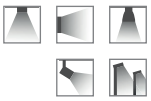

TALEXmodule SLE G4 ESSENCE

TALEXmodule SLE

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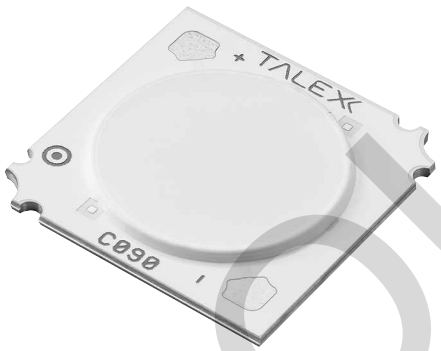
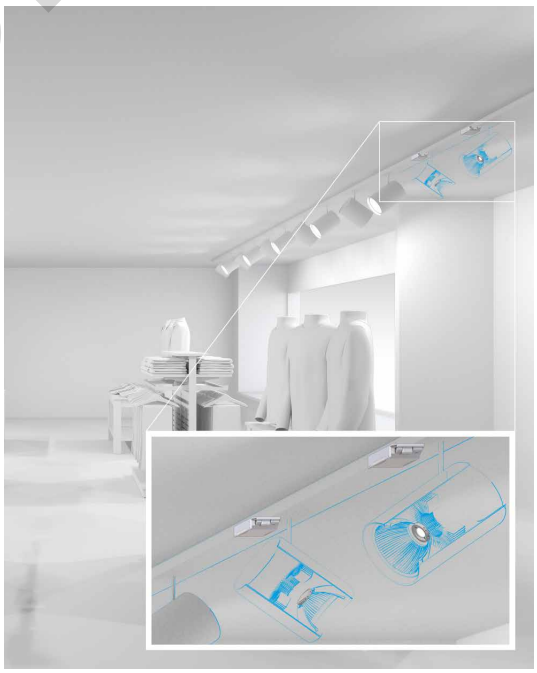
Product description

- For general lighting application
- Typ. luminous flux category: 5,000/3,000/2,000 lm
- High efficacy up to 127 lm/W for the LED module at tp = 25 °C
- High system efficacy up to 102 lm/W at tp = 65 °C
- Small LES (light emitting surface) diameter enables narrow beam angle for spotlights
- Excellent thermal management by COB technology
- Uniform radiation with Dam&Fill technology
- Fixing holes for M3 screws
- Cooling required
- Flexible operating modes
- 3-year guarantee

Standards, page 3
Colour temperatures and tolerances, page 7





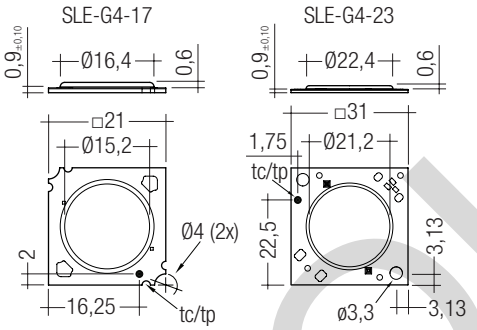
RoHS

TALEXmodule SLE G4 ESSENCE

TALEXmodule SLE

Technical data

Beam characteristic	115°
Ambient temperature ta	-30 ... +75 °C
tp_rated temperature①	65 °C
Risk group (EN 62471:2008)	1
Type of protection	IP00



Dimensions in mm

Ordering data

Type	Article number	Colour temperature	Connection cable	Packaging	Weight per pc.
STARK-SLE-G4-17-2000-830-PURE W/O-C	**28000483**	3,000 K	no	25 pc(s).	0.001 kg
STARK-SLE-G4-17-2000-840-PURE W/O-C	**28000484**	4,000 K	no	25 pc(s).	0.001 kg
STARK-SLE-G4-17-3000-830-PURE W/O-C	**28000481**	3,000 K	no	25 pc(s).	0.001 kg
STARK-SLE-G4-17-3000-840-PURE W/O-C	**28000482**	4,000 K	no	25 pc(s).	0.001 kg
STARK-SLE-G4-23-5000-830-PURE W/O-C	**28000479**	3,000 K	no	15 pc(s).	0.002 kg
STARK-SLE-G4-23-5000-840-PURE W/O-C	**28000480**	4,000 K	no	15 pc(s).	0.001 kg

Specific technical data

Type	Photometric code	Forward current③④⑤	Luminous flux at tp = 25 °C②	Luminous flux at tp = 65 °C②	Power consumption⑦	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Luminous efficacy module at tp = 25 °C	Luminous efficacy module at tp = 65 °C	Luminous efficacy system at tp = 65 °C⑥	Colour rendering index CRI	Energy classification
STARK-SLE-G4-17-2000-830-PURE W/O-C	830/459	500 mA	2,220 lm	1,920 lm	18.0 W	34.9 V	39.3 V	121 lm/W	107 lm/W	96 lm/W	80	A+
STARK-SLE-G4-17-2000-840-PURE W/O-C	840/459	500 mA	2,330 lm	2,030 lm	18.0 W	34.9 V	39.3 V	127 lm/W	113 lm/W	102 lm/W	80	A+
STARK-SLE-G4-17-3000-830-PURE W/O-C	830/459	900 mA	3,670 lm	3,180 lm	33.3 W	35.8 V	40.2 V	109 lm/W	96 lm/W	86 lm/W	80	A+
STARK-SLE-G4-17-3000-840-PURE W/O-C	840/459	900 mA	3,870 lm	3,350 lm	33.3 W	35.8 V	40.2 V	114 lm/W	101 lm/W	91 lm/W	80	A+
STARK-SLE-G4-23-5000-830-PURE W/O-C	830/459	1.400 mA	5,780 lm	5,100 lm	52.1 W	36.0 V	40.4 V	109 lm/W	98 lm/W	88 lm/W	80	A+
STARK-SLE-G4-23-5000-840-PURE W/O-C	840/459	1.400 mA	6,260 lm	5,500 lm	52.1 W	36.0 V	40.4 V	118 lm/W	106 lm/W	95 lm/W	80	A+

① If the max. temperature limits are exceeded, the life of the system will be greatly reduced or the system may be damaged. The temperature of the TALEXmodule at the tp-point is to be measured in the thermally stable state with a temperature sensor or or temperature-sensitive sticker as per EN 60598-1. For the precise position of the tp point see the drawing above.

② Tolerance range for optical data: ±10 %.

③ Exceeding the max. operating current leads to an overload on the TALEXmodule. This may in turn result in a significant reduction in life-time or even destruction of the TALEXmodule.

④ Max. permissible surge current for STARK-SLE-G4-17-2000-8x0-PURE W/O-C: 1.9 A, duration max. 10 ms. Max. permissible surge current for STARK-SLE-G4-17-3000-8x0-PURE W/O-C: 2.8 A, duration max. 10 ms. Max. permissible surge current for STARK-SLE-G4-23-5000-8x0-PURE W/O-C: 4.3 A, duration max. 10 ms.

⑤ Max. permissible repetitive peak current for STARK-SLE-G4-17-2000-8x0-PURE W/O-C: 960 mA. Max. permissible repetitive peak current for STARK-SLE-G4-17-3000-8x0-PURE W/O-C: 1,440 mA. Max. permissible repetitive peak current for STARK-SLE-G4-23-5000-8x0-PURE W/O-C: 2,160 mA.

⑥ Assumed efficiency for the LED control gear is 0.9.

⑦ All values at tp = 65 °C.

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1. Standards

EN 62031
EN 62471
EN 61547
EN 55015
IEC 62717

1.1 Photometric code

Key for photometric code, e. g. 830 / 469

1st digit		2nd + 3rd digit	4th digit	5th digit	6th digit	
Code	CRI	Colour temperature in Kelvin x 100	McAdams initial	McAdams after 25% of the life-time (max.6000h)	Luminous flux after 25% of the life-time (max.6000h)	
					Code	Luminous flux
7	67 – 76				7	≥ 70 %
8	77 – 86				8	≥ 80 %
9	87 – ≥90				9	≥ 90 %

2. Thermal details

2.1 tp point, ambient temperature and life-time

The temperature at tp reference point is crucial for the light output and life-time of a TALEX product.
The opeating temperature of a Talex product is crucial for the light output, the product life-time but also for the product safety.
The thermal limits can be checked at the tp/tc point and at tr.
On page 10 the lumen maintenance is shown in relation to the temperature at tp.
tp,rated shows the temperature at which the rated values are reached.
tc shows the thermal limit for safety reason und must never be exceeded under normal conditions.
For the interchangeablity with othe Zhaga products, $t_{r,max}$ is specified directly at the thermal interface to the heatsink of the luminaire.

For TALEXmodule SLE G4 SNC a tp temperature of 65 °C has to be complied in order to achieve an optimum between heat sink requirements, light output and life-time.

Compliance with the maximum permissible reference temperature at the tp point must be checked under operating conditions in a thermally stable state. The maximum value must be determined under worst-case conditions for the relevant application.

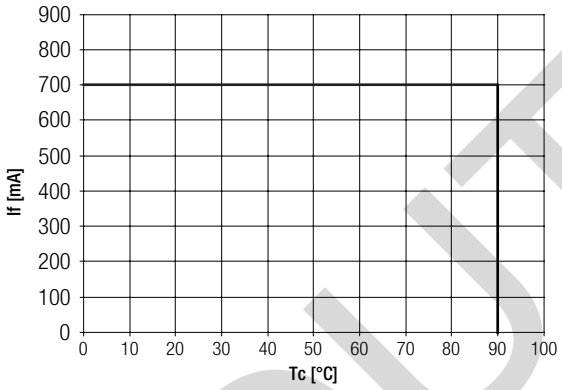
2.2 Thermal behaviour

storage temperature	-30 ... +80 °C
operating temperature ta	-30 ... +75 °C
tp (at typ. current)	65 °C
tc temperature as a function of the current	acc. to the derating curves
max. humidity*	0 ... 70 %

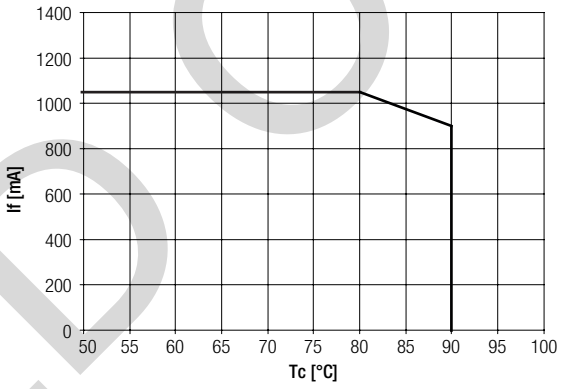
* not condensed

2.3 Derating curves

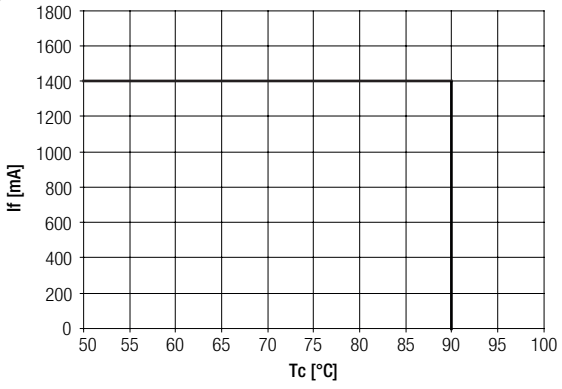
STARK-SLE-G4-17-2000-8x0-PURE W/O-C



STARK-SLE-G4-17-3000-8x0-PURE W/O-C



STARK-SLE-G4-23-5000-8x0-PURE W/O-C



2.4 Thermal design and heat sink

The rated life of TALEX products depends to a large extent on the temperature. If the permissible temperature limits are exceeded, the life of the TALEXmodule SLE G4 SNC will be greatly reduced or the TALEXmodule SLE G4 SNC may be destroyed.

Therefore the TALEXmodule SLE G4 SNC needs to be mounted onto a heat sink heat sink which does not exceed the value for $R_{th,max}$.

Tridonic's excellent thermal design for the TALEXmodule SLE G4 SNC products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life-time.

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2.5 Heat sink values

TALEXmodule STARK-SLE-G4-17-2000-8x0-PURE W/O-C

ta	tp	Operating current	$R_{th, hs-a}$
25 °C	65 °C	500 mA	3.40 K/W
30 °C	65 °C	500 mA	2.96 K/W
40 °C	65 °C	500 mA	2.08 K/W
50 °C	65 °C	500 mA	1.21 K/W

TALEXmodule STARK-SLE-G4-17-3000-8x0-PURE W/O-C

ta	tp	Operating current	$R_{th, hs-a}$
25 °C	65 °C	900 mA	1.73 K/W
30 °C	65 °C	900 mA	1.50 K/W
40 °C	65 °C	900 mA	1.04 K/W
50 °C	65 °C	900 mA	0.58 K/W

TALEXmodule STARK-SLE-G4-23-5000-8x0-PURE W/O-C

ta	tp	Operating current	$R_{th, hs-a}$
25 °C	65 °C	1.400 mA	1.05 K/W
30 °C	65 °C	1.400 mA	0.91 K/W
40 °C	65 °C	1.400 mA	0.64 K/W
50 °C	65 °C	1.400 mA	0.36 K/W

Notes

The actual cooling can differ because of the material, the structural shape, outside influences and the installation situation. A thermal connection between TALEXmodule SLE G4 SNC and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.
Additionally the TALEXmodule SLE G4 SNC has to be fixed on the heat sink with M3 screws to optimise the thermal connection.
Use of thermal interface material with thermal conductivity of l > 1 W/mK and layer thickness of interface material with max. 50 µm or a similar interface material where the quotient of layer thickness and thermal conductivity b < 50 µmmK/W.

3. Installation / wiring

3.1 Electrical supply/choice of LED control gear

TALEXmodule SLE G4 SNC from Tridonic are not protected against overvoltages, overcurrents, overloads or short-circuit currents. Safe and reliable operation can only be guaranteed in conjunction with a LED control gear which complies with the relevant standards. The use of TALEX LED control gears from Tridonic in combination with TALEXmodule SLE G4 SNC guarantees the necessary protection for safe and reliable operation.

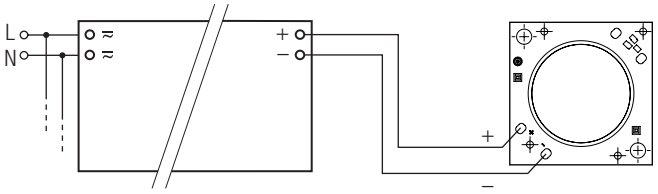
TALEXmodule SLE G4 SNC are basic isolated up to 75 V against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the led control gear (also against earth) is above 75 V, an additional isolation between LED module and heat sink is required (for example by isolated thermal pads) or by a suitable luminaire construction.
At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

If a LED control gear other than Tridonic TALEXconverter is used, it must provide the following protection:
- Short-circuit protection
- Overload protection
- Overtemperature protection

TALEXmodule SLE G4 SNC must be supplied by a constant current LED control gear.
Operation with a constant voltage LED control gear will lead to an irreversible damage of the module.

Wrong polarity can damage the TALEXmodule SLE G4 SNC.

3.2 Wiring example



TALEXconverter LC...

3.3 Wiring type and cross section

The wiring has to be solid cable with a cross section of 0.5 to 0.75 mm² or with stranded wire with soldered ends with a cross section of 0.5 mm².

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3.4 Mounting instruction

TALEXmodule SLE G4 SNC from Tridonic which have to be installed on a heat sink have to be connected with heat-conducting paste or heat conducting adhesive film and fixed with M3 screws.

The fixing/cooling surface must be cleaned by removing all dirt, dust and grease before installing the TALEX modules.

None of the components of the TALEXmodule SLE G4 SNC (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing: 0.5 Nm.

The TALEXmodule SLE G4 SNC modules are mounted with 2 screws per module. In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used.

For further information please refer to to the brochure entitled "Technical Design-In-Guide SLE GEN4".

Chemical substance may harm the LED module. Chemical reactions could lead to colour shift, reduced luminous flux or a total failure of the module caused by corrosion of electrical connections.

Materials which are used in LED applications (e.g. sealings, adhesives) must not produce dissolver gas. They must not be condensation curing based, acetate curing based or contain sulfur, chlorine or phthalate. Avoid corrosive atmosphere during usage and storage.

3.5 EOS/ESD safety guidelines

The device / module contains components that are sensitive to electrostatic discharge and may only be installed in the factory and on site if appropriate EOS/ESD protection measures have been taken. No special measures need be taken for devices/modules with enclosed casings (contact with the pc board not possible), just normal installation practice. Please note the requirements set out in the document EOS / ESD guidelines (Guideline_EOS_ESD.pdf) at:
http://www.tridonic.com/esd-protection

4. Life-time

4.1 Life-time, lumen maintenance and failure rate

The light output of an LED Module decreases over the life-time, this is characterized with the L value.
L70 means that the LED module will give 70 % of its initial luminous flux. This value is always related to the number of operation hours and therefore defines the life-time of an LED module.

As the L value is a statistical value and the lumen maintenace may vary over the delivered LED modules.
The B value defines the amount of modules which are below the specific L value, e.g. L70B10 means 10 % of the LED modules are below 70 % of the inital luminous flux, respectivly 90 % will be above 70 % of the initial value. In addition the percentage of failed modules (fatal failure) is characterized by the C value.

The F value is the combination of the B and C value. That means for F degradation and complete failures are considered, e.g. L70F10 means 10 % of the LED modules may fail or be below 70 % of the initial luminous flux.

4.2 Lumen maintenance

tp temperature	L70 / B50	L80 / B50	L90 / B50
65 °C	30,000 h	20,000 h	10,000 h

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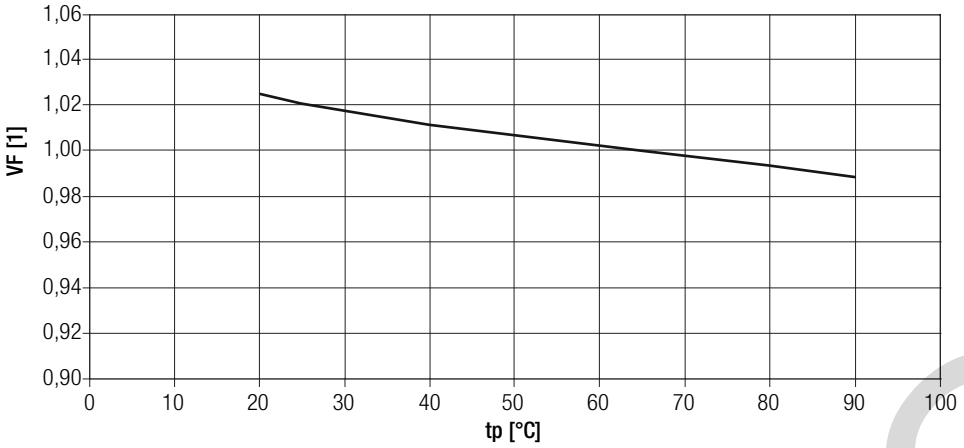
5. Electrical values

5.2 Forward voltage vs. tp temperature



The diagrams based on statistic values.
The real values can be different.

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6. Photometric charcteristics

Coordinates and tolerances according to CIE 1931

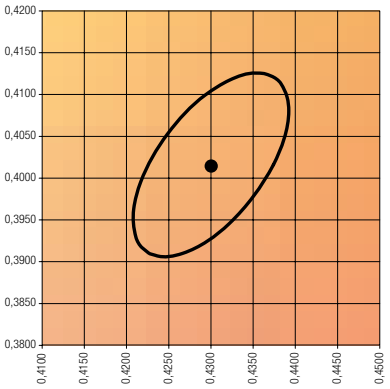
The specified colour coordinates are measured integral after a settling time of 100 ms. The current impuls depends on the module type.

Module type	Current impulse
TALEX(module STARK-SLE-G4-17-2000-8x0-PURE W/O-C	500 mA
TALEX(module STARK-SLE-G4-17-3000-8x0-PURE W/O-C	900 mA
TALEX(module STARK-SLE-G4-23-5000-8x0-PURE W/O-C	1.400 mA

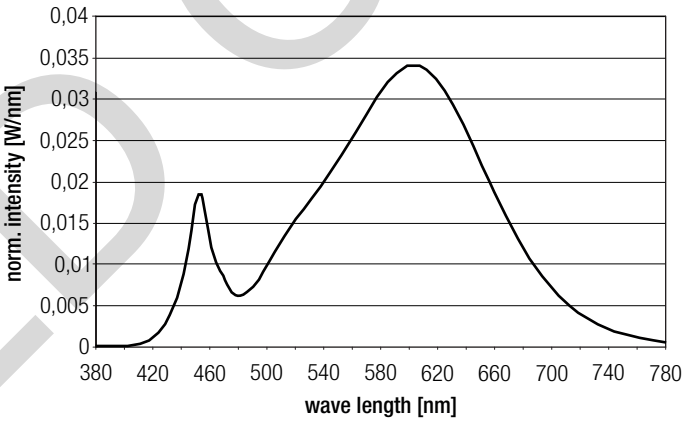
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4300	0.4016

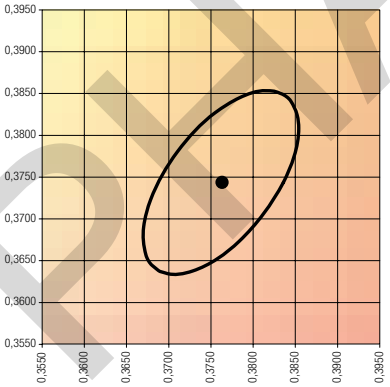


MacAdam ellipse: 4SDCM

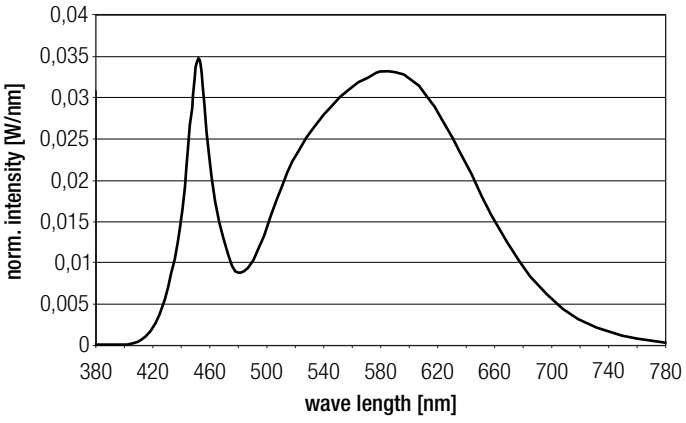


4,000 K

	x0	y0
Centre	0.3761	0.3740



MacAdam ellipse: 4SDCM



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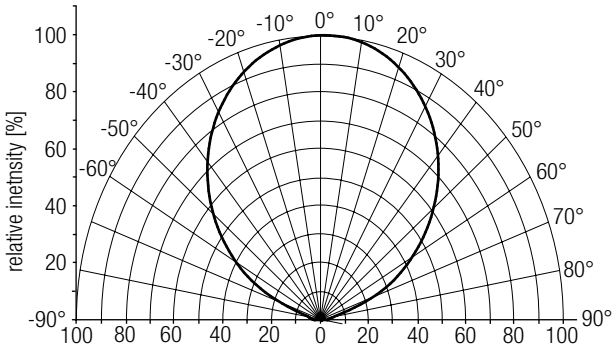
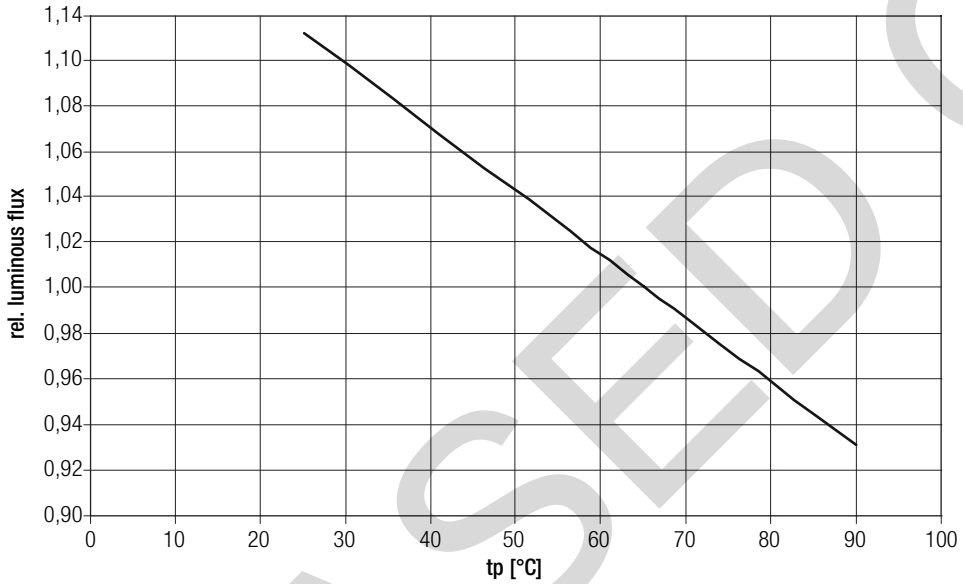
6.2 Light distribution



6.3 Relative luminous flux vs. tp temperature



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