

Index	Wavelength nm	Exposure limit value	Units	Comment	Part of the body	Hazard
g.	380-1 400 (Visible and IRA)	$L_R = \frac{2,8 \cdot 10^7}{C_a}$ for $t > 10$ s	[W m <sup>-2</sup> sr <sup>-1</sup> ]	$C_a = 1,7$ for $\alpha \leq 1,7$ mrad $C_a = \alpha$ for $1,7 \leq \alpha \leq 100$ mrad $C_a = 100$ for $\alpha > 100$ mrad $\lambda_1 = 380; \lambda_2 = 1 400$	eye retina	retinal burn
h.	380-1 400 (Visible and IRA)	$L_R = \frac{5 \cdot 10^7}{C_a t^{0,25}}$ for $10 \mu s \leq t \leq 10$ s	$L_R$ : [W m <sup>-2</sup> sr <sup>-1</sup> ] t: [seconds]			
i.	380-1 400 (Visible and IRA)	$L_R = \frac{8,89 \cdot 10^8}{C_a}$ for $t < 10 \mu s$	[W m <sup>-2</sup> sr <sup>-1</sup> ]			
j.	780-1 400 (IRA)	$L_R = \frac{6 \cdot 10^6}{C_a}$ for $t > 10$ s	[W m <sup>-2</sup> sr <sup>-1</sup> ]	$C_a = 11$ for $\alpha \leq 11$ mrad $C_a = \alpha$ for $11 \leq \alpha \leq 100$ mrad $C_a = 100$ for $\alpha > 100$ mrad (measurement field-of-view: 11 mrad) $\lambda_1 = 780; \lambda_2 = 1 400$	eye retina	retinal burn
k.	780-1 400 (IRA)	$L_R = \frac{5 \cdot 10^7}{C_a t^{0,25}}$ for $10 \mu s \leq t \leq 10$ s	$L_R$ : [W m <sup>-2</sup> sr <sup>-1</sup> ] t: [seconds]			
l.	780-1 400 (IRA)	$L_R = \frac{8,89 \cdot 10^8}{C_a}$ for $t < 10 \mu s$	[W m <sup>-2</sup> sr <sup>-1</sup> ]			
m.	780-3 000 (IRA and IRB)	$E_{IR} = 18 000 t^{-0,75}$ for $t \leq 1 000$ s	E: [W m <sup>-2</sup> ] t: [seconds]		eye cornea lens	corneal burn cataractogenesis
n.	780-3 000 (IRA and IRB)	$E_{IR} = 100$ for $t > 1 000$ s	[W m <sup>-2</sup> ]			

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o.	380-3 000 (Visible, IRA and IRB)	$H_{\text{skin}} = 20\,000\ t^{0.25}$ for $t < 10\ \text{s}$	H: [J m <sup>-2</sup> ] t: [seconds]		skin	burn

Note 1: The range of 300 to 700 nm covers parts of UVB, all UVA and most of visible radiation; however, the associated hazard is commonly referred to as 'blue light' hazard. Blue light strictly speaking covers only the range of approximately 400 to 490 nm.

Note 2: For steady fixation of very small sources with an angular subtense  $< 11\ \text{mrad}$ ,  $L_b$  can be converted to  $E_b$ . This normally applies only for ophthalmic instruments or a stabilized eye during anaesthesia. The maximum 'stare time' is found by:  $t_{\text{max}} = 100/E_b$  with  $E_b$  expressed in  $\text{W m}^{-2}$ . Due to eye movements during normal visual tasks this does not exceed 100 s.