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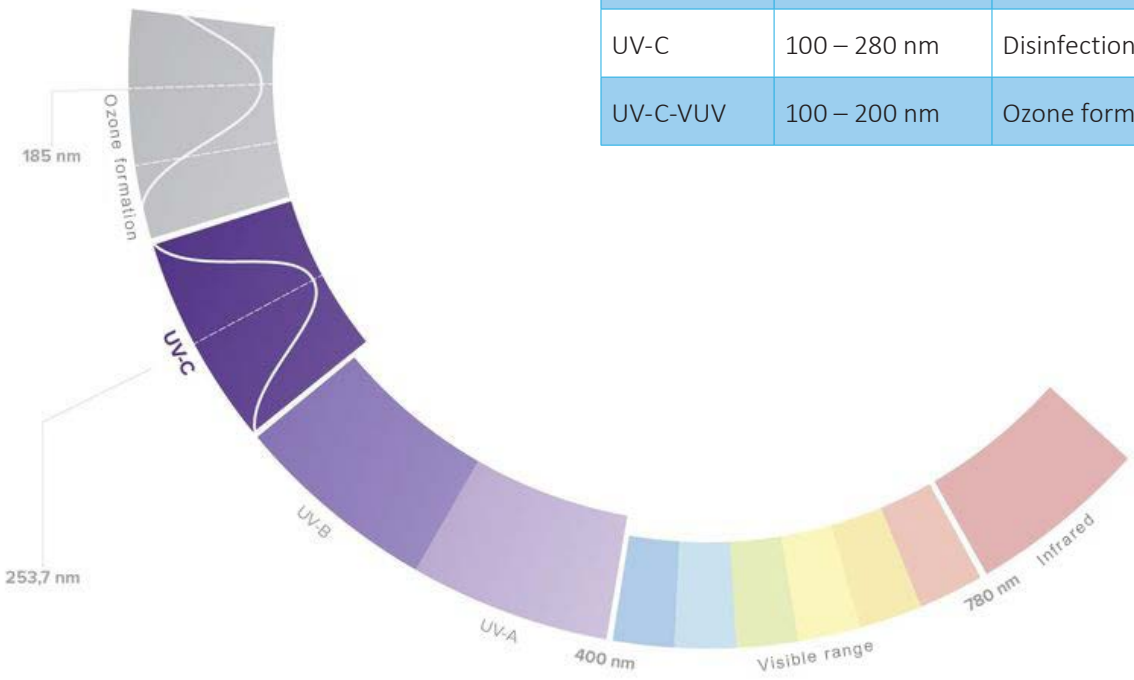
General Information about UV Wavelengths

Overview UV Light

UV radiation	Wavelength	Description
UV-A	315 – 380 nm	Black light
UV-B	280 – 315 nm	Responsible for sunburn
UV-C	100 – 280 nm	Disinfection effect
UV-C-VUV	100 – 200 nm	Ozone formation



UV Radiation in General

Ultraviolet radiation, like visible light or radio waves, is an electromagnetic radiation and cannot be perceived by the human eye. By definition, it covers the spectral range from 100 to 380 nm and is thus directly related to the blue, visible part of light.

At 100 to 280 nanometers, UV-C light is the shortest wavelength range of ultraviolet light.
However, if the ozone layer near the earth is intact, this range of ultraviolet light is filtered out of the sun's radiation spectrum before it reaches the earth's surface.

In contrast to UV-B radiation, which penetrates particularly deep into the skin, a causal relationship between skin cancer and intensive UV-C radiation has not yet been scientifically proven.

The very high-energy UV-C light triggers a photochemical reaction. The wavelength of 253.7 nm is absorbed by the cell nucleic acid and, depending on the irradiation dose, leads to the killing or damage of bacteria and fungal spores. The UV-C light is therefore used to specifically damage or kill microorganisms (such as bacteria/viruses, yeasts and moulds).

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Application Examples for UV Wavelengths

Longwave 365 nm - UV-A

Laboratory/Research
Bacterial Identification • Specimen Staining • Gel Electrophoresis • Chlorination • Fluorochemistry • Pesticide Analysis • Fluorescence Photography • Titration Processes • TLC • Nucleic Acid Visualization • Genetic Experiments • Virology Sanitation: Aflatoxin Detection • Rodent Contamination and Lice Detection • Detection of Food Contamination • Milkstone Inspection • E-Coli Water Testing • Culture Fluorescence Medical: Medical Diagnosis • Dermatology • Cosmetology

Education
Fluorescence Demonstration and Analysis

Industrial
Non-Destructive Testing • UV Curing •Magnetic Particle Inspection • Inspection of Conformal Coatings

Criminology
Detection of Altered Documents • Counterfeit Currency Detection • Signature Verification • Forensic Applications • Coding/Marking • Arson Investigation • Lab Testing

Electronics
Clean Room Inspection • Epoxy Coat • Quality Control • Inspection

Miscellaneous
Examination of Fine Art • Archaeology • Entomology • Photoresist Exposure • Philately • Re-Admission Control • Mineralogy

Automotive
Leak Detection • Windshield Repair

Midrange 302 nm - UV-B

Research
Gel Electrophoresis • Gel Viewing • Optical Lab Measurements

Industrial
UV Curing • Gradient Sampling • Solar Experimentation

Medical
Phototherapy • Dermatological

Miscellaneous
Mineralogy • Art and Museum Inspection

Shortwave 254 nm - UV-C

Criminology
Document Examination • Field Clue • Arson Investigation • Toxicology

Education
Fluorescence Demonstration and Analysis

Laboratory/Research
Fluorochemistry • Mercury Detectors • Optical Alignment • Pesticide Analysis • Polymer Curing • Sterilization • DNA Analysis • Biochemical Testing • Electrophoresis • TLC • Mutation • Mycology • Nucleic Acid Visualization • Photochemistry • Photo Disassociation

Miscellaneous
E-Coli Testing • Alumina Testing • Archaeology • Fluorescence Photography • Mineralogy • Philately

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Important Safety Information Regarding UV Radiation

Caution!

Ultraviolet transilluminators and ultraviolet lamps are powerful sources of UV radiation that will cause damage to unprotected eyes and skin. Before operating any unit, be sure all personnel in the area are properly protected. Personnel should protect skin and eyes by wearing ultraviolet protection eyewear, gloves and clothing when operating the UV equipment.

When using a transilluminator, it is recommended that the transilluminator be installed and operated in a darkroom where access and exposure to UV is limited while the unit is in operation.
If a darkroom is unavailable, we offer darkrooms or covers which provide protection from accidental exposure. For information, contact www.labortechnik.com.

Each transilluminator is shipped with an ultraviolet blocking cover. Even though this cover blocks the UV radiation emitted by the unit, UV Blocking Eyewear should be worn as well. LTF Labortechnik has a complete line of UV Blocking Eyewear: Spectacles, Goggles and Faceshield designed for this purpose (www.labortechnik.com).

UV Eye Protection

- **Protection Shield MP-1000**
  UVC face visor for face and eyes.
  Safe protection from 210 nm – 365 nm.
- **Laboratory glasses with yellow tint**
  Especially recommended at 254 nm and 312 nm.
  The yellow tint has a brightening and contrast-enhancing effect for some analytical applications.
- **UV spectacles UVC-303**
  Lightweight polycarbonate safety goggles.
  Additional top and side shields provide all-around protection from UV light.
  Blocks wavelengths from 200 to 400 nm.

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