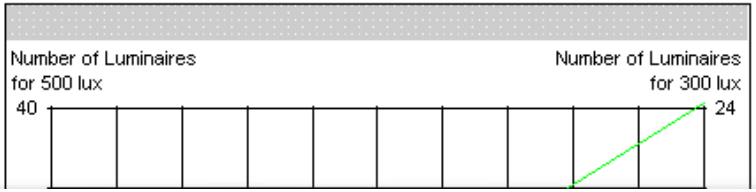
	C0	C90	C180	C270
0°	58	58	58	58
5°	71	59	71	59
10°	76	64	76	64
15°	73	72	73	72
20°	68	80	68	80
25°	60	85	60	85
30°	51	87	51	87
35°	45	88	45	88
40°	40	84	40	84
45°	37	73	37	73
50°	32	58	32	58
55°	28	38	28	38
60°	25	28	25	28
65°	22	21	22	21
70°	18	15	18	15
75°	15	11	15	11
80°	11	7	11	7
85°	12	3	12	3
90°	33	1	33	1
95°	57	6	57	6
100°	76	17	76	17
105°	86	31	86	31
110°	103	46	103	46
115°	120	59	120	59
120°	129	74	129	74
125°	134	87	134	87
130°	138	101	138	101
135°	144	112	144	112
140°	151	121	151	121
145°	150	128	150	128
150°	152	132	152	132
155°	162	136	162	136
160°	167	140	167	140
165°	169	145	169	145
170°	159	148	159	148
175°	153	150	153	150
180°	151	151	151	151

Photometric LDT
Photometric IES
Transfer to ecoCALC
Transfer to DIALux
Transfer to Relux
Datasheet
Photometric Datasheet
Combination Datasheet
CE - Declaration of Conformity
ENEC certificate
Test mark certificate
2D CAD drawing
3D CAD drawing

Handling

Dimensional sketch
Installation Instruction

Select all
Reset
Generate ZIP



Light output ratio	
LOR	81 %
ULOR	61 %
DLOR	20 %

Energy Performance of Buildings Directive 2010/31/EU

- …asks to consider built-in lighting installation for the calculation of energy performance of buildings.
- The energy label could give EU countries a tool to implement energy performance standards.
- The energy label could also operate independently (help for choosing best-efficiency products while meeting e.g. required minimum illuminance (lux) per square meter (EN 12464-1 for work places).

Thank you for your attention

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