Measures of light intensity

Parameter	measure	explanation
luminous flux	lm (lumen)	all the light produced by a light source
relativ luminous flux	lm/m	for line shaped sources: all the light coming from 1 m in length
light efficiancy	lm/W WATTS.	
luminous intensity eat. STARS.	cd(=lm/sr) (candela)	all the light of a source radiated to one direction per spherical angle
luminance	cd/m²	radiated light per surface unit and per spherical angle (equal to the brightness impression)
illuminance or LUMINOUS FLUX. Light meter.	lx(=lm/m²)	total luminous flux from all directions reaching an area unit

At line shaped light sources there is a strong relation between relativ luminous flux and luminance:

$$\text{luminance } [cd*/m^2] \quad = \quad \frac{101 *\text{relative luminous flux } [lm/m]}{\text{diameter } [mm]}$$

In our lumen chart we have a relative luminouse flux related both to electrical current and length

relative luminous flux in lm/(m * mA)

There are different values for colours and diameters in the chart.
The values in our chart ar measured at Lighting technology institute of the Ilmenau University in Germany.
By multipication with the nominal current in mA you get the luminous flux in lm/m.
Using the upper given approximation formula you can calculate the luminance in cd/m².

Examples of lighting data

	luminous flux lm	efficiancy lm/W	luminance cd/m²
sun			$1{,}5 * 10^9$
blue sky			up to 10 000
sky with cloudes			1000 - 6000
moon			2 500
candle			7 000
incandescent lamp	730	12	100 000
FL lamp	5400	93	15 000
High pressure mercury lamp	15000	70	3 000 000

	Illuminance /lx
sunny summerday	100 000
bad weather day	3 000
good working place	1 000
suficciant illuminated street	30
moon night	0,25
black night without cloudes	0,01

NEON PRODUCTS

lumen output of neon tubes in lm/(m*mA)

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diameter mm color	10 lm/(m*mA)	12 lm/(m*mA)	15 lm/(m*mA)	18 lm/(m*mA)	20 lm/(m*mA)	22 lm/(m*mA)
white 1	32	29	22	18	17	15
white 1a	30	28	20	17	16	14
white 1d	37	34	25	21	20	18
white 2b	37	34	25	20	19	17
white 3a	30	28	21	17	16	14
white 35	43	40	29	24	23	20
white 45	40	37	27	22	21	19
white 65	26	24	17	14	14	12

To determine the lumen output please multiply the related value with the tube length and with the current

e.
length	2m
current	50 mA
diameter:	18mm
color	white 45
lumen outp. =	22lm/(m*mA) * 2m * 50 mA = 2200 lm

This are the values for the first 100 hours of operation when proper production methods are used.
The normal degradation of the phosphor will result in a reduction of lumen output. (after 10000 hours about to 70%)