

Vijf aandachtspunten bij het aanschaffen van ledverlichting

Vakmeeting ledtechnologie voor podiumtoepassing

Koen Smits



Lichtontwerp: Lichtconsult.nl

Waarom led?

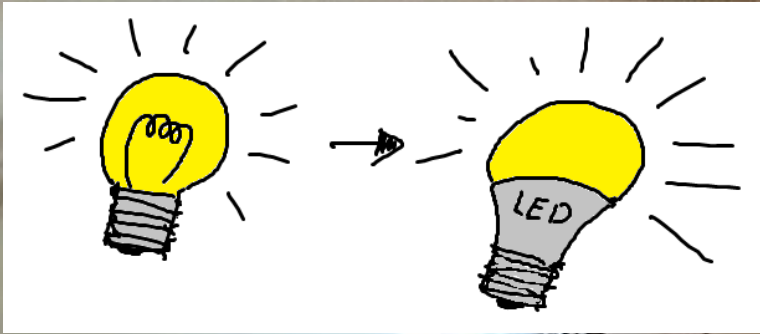
McKinsey&Company

“Led lighting is expected to be the most promising
technology in terms of commercial viability”

Waarom led?

McKinsey&Company





Y IJA
IE IA
pyeia

A+

B
C
D
E

7 kWh/1000h

CE

ERL

Intertek

Made in Germany

1509-222

702.667.65

22858

www.ikea.com IKEA of Sweden AB
AA-1306480-3 SE-343 81 Älmhult
©Inter IKEA Systems B.V. 2014

220-240V~
50/60Hz
CRI>87
63lm/W

D 60 mm
L 110 mm

**LEDARE
LED
400 lm
6.3W**

2700 Kelvin

IKEA
Design and Quality
IKEA of Sweden

25 000 h
<1 sec
x 25 000

**E27
LED1422G6**

#1 Kleurtemperatuur



Fotografie: Lichtconsult.nl



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Fotografie: Lichtconsult.nl

2700K

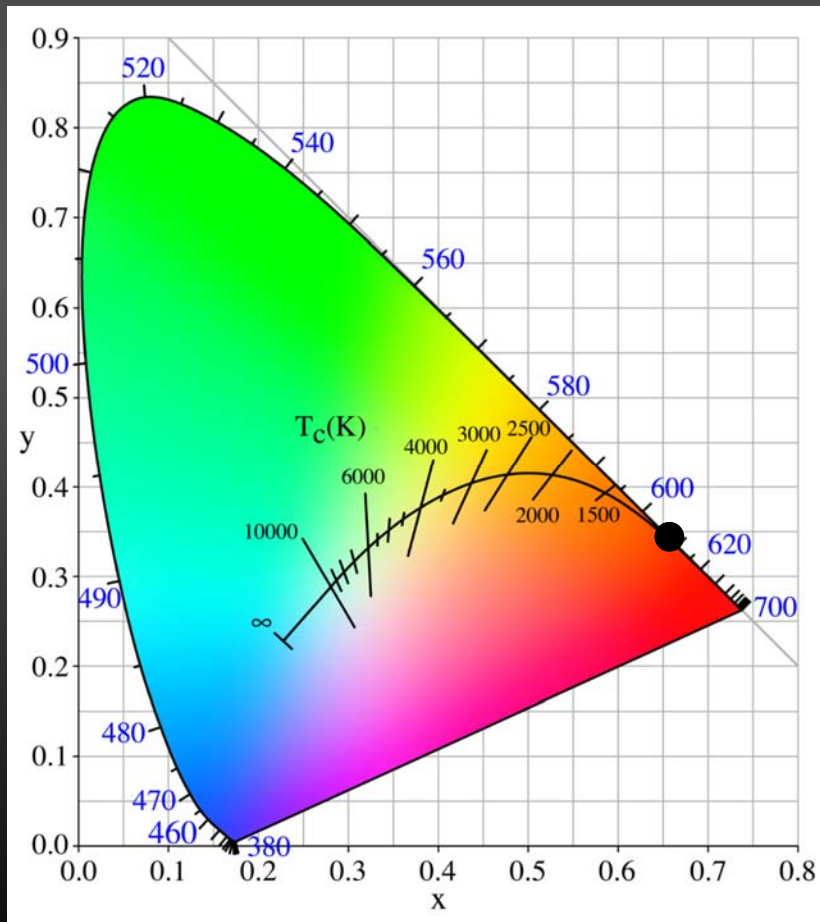


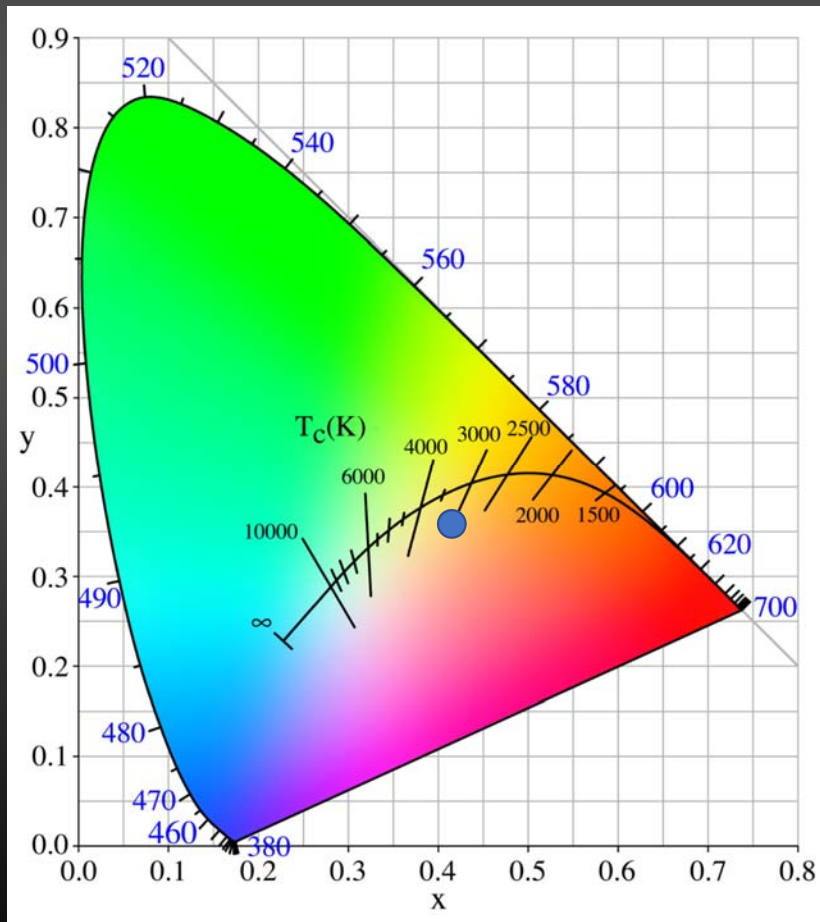
3000K



3500K



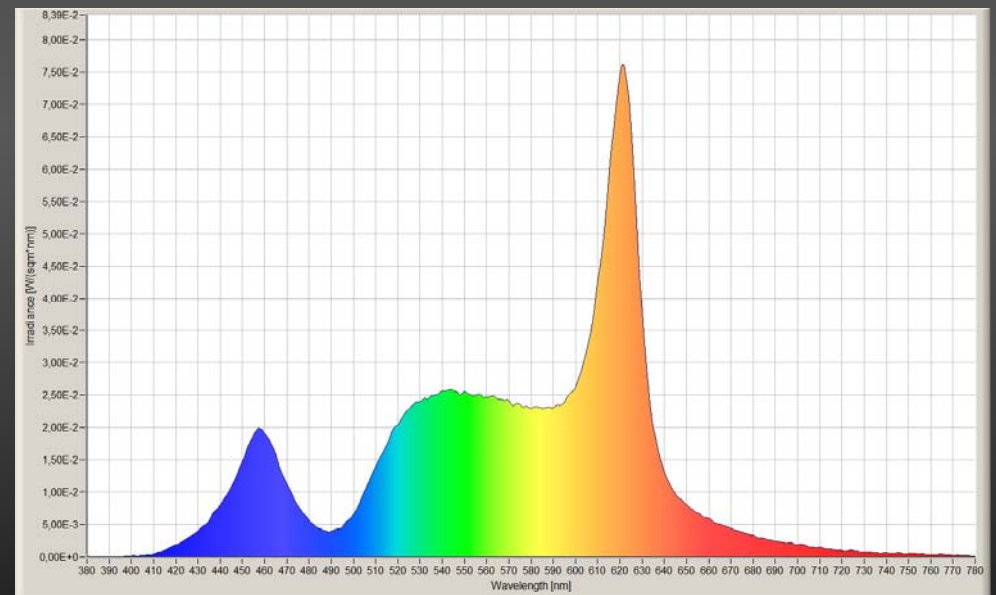
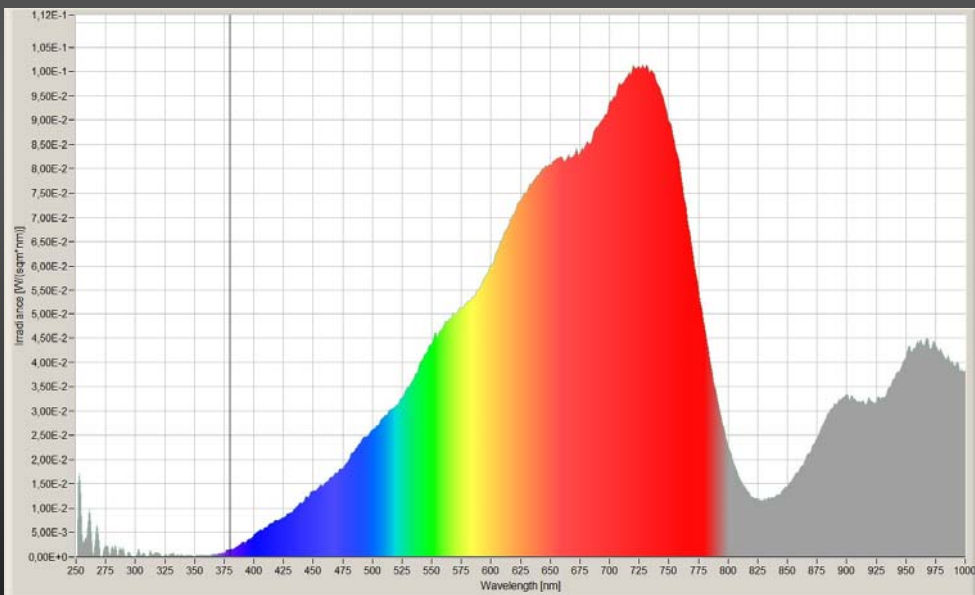




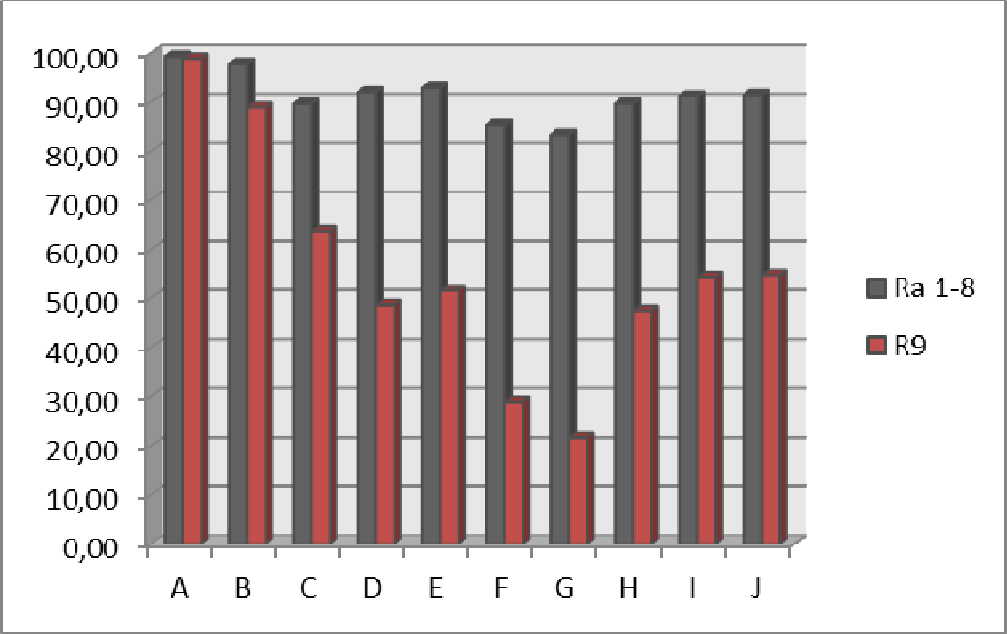
#2 Kleurweergave (CRI of R_a)



Fotografie: Lichtconsult.nl

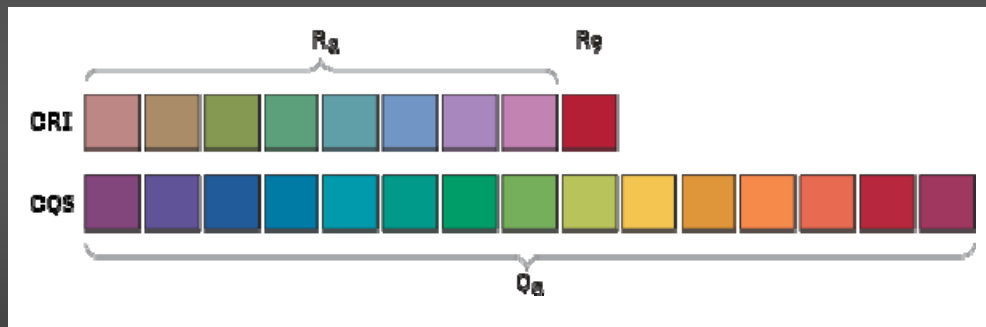


Grafiek: Lichtconsult.nl

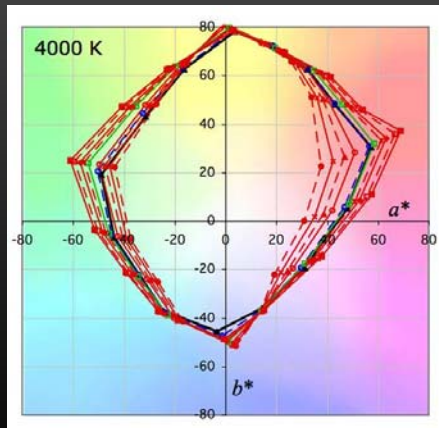


Alternatieve aanvullingen op CRI

- CQS



- GAI



#3 Frequentie (*flicker*)



Fotografie: Lichtconsult.nl



Metten is weten

Ultra moderne led verlichting:

- CRI = 82 (oude TL: CRI = 87)
- $\text{CRI}_{1-14} = 77$
- Kleurtemperatuur = 3109 Kelvin
- Power factor = 0,35
- Niveau = 41% minder licht dan oude TL
- Frequentie = 100 Hz (Dus de frequentie van het net! De oude TL: 45.000 Hz)

Vraag aan vier gerenommeerde fabrikanten:

Wat is de frequentie van jullie led kantoorverlichting?



25% dimming. LED(s) are "on" 75% of the time.

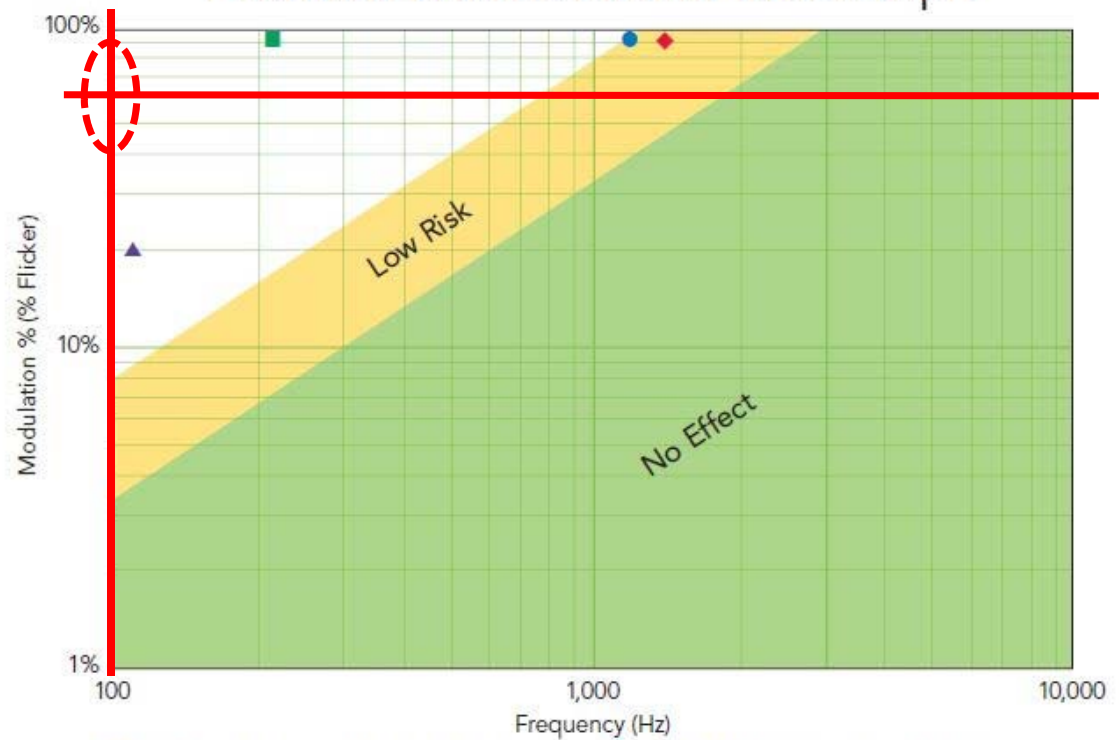


50% dimming. LED(s) are "on" 50% of the time.



75% dimming. LED(s) are "on" 25% of the time.

Lehman/Wilkins Flicker Risk Graph



- Recommended Low Risk Minimum (1250 Hz)
- ◆ 'Quality' Dimming Driver at 5% Dim Level
- ◆ Xicato XIM at 1% Dim Level (1400 Hz)
- ▲ 'Mainstream' Dimming Driver at 20% Dim Level

Brad Lehman and Arnold J. Wilkins. Designing to Mitigate the Effects of Flicker in LED Lighting. IEEE Power Electronics Magazine, September 2014.

Grafieken: Xicato

#4 Lichtsterkteverdeling





Fotografie: Lichtconsult.nl

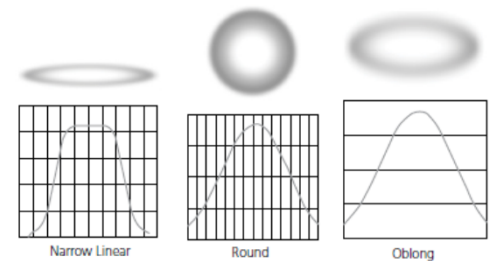


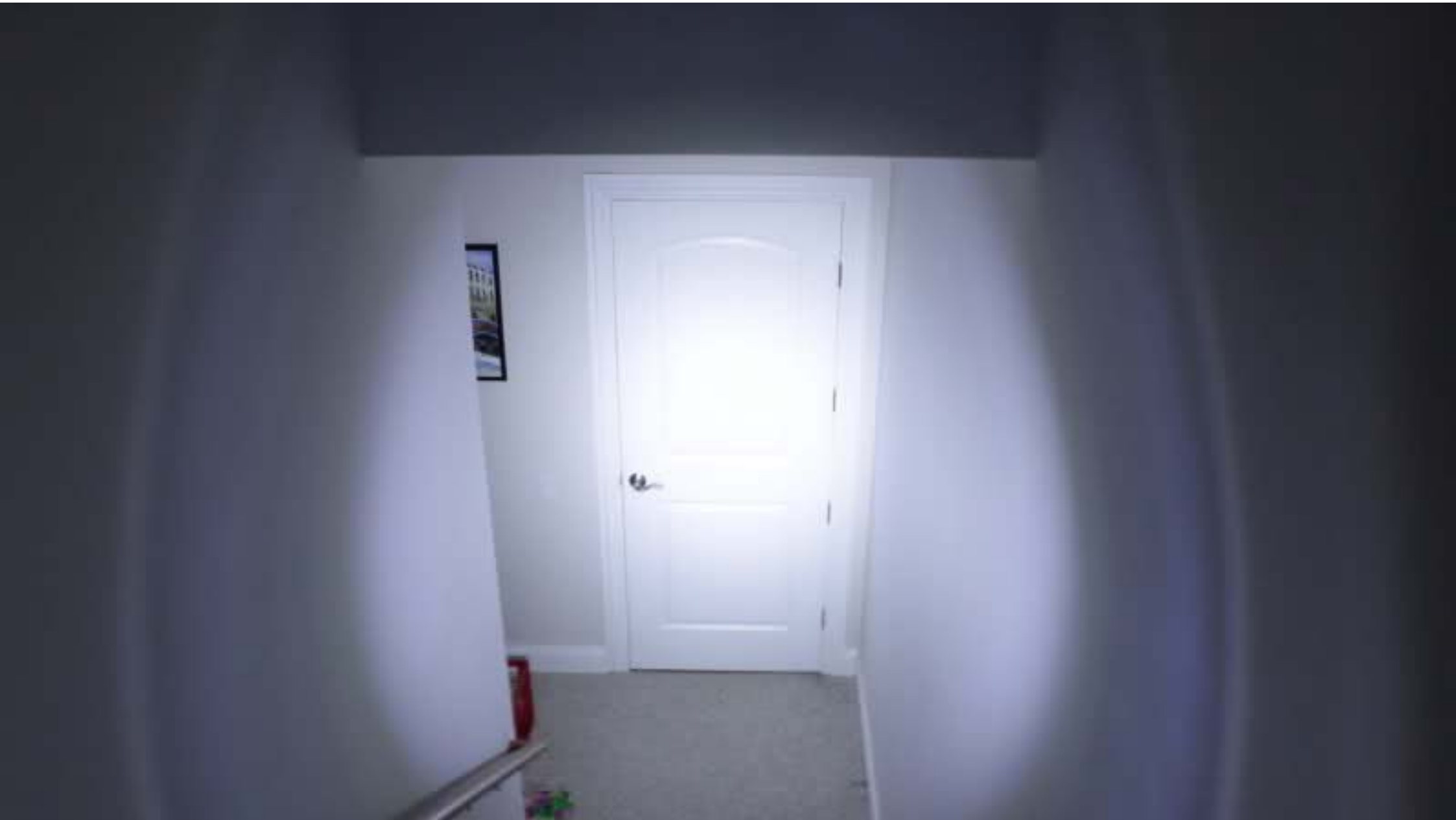
Secondary Lens Options

MODEL	DESCRIPTION: The following lenses are cut for D60X luminaires and create round, linear or oblong field patterns as described below. These lenses are not for use in Selador® Classic (Vivid™, Lustr®, Paletta®) fixtures.
Narrow Linear Field	Note: This is the same material as Selador Classic lenses. Not UV-stable, not for outdoors.
Round Field	Any one of the following round lenses may be installed permanently in the luminaires at the factory as a special order. UV-stable for outdoor use.
D60XTI-RVN	Very Narrow lens (round field)
D60XTI-RN	Narrow lens (round field)
D60XTI-RM	Medium lens (round field)
D60XTI-RW	Wide lens (round field)
D60XTI-REW	Extra Wide lens (round field)
Oblong Field	UV-stable for outdoor use
D60XTI-ON	Narrow lens (oblong field)
D60XTI-OM	Medium lens (oblong field)
D60XTI-OW	Wide lens (oblong field)

http://www.etconnect.com/docs/docs_downloads/miscdocs/Desire_vs_PAR_EA_revB.pdf

Typical Lens Field Profiles



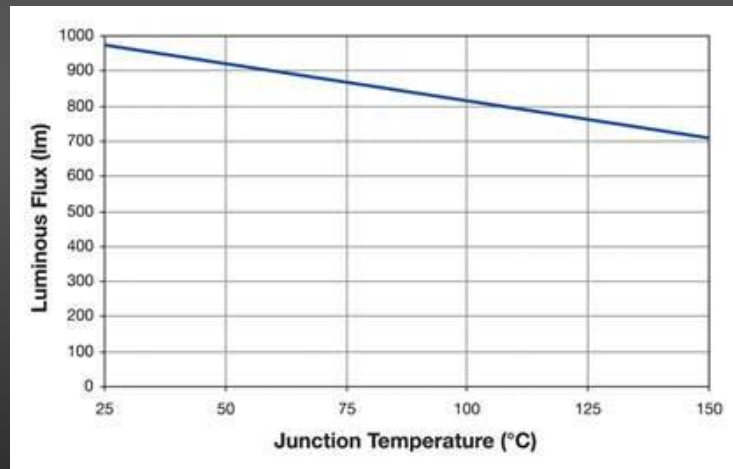


Voordelen van led

- Straalt in één richting licht uit en kan heel goed gebundeld worden.
 - Beter af te schermen, daardoor minder hinder of inkijk.
 - Geeft geen of weinig warmte in de bundel.
-
- Snel imperfecties in en om lichtbundel (fried egg, halo's, e.d.)
 - Minder “nuttig” strooilicht.
 - Groot contrast tussen licht en donker.

#5 Warmte (en geluid en gewicht)

“Active cooling can boost lumen output
(in LED lighting)”





ETC Source Four PAR

3 kg.



ETC Selador Desire D60

11 kg.

5 aandachtspunten

1. Kleurtemperatuur
2. Kleurweergave
3. Frequentie
4. Licht(sterkte)verdeling
5. Warmte (en geluid en gewicht)

Ook leuk: levensduur, prijs, garantie, lenzen en filters...

Wanneer u weer ledverlichting aanschaft...
krijgt u met deze 5 punten wel wat u wilt!

Dank voor uw aandacht

Lichtconsult.nl 