



Germ-free, economical, environmentally-friendly
Intense UV light for industrial food processing

Economical and environmentally-friendly

Sustainable solutions for the food industry



Safe and germ-free:
Disinfection with ultraviolet light is
suitable for many industrial processes.

Protection against contamination is the top priority in food production, therefore, pathogens must be completely removed. This can be achieved by ultraviolet light – in a very environmentally-friendly way without the addition of chemicals or costly cleaning processes.



The Heraeus UV disinfection

Short wave UV light, in particular, destroys the DNA of microorganisms. Viruses are inactivated within seconds and microorganisms, such as bacteria, yeasts and fungi, are killed without the use of chemicals. This environmentally-friendly method is suitable for various media and can be used to treat water, air and surfaces.

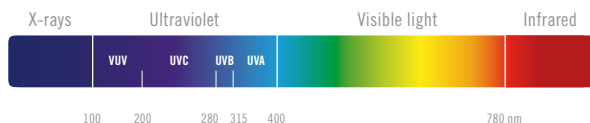
The results are maximal safety and hygiene for manufacturers and consumers alike and a long shelf life for fresh produce. Moreover, disinfection with UV light improves the ecobalance of a product over its entire life cycle – an important concern to many consumers and an inherent competitive edge.

Your benefits at a glance

- Surfaces are not heated due to cold UV radiation
- Short exposure time with no delay of the process
- No use of chemicals, minimizing environmental impact
- Simple and low maintenance
- Economic due to low cost of ownership
- Retrofittable to existing systems and machines

We make light productive!

Heraeus Noblelight is the world's leader for photonics-based solutions – from ultraviolet to infrared.



Our range of services comprises well-engineered, reliable and customer-optimized light systems developed for increased productivity, product enhancement and efficiency. As a UV specialist with know-how and many years of experience, solving individual process challenges is our top priority.

Rental systems for on-site testing

Ask for our rental systems to test the direct application of UV light directly in your process or your environment.



Reduction of germ load by up to 99.9 %

Surface disinfection of packaging materials and conveyors with UV light



6-lamp Premium system with control module

Microbiologically sensitive bulk products, such as foodstuffs, demand hygienic packaging materials. They are used, for example, in FFS machines (forming, filling and sealing machines) for milk products and beverages. The use of intensive UV radiation for surface disinfection in the filling process significantly extends the shelf life of products. The number of returns is substantially reduced, saving food manufacturers time, expenditure and money.

How does disinfection with UV light work?

In general, the germ removal process involves disinfection, not sterilization, of packaging material surfaces. Ultraviolet light at a wavelength of 254 nanometers (nm) has a higher energy than the sun's UV light. The especially short-wave UV light destroys the DNA of microorganisms. Viruses are inactivated within seconds and microorganisms such as bacteria, yeasts and fungi are killed in an environmentally-friendly manner without the use of chemicals.

Spores of molds, such as *Aspergillus niger*, protect themselves against UV radiation with their thicker cell walls, which may even have pigments. To destroy them, it requires 10 to 100 times the UV dose needed for bacteria. As an alternative, UV radiation can be applied following the action of low-percentage (1 to 3%) hydrogen peroxide. This combined method achieves an efficient and broad germicidal effect.

The Heraeus solution: Premium systems for UV disinfection

Examples of applications for packaging material disinfection

- Packaging materials for fresh products (dry, paste-like or liquid) stored in the kitchen, such as powder, yogurt, kefir or milk
- Cups
- Sealing foil or pouches
- Sealing caps
- Cans or bags for milk powder
- Packaging materials prior to cold filling, e.g. filling of ketchup, sauces, jams, jellies because less energy is consumed
- Bottlenecks or glasses

Example of application for conveyor belt disinfection

UV surface disinfection yields improved quality and improved production processes on conveyor belts. Germ-free conveyor belts prevent cross-contamination and permanently reduce the total germ count on the belts. Fewer cleaning intervals between production shifts are required as well.



UV disinfection of sealing films



UV disinfection of pre-stamped sealing films

Your benefits at a glance

- Cold and dry method requires less energy
- Environmentally-friendly without the use of chemicals
- Short warm-up and exposure times optimize the filling process
- Low-maintenance UV systems and retrofitting to existing filling and sealing machines reduces operating and investment costs

Reduction of germ load by up to 99.9% – Fraunhofer-tested

Heraeus UV disinfection systems are developed especially for the food industry. They reduce the number of germs on the surface by up to 99.9%. This is confirmed by the test report of the Fraunhofer Institute for Process Engineering and Packaging in Freising, Germany.

Low carbon footprint

Climate change is a major challenge to the food processing industry and influences the behavior of companies, organizations and consumers. Food production and processing should become climate-neutral and sustainable. Heraeus UV solutions support you in reducing CO₂ emissions by using low-energy methods.

Ideal for organics

The UV disinfection method is particularly reliable, safe and environmentally-friendly because no chemicals are added. Therefore, it meets the special requirements of organic fresh products. This makes it very well suited for the disinfection of packaging materials for food products.

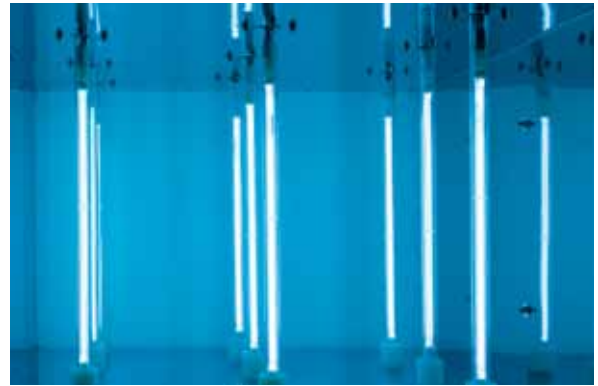
Reduction the risk of fire in canopies

Reduction of grease and odors with special UV light



Fewer grease deposits and significantly reduced frying and roasting odors due to specialty vacuum UV systems.

The use of grease and oil, particularly in commercial kitchens and industrial food processing steps, causes unpleasant odors and deposits. Grease deposits in canopies and exhausts are a major fire hazard as grease separators catch only up to 95% of the grease in the exhaust air. The rest of the grease is precipitated in the hood body and the exhaust air duct. No grease filter can completely eliminate these deposits.



Heraeus UVC lamps in a cheese dairy keep the process air at low germ levels and the HEPA filters free from mildew.

Specialty vacuum UV systems from Heraeus for the post-treatment of aerosols and aerosolates, function at a wavelength of 185 nm. They photolyze, destroy and neutralize the molecules of greases and odors. At the same time, the VUV radiation generates ozone from the atmospheric oxygen around the lamp. The ozone is decomposed into excited oxygen that has an oxidizing aftereffect in the exhaust duct and keeps it clean.

The Heraeus solution: Vacuum UV systems

Examples of applications for odor and grease reduction

- Eliminate odors in the food processing industry such as in the processing of meat, sausage and fish, in cheese and other dairies, in the production of cooking oils and in bakeries
- Decompose greases
- Eliminate VOCs and chemicals
- Disinfect air in production and storage rooms in the food processing industry, e.g., to reduce germ levels in storage rooms and headrooms of tanks and silos, in stock breeding and processing, and in cowsheds
- Disinfect sterile and clean rooms

Your benefits at a glance

- Substantially reduced cost of cleaning and servicing
- Improved and optimized hygiene conditions
- Best possible fire protection for kitchen exhaust air systems – no fire hazard due to grease deposits
- No emission problems, so that official conditions can be met or permits obtained
- Substantial reduction of downtime due to accelerated maintenance
- Efficient alternative to thermal incineration units that consume a lot of energy
- Grease reduction enables efficient waste heat recovery

The Heraeus Kitchen Control System, with only one VUV lamp, is sufficient to reduce to a minimum the odors and greases produced by the deep fat fryer in a 3,000-staff canteen.



Chemical-free and ecological UV light for treating water



With long-life UV lamps, Heraeus helps sterilize drinking water in an energy-saving and environmentally-friendly way.

Chlorine products in food or water affect taste and are detrimental to the environment. Contaminated water can be treated with high-energy UV radiation without adding chemicals such as chlorine or ozone. The special UV light not only destroys microorganisms such as bacteria, viruses, yeasts and fungi, but also decomposes chemicals that are adverse to health. Even germs resistant to chlorine can be inactivated by UV radiation. Disinfection and advanced oxidation are two methods that can be used to treat water.

The Heraeus solution: UV lamps and systems for reactors

Examples of applications for industrial water treatment

- Process water: Treatment of industrial water for reuse, e.g., as clean water for rinsing or cleaning processes in the industrial production of beverages and food
- Crushed ice: Water treatment in machines that produce crushed ice
- Drinking water: Disinfection of drinking water used for beverage production – germs are inactivated by UV light treatment



Production processes in the food and beverage industries need germ-free water.

- Air washers: Disinfection of water in air conditioning plants and air humidifiers – no biocides are released in the air
- Aquaculture: Water treatment for controlled breeding of fish, shellfish and mussels in running or standing water, independent of environmental influences
- Fresh water: Treatment independent of environmental influences
- Transport water: Water disinfection during intermediate storage and in storage tanks
- Fruit juice disinfection: Cold aseptic treatment extends the shelf-life of fruit juices and reduces energy consumption; pasteurization is no longer necessary

Your benefits at a glance

- No impairment of taste and smell
- No use of chemicals, minimizing environmental impact
- Cost reduction and process optimization due to short radiation exposure times, reduced handling and low maintenance requirements
- Effective against chlorine-resistant pathogens
- Safe method due to various safety systems (e.g., shatter protection)

Reliable heat processes and precise light analyses

More applications using Heraeus specialty light solutions



Disinfection of food carriers

Reliable heat processes with infrared radiation

Specialty light sources with infrared heat make filling processes and food processing more productive. They are environmentally-friendly and energy-efficient.

The Heraeus solution: Infrared emitters and systems

Examples of applications for infrared heat

- Improves taste by browning ham or frying hamburgers
- Browns desserts, biscuits or cake: IR heat makes it easier to crush almonds, caramelize sugar and gives cheesecake an appealing colour
- Preheats molds or melting rims during the production of shaped or filled chocolate products
- Reduces germs on bread surfaces prior to packing for longer shelf life
- Disinfects and dries bakery tools

Your benefits at a glance

- Efficient use of energy by eliminating the preheating process
- Targeted use of heat where heat is needed
- Contactless and fast-reaction heating optimises the production process.
- Compact system design for optimal use of space
- Precise adherence to temperature specifications



Control of food additives

Light sources for analytics

In modern food processing, a range of additives helps extend a product's shelf life and makes the product healthier for the consumer. Sugar and salt levels are controlled to prevent obesity and heart disease. Trace elements or contaminants are determined to make food healthier and easier to digest. Methods used include high-pressure liquid chromatography (HPLC), UV/VIS and atomic absorption spectroscopy.

The Heraeus solution: Deuterium, tungsten or hollow cathode lamps

Examples of applications for analytical purposes

- Control food additives, e.g., vitamins and preservatives
- Determine trace elements in food, e.g., monitoring of aluminium

Your benefits at a glance

- Precise measurements for reliable analysis and detection
- Diverse analysis possible due to wide lamp spectrum



Heraeus Noblelight's Ultraviolet Business Line (Specialty Light Sources Global Business Unit at Heraeus) is the specialist for tailor-made UV systems. Based on our long-standing innovation leadership, we develop and implement UV process solutions and produce several hundred thousand UV lamps each year. More than 90% of these are customer-specific developments.

Our expertise is your advantage. Optimize your processes in a personal dialogue with our marketing managers and developers who have extensive experience with applications. Make use of our own advanced Applications Competence Center (ACC) and the expertise of one of the most modern independent UV measurement laboratories in the optical industry. We are pleased to provide you with certificates confirming the reliability of our UV systems and components.

Benefit from the known Heraeus quality. Unrivalled stability of UV efficiency over the entire service life to enable maximum productivity at minimal operating costs.

The tradition of manufacturing specialty light sources goes back to 1904 when Heraeus invented the UV lamp, and the 1950s when the company paved the way for infrared technology. Today, Heraeus Noblelight has more than 900 employees and runs its own subsidiaries in many countries worldwide.

www.heraeus-noblelight.com

Germany

Heraeus Noblelight GmbH

Heraeusstraße 12-14
63450 Hanau, Germany
Telephone +49 6181 35 4499
Fax +49 6181 35 9926
hng-uv@heraeus.com

USA

**Heraeus Noblelight
America LLC**

910 Clopper Road
Gaithersburg, MD 20878
Telephone +1 301 527 2660
Fax +1 301 527 2661
info.hna.uvp@heraeus.com

Australia

**Heraeus Amba Australia
PtyLtd.**

Unit 3, 41-49 Norcal Road
3131 Nunawading, Victoria
Telephone +61 3 9874 7455
Fax +61 3 9874 7488
sales.hala@heraeus.com

China

**Heraeus Noblelight (Shenyang) Ltd.
Shanghai Branch**

2F, Building 5th
No. 406, Guilin Rd, Xuhui District
Shanghai 200233
Telephone +86 21 3357 5555
Fax +86 21 3357 5333
info.hns@heraeus.com

Great Britain

Heraeus Noblelight Ltd.

Unit 1 Millennium Court,
Clayhill Industrial Estate,
Buildwas Road Neston,
Cheshire, CH64 3UZ
Telephone +44 151 353 2710
Fax +44 151 353 2719
ian.bartley@heraeus.com

France

Heraeus SAS

12, av. du Québec - Bât I 2
B.P. 630 Villebon
91945 Courtaboeuf Cedex
Telephone +33 1 69 18 48 51
Fax +33 1 69 28 82 43
philippe.wuattier@heraeus.com

Italy

Heraeus SpA

Via dei Chiosi, 11
20040 CAVENAGO BRIANZA (MI)
Telephone +39 02 95759 212
Fax +39 02 95759 241
hng-italy@heraeus.com

Spain

Heraeus S.A.

C/Ilull 27-39 1^o-9^a
08005 Barcelona
Telephone +34 933 208 042
Fax +34 934 853 411
bcn@heraeus.es



Wissenschaftliche Apparaturen
und Industrieanlagen AG
Bruggacherstrasse 24
CH-8117 Fällanden

Tel. 044 317 57 57
Fax 044 317 57 77
<http://www.wisag.ch>
e-mail: info@wisag.ch