Classification of the spectral ranges

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Designation	Spectral range	Standard / Source	Remarks
UV-A	315 nm to 400 nm	https://cie.co.at/eilvterm/17-21-009	There are no precise limits for the spectral range of visible radiation since they depend upon the amount of radiant flux reaching the retina and the responsivity of the observer. The lower limit is generally taken between 360 nm and 400 nm and the upper limit between 760 nm and 830 nm.
UV-B	280 nm to 315 nm		
UV-C	200 nm to 280 nm		
visible radiation			
IR-A	780 nm to 1400 nm		
IR-B	1400 nm to 3000 nm		
IR-C	3000 nm to 1000000 nm		

Designation	Spectral range	Standard / Source	Remarks
UV-A	320 nm to 400 nm	DIN EN ISO 24444 : 2022-07	Cosmetic products, especially for test methods for sunscreen products and the in vivo determination of the sun protection factor
UVA II	320 nm to 340 nm		
UVA I	340 nm to 400 nm.		
UV-B	290 nm to 320 nm		

Designation	Spectral range	Standard / Source	Remarks
UV, ultraviolet Radiation	290 nm to 400 nm	DIN EN ISO 24443 : 2022-08	Cosmetic products, application in the field of test methods for sunscreen products
UV-A	320 nm to 400 nm		
UVA II	320 nm to 340 nm		
UVA I	340 nm to 400 nm.		
UV-B	290 nm to 320 nm		

Designation	Spectral range	Standard / Source	Remarks
UV-A	320 nm to 400 nm	DIN EN ISO 24442 : 2022-10	Determination of UVA sun protection
UVA II	320 nm to 340 nm		
UVA I	340 nm to 400 nm.		
UV-B	290 nm to 320 nm		

Designation	Spectral range	Standard / Source	Remarks
UV-A	315 nm to 380 nm	DIN EN ISO 18369-1 : 2018-04	Ophthalmic optics - Contact lenses - Part 1: Terms, classification of contact lens materials and recommendations for writing contact lens specifications
UV-B	280 nm to 315 nm		

Designation	Spectral range	Standard / Source	Remarks
UV, ultraviolet	200 nm to 400 nm	DIN EN 3475-706 : 2006-07	Aerospace - Electrical cables for aerospace applications

Designation	Spectral range	Standard / Source	Remarks
UV, ultraviolet	200 nm to 400 nm	DIN EN 4650 : 2023-06	Aerospace - Wire and cable marking processes using UV lasers

Designation	Spectral range	Standard / Source	Remarks
UV, ultraviolet	100 nm to 400 nm	DIN EN 16981 : 2021-12	The designation and the limits of the various ranges correspond to the recommendation of the International Commission on Illumination (CIE), with the exception that in these recommendations the UV-C range is 100 nm to 280 nm and thus includes the vacuum UV range.
Vacuum ultraviolet (VUV)	100 nm to 200 nm		
UV-C	200 nm to 280 nm		
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
UVA, Near UV	315 nm to 400 nm	IEC TR 62471-4	Photobiological safety of lamps and lamp systems. Measuring methods

Designation	Spectral range	Standard / Source	Remarks
UVA, Near UV	315 nm to 400 nm	PD IEC/TR 62471-2:2009-10-31	Photobiological safety of lamps and lamp systems. Guideline for Manufacturer requirements regarding the radiation safety of optical sources that

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation	100 nm to 400 nm	IEC 62471-6:2022	Photobiological safety of lamps and lamp systems - Part 6: Products emitting ultraviolet radiation (IEC 62471-6:2022)
UV-C	100 nm to 280 nm		
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV radiation, UVR	100 nm to 400 nm	DIN EN IEC 62471-7; VDE 0837-471-7:2024-04	Photobiological safety of lamps and lamp systems
UV-C	100 nm to 280 nm		In some applications, the ultraviolet spectrum has also been subdivided into "far ultraviolet", "vacuum ultraviolet" and "near ultraviolet"; however, the boundaries necessarily vary depending on the application (e.g. in meteorology, optical design, photochemistry and thermal physics).
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation	100 nm to 400 nm	DIN EN 62471:2009-03 / EN 62471:2008	Photobiological safety of lamps and lamp systems
UV-C	100 nm to 280 nm		The range of ultraviolet radiation between 100 nm and 400 nm is usually divided into: UV-A from 315 nm to 400 nm; UV-B from 280 nm to 315 nm; UV-C from 100 nm to 280 nm. These designations for UV radiation should not be understood as exact limits, especially for photobiological effects. In some areas of photobiology, the wavelength ranges are subdivided from 200 nm to 290 nm, from 290 nm to 320 nm and from 320 nm to 400 nm. Sometimes these wavelength ranges are (incorrectly) referred to as UV-A, UV-B and UV-C. Ultraviolet radiation with wavelengths of less than 180 nm is referred to as vacuum UV radiation. It should be noted that radiation between 380 nm and 400 nm is referred to as visible radiation, although this wavelength range is by definition also in the UV radiation range.
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
UV-C	100 nm to 280 nm	DIN 5030-2:1982-09 and DIN 5031-7:1984 (withdrawn)	Spectral radiation measurement; emitters for spectral radiation measurements; selection criteria Radiation physics in the optical field and lighting technology - Supplement 1: Table of contents on quantities, formula symbols and units and index to DIN 5031
VUV	100 nm to 200 nm		
FUV	200 nm to 280 nm		
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		
VIS	380 nm to 780 nm		
IR-A	780 nm to 1400 nm		
IR-B	1400 nm to 3000 nm		
IR-C	3000 nm to 1000000 nm		
MIR	3000 nm to 50000 nm		
FIR	50000 nm to 1000000 nm		

Designation	Spectral range	Standard / Source	Remarks
Vacuum UV, VUV	10 nm to 200 nm	ISO 21348:2007	Space flight environment (natural and artificial) - Determination of solar radiation
Extreme UV, EUV	10 nm to 121 nm		This definition is commonly used by data providers of this spectral category as well as by the materials sciences community
FUV, FAR Ultraviolet	122 nm to 200 nm		This definition is commonly used by the aeronomy community
Ultraviolet C, UVC	100 nm to 280 nm		
Ultraviolet B, UVB	280 nm to 315 nm		
Near Ultraviolet , NUV	300 nm to 400 nm		
UV-A	315 nm to 400 nm		
Visible, VIS	380 nm to 760 nm		
Purple	360 nm to 450 nm		
Blue	450 nm to 500 nm		
Green	500 nm to 570 nm		
Yellow	570 nm to 591 nm		
Orange	591 nm to 610 nm		
Red	610 nm to 760 nm		
Infrared, IR	760 nm to 1000000 nm		
Near Infrared, IR-A	760 nm to 1400 nm		
Middle Infrared, IR-B	1400 nm to 3000 nm		
Far Infrared, IR-C	3000 nm to 1000000 nm		

Designation	Spectral range	Standard / Source	Remarks
Vacuum UV	100nm to 200 nm	DIN EN ISO 15858:2017-01; EN ISO 15858:2016	UV-C equipment - Safety information - Permissible exposure of persons
UV-C	100 nm to 280 nm		
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet	optical radiation, their wavelength	DIN 18716 : 2017-06	

Designation	Spectral range	Standard / Source	Remarks
ultraviolet	200 nm to 400 nm	DIN EN 3475-705 : 2022-11	Aerospace series - Electrical cables for aerospace use - Test methods

Designation	Spectral range	Standard / Source	Remarks
ultraviolet	200 nm to 400 nm	DIN EN 4650 : 2023-06	Aerospace - Wire and cable marking processes using UV lasers

Designation	Spectral range	Standard / Source	Remarks
Vacuum ultraviolet (VUV)	100 nm to 200 nm	DIN EN 16981 : 2021-12	Photocatalysis - Glossary of terms;
UV-C	200 nm to 280 nm		Note 1 to entry: This area is divided into four sub-bands as follows: - Vacuum ultraviolet (VUV) 100 nm to 200 nm; - UV-C 200 nm to 280 nm; - UV-B 280 nm
UV-B	280 nm to 315 nm		The designation and boundaries of the various areas correspond to the Recommendation of the International Commission on Illumination (CIE), with the exception that in these recommendations the UV-C range is 100 nm to 280 nm and thus includes the vacuum UV range.
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation	optical radiation, their wavelengths	DIN EN ISO 13666 : 2019-12	Ophthalmic optics - Spectacle lenses

Designation	Spectral range	Standard / Source	Remarks
UV-C	200 nm to 280 nm	ISO 20473:2007-04	ISO 20473 specifies the spectral range of ultraviolet radiation for use in optics and photonics standards and divides it into: - UV-A: 315 nm to 380 nm; - UV-B: 280 nm to 315 nm; - UV-C: 100 nm to 280 nm. In other health and safety areas, UV-A is defined as 315 nm to 400 nm
UV-B	280 nm to 315 nm		
UV-A	315 nm to 380 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV	200 nm and 380 nm	Railroad applications - Front windows for	Railroad applications - Front windows for rail vehicles

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV	100 nm to 400 nm	DIN EN 17036 : 2018-08	Preservation of cultural heritage - Artificial ageing of untreated or treated porous inorganic material surfaces with simulated solar radiation
UV-C	200 nm to 280 nm		
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation	10 nm to 380 nm	DIN EN 16782 : 2016-07	Preservation of cultural heritage - cleaning of porous inorganic materials - Laser cleaning process for cultural heritage

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV radiation, UVR	optical radiation, their wavelengths	DIN EN ISO 4007 : 2020-01	Personal protective equipment - eye and face protection
In standards for protection against solar radiation, for example in sunglasses for general use, the upper limit of UV-A is sometimes assumed to be 380 nm. In standards with protection requirements against radiation from artificial sources, the upper limit of UV-A is usually assumed to be 400 nm, which is consistent with the CIE definition. The upper limit of 400 nm is used by ICNIRP, ACGIH, the World Health Organization and in the Directive of the European Parliament and of the Council on the protection of health and safety from the dangers of artificial optical radiation, among others.			

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV	100 nm to 400 nm	DIN EN ISO 29464 : 2020-0	Purification of air and other gases
UV-C	200 nm to 280 nm		
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation	10 nm to 400 nm	DIN EN ISO 9488 : 2022-12	Solar energy
UV-C	200 nm to 280 nm		
UV-B	280 nm to 315 nm		
UV-A	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV radiation	none	ISO 5843-6 : 1985-06	Aerospace construction

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UVR	180 nm to 400 nm	DIN EN 13758-1 : 2007-03	Textiles - Protective properties against ultraviolet solar radiation - Part 1: Test methods for apparel textiles;
	200 nm to 280 nm		
	280 nm to 315 nm		
	315 nm to 400 nm		

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV radiation	Radiant energy, with the wavelengths	DIN EN ISO 105-A08 : 2003-01	Textiles - Tests for color fastness - Part A08: Vocabulary of colorimetry
The limit values of the spectral range of ultraviolet radiation are not precisely defined and may vary depending on the application.			

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation, UV radiation	electromagnetic Radiation in the	DIN EN ISO 14692-1 : 2018-02	Petroleum and natural gas industries - Glass fiber reinforced plastic (GRP) piping - Part 1: Terms, symbols, applications and materials

Designation	Spectral range	Standard / Source	Remarks
ultraviolet radiation	none	DIN EN 1330-1 : 2015-05	Non-destructive testing - Terminology