Status May 2022

Standards related to UV-C

Type of organizations	Organization	Scope/responsibility	Publications/on-going projects/activities
International standardization bodies	IEC/TC 34 Lighting		· IEC 61228:2008 Fluorescent ultraviolet lamps used for tanning – Measurement and specification method (Photobiological safety covering UV-C range) · IEC 61549:2010 Miscellaneous lamps (Marking of UV-C mentioned)
	IEC/TC 59 Performance of household and similar electrical appliances		· IEC 63086-1:2020 Household and similar electrical air cleaning appliances - Methods for measuring the performance - Part 1: General requirements
	IEC/TC 61 Safety of household and similar electrical appliances	To prepare safety requirements for electrical appliances primarily for household purposes, but also for other equipment and appliances in similar fields where there is no IEC Technical Committee in existence. NOTE 1: TC 61 does not deal with appliances which are already explicitly covered by the scope of other IEC Technical Committees. NOTE 2: The work of TC 61 in fields other than household may lead to a recommendation that the work on that particular project should be transferred to a new Technical Committee.	· IEC 60335-1 Household and similar electrical appliances - Safety - Part 1: General requirements (Annex T UV-C radiation effect on non-metallic materials) · IEC 60335-2-27:2019 Household and similar electrical appliances – Safety – Part 2-27: Particular requirements for appliances for skin exposure to optical radiation · IEC60335-2-40: Household and similar electrical appliances-Safety-Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers · IEC 60335-2-59 Household and similar electrical appliances - Safety - Part 2-59: Particular requirements for insect killers · IEC 60335-2-65:2015 Household and similar electrical appliances – Safety – Part 2-65: Particular requirements for appliances for air-cleaning appliances · IEC 60335-2-109:2016 Household and similar electrical appliances – Safety – Part 2-109: Particular requirements for UV radiation water treatment appliances · IEC 60335-2-115 (61/5947/CDV) Household and Similar Electrical Appliances – Safety – Part 2-115: Particular requirements for beauty care appliances

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	IEC/TC 62 Electrical equipment in medical practice	To prepare international standards and other publications concerning electrical equipment, electrical systems and software used in healthcare and their effects on patients, operators, other persons and the environment. NOTE: This scope includes items that are also within the scopes of other committees and will be addressed through cooperation. Attention will focus on safety and performance (e.g. radiation protection, data security, data integrity, data privacy and environmental aspects) and will contribute to regulatory frameworks. Healthcare includes medical practice as well as emergency medical services, homecare, and support of persons with disabilities in their daily lives (i.e. Ambient Assisted Living).	· IEC 60601-1-2: Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral Standard: Electromagnetic disturbances - Requirements and tests
	IEC/TC 76 Optical radiation safety and laser equipment	To prepare international standards for equipment (including systems) incorporating lasers (and light emitting diodes) or intended only for use with lasers, including those factors introduced by the use of lasers which are needed to characterize equipment and/or which are essential to safe use. The scope includes the preparation of standards applying limits as determined by organizations such as ICNIRP and CIE, to human exposure to optical radiation (100 nm to 1 mm) from artificial sources. Group Safety Function: Aspects of laser radiation pertaining to human safety.	· IEC 62471:2006/ CIE S 009/E:2002 Photobiological safety of lamps and lamp systems · IEC TR 62471-2:2009 Photobiological safety of lamps and lamp systems - Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety · IEC 62471-6 (76/652/CD) Photobiological safety of ultraviolet lamp products
	IEC/TC108: Safety of electronic equipment within the field of	Standardization in the field of safety for audio/video and similar technology, information technology and communication technology equipment.	· IEC 62368-1: AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT – Part 1: Safety requirements

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	audio/video, information technology and communication technology	Horizontal safety function: Methods of measuring touch current and protective conductor current (IEC 60990) This includes, for various types of equipment, methods of measurement of touch current with regard to physiological effects and of protective conductor current for installation purposes. The methods of measurement consider both normal conditions and certain fault conditions. Safety of equipment electrically connected to a telecommunication network (IEC 62151) Group safety function: Audio, video and similar electronic apparatus - Safety requirements (IEC 60065) Audio/video, information and communication technology equipment - Safety - Part 3: Remote power feeding (IEC 62368-3).	
	CIE Illumination		· ISO 17166/CIE S 007:1999 Erythema reference action spectrum and standard erythema dose (GB/T 21005-2007) · CIE 098-1992 Personal dosimetry of UV radiation · CIE 155:2003 Ultraviolet air disinfection · CIE 172:2006 UV protection and clothing. · CIE 181:2007 Hand protection by disposable gloves against occupational UV exposure · CIE 187:2010 UV-C photocarcinogensis risks from germicidal lamps · CIE 220:2016 Characterization and Calibration Methods of UV Radiometers · CIE 201:2011 Recommendations on Minimum Levels of Solar UV Exposure · CIE 207:2014 Sensitivity of Human Skin to Ultraviolet Radiation, Expressed as Minimal Erythema Dose (MED) · CIE 209:2014 Rationalizing Nomenclature for UV Doses and Effects on Humans · IEC 62471:2006/ CIE S 009/E:2002 Photobiological safety of lamps and lamp systems · ISO/CIE 28077:2016(E) Photocarcinogenesis action spectrum (non-melanoma skin cancers)

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			· CIE D6-52 CIE guide for the Measurement of Upper Air Ultraviolet Germicidal Irradiation Luminaires using Low Pressure Germicidal UV-C Lamps · CIE Position Statement - UV radiation (2020) (http://cie.co.at/publications/cie-position-statement-use-ultraviolet-uv-radiation-manage-risk-covid-19-transmission) · CIE 247:2021 Guide for the gonioradiometric measurement of upper air ultravioled germicidial irradiation luminiaires
	ISO/TC94/SC6 Eye and face protection		· ISO 12609-2:2013 Eyewear for protection against intense light sources used on humans and animals for cosmetic and medical applications - Part 2: Guidance for use
	ISO/TC 142 Cleaning equipment for airs and other gases		· ISO 15858:2016 UV-C Devices – Safety information – Permissible human exposure · ISO 15714:2019 Method of evaluating the UV dose to airborne microorganisms transiting in-duct ultraviolet germicidal irradiation devices · ISO 15727:2020 UV-C devices — Measurement of the output of a UV-C lamp
	ISO/TC172/SC9		· ISO 11151-1: Lasers and laser-related equipment — Standard optical components — Part 1: Components for the UV, visible and near-infrared spectral ranges
	ISO/TC198	Standardization of processes and equipment for sterilization of health care products	· ISO 11137-1: Sterilization of health care products - Radiation - Part 1: Requirements for development, validation and routine control of a sterilization process for medical devices (TC198 WG2) · ISO 11137-2: Sterilization of health care products - Radiation - Part 2: Establishing the sterilization dose (TC198 WG2) · ISO 11137-3: Sterilization of health care products - Radiation - Part 3: Guidance on dosimetric aspects of development, validation and routine control (TC198 WG2) · ISO/TS 11137-4: Sterilization of health care products - Radiation - Part 4: Guidance on process control (TC198 WG2)

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	ISO/TC210		· ISO 13485: Medical devices - Quality management systems - Requirements for regulatory purposes
	ISO/TC282/SC3		· ISO/FDIS 20468-4 Guidelines for performance evaluation of treatment technologies for water reuse systems —Part 4: UV Disinfection
Other type of international bodies	ICNIRP		· ICNIRP 2004 Guidelines on limits of exposure to UV radiation of wavelengths between 180 nm and 400 nm (incoherent optical radiation) · ICNIRP 14/2007 Protecting workers from ultraviolet radiation · ICNIRP 2010 ICNIRP Statement on protection of workers against UV radiation
	IUVA		· Protocol for the Determination of Fluence (UV Dose) Using A Low-Pressure or Low-Pressure High-Output UV Lamp in Bench-Scale Collimated Beam Ultraviolet Experiments · Method for the Measurement of the Output of Monochromatic (254 nm) Low-Pressure UV Lamps · Fluence (UV Dose) Required to Achieve Incremental Log Inactivation of Bacteria, Protozoa, Viruses and Algae · Uniform Protocol for Wastewater UV Validation Applications
Regional and national bodies	EU		· EN 14255-1:2005 Measurement and assessment of personal exposures to incoherent optical radiation - Part 1: Ultraviolet radiation emitted by artificial sources in the workplace · EN 14255-4:2006 - Measurement and assessment of personal exposures to incoherent optical radiation - Part 4: Terminology and quantities used in UV-, visible and IR-exposure measurements · EN 62471:2008 (IEC 62471:2006/CIE S) · DIRECTIVE 2006/25/EC, on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents · DIRECTIVE 2006/25/EC on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation)

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			· DIRECTIVE 2014/35/EU on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits4 · DIRECTIVE 2001/95/EU on general product safety · Lighting Europe Position Paper (2020-9-14) Lighting Europe Position Paper on the benefits of using UV-C disinfection to combat COVID-19
	DE		· DIN 19294-1 Devices for the disinfection of water using ultraviolet radiation - Part 1: Devices equipped with UV low pressure lamps - Requirements and testing · DIN 19294-3 Devices for the disinfection of water using ultraviolet radiation - Part 3: Reference radiometers for devices equipped with UV low pressure lamps - Requirements and testing
	US		· NSF/ANSI 55-2002 Ultraviolet microbiological water treatment systems · UL 1598 CRD (UL. Certification requirement decision) · EPA Ultraviolet disinfection guidance manual for the final long term 2 enhanced surface water treatment rule (2006), (“UV Disinfection Guidance Manual for the Final LT2ESWTR” for short) · ACGIH Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) · IES Committee Report CR-2-20-V1 (2020-4-15) Germicidal Ultraviolet (GUV) – Frequently Asked Questions (https://www.ies.org/standards/committee-reports/) · NEMA GD 4-2020 Version 1 (2020-5-13) COVID-19 Cleaning and Disinfecting Guidance for Electrical Equipment · ANSI/IES/IUVA LM-92-22 Approved Method: Optical and Electrical Measurement of Ultraviolet LEDs
	CN		· GB/T 19258-2012 Ultraviolet germicidal lamp (low pressure UV-C lamp) · GB/T 28795-2012 Cold cathode ultraviolet germicidal lamp · GB 28235-2020 Hygienic requirements for ultraviolet appliance of disinfection

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			· GB 15981-1995 Evaluating method for the efficacy of sterilization for disinfection equipment · GB/T 18205-2012 Comprehensive appraisement for health in schools · GB 28932-2012 Regulation of infectious diseases prevention and control in primary and secondary schools · HJ 2522-2012 Technical requirements for environmental protection products - ultraviolet disinfection equipment · QB/T 1172-1999 Ultraviolet disinfection equipment · CQC 1332-2020 Safety and performance certification criteria for ultraviolet disinfection luminaires · GB/T 20145-2006 (IEC 62471:2006/CIE S 009:2002, IDT) · GB 4706.45-2008 (IEC 60335-2-65:2005, IDT) · GB 4706.85-2008 (IEC 60335-2-27:2004, IDT) · GB/T 21005-2007 (ISO 17166/CIE S 007:1999, IDT)
	JP		· JIS C 7605:2011 Germicidal lamps · JIS Z 8811 Measuring Methods of Ultra-violet Rays for Sterilization · JIS Z 8812 Measuring Methods of Eye-hazardous Ultraviolet Radiation · Electrical Appliances and Materials Safety Act: Electric sterilizers (limited to those having a germicidal lamp) · Technical examination standard for UV irradiation equipment ,Japan Water Research Center (2012)
	TW		· CNS 2657 Low-Voltage Mercury Discharge Tube (for Germ Killing) · CNS 60335-2-65 C4547-2-65 Household and similar electrical appliances − Safety − Part 2-65: Particular requirements for air-cleaning appliances · CNS 16098 C4599 Air cleaners for household and similar use − Methods for measuring the performance

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