



Excimer High-performance Modules

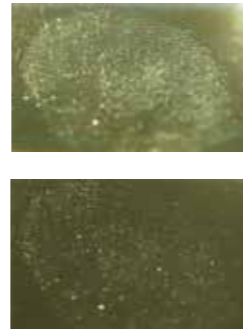
for surface cleaning, surface activation
and other special processes

Excimer treatment is a radiation-based process for surface cleaning and surface activation, which can be applied to a wide variety of materials such as plastics, glass or metals. In contrast to other methods, excimer irradiation is particularly precise, uniform and gentle and is, therefore, especially suitable for sensitive surfaces, such as membranes or wafers.

Ushio offers two excimer product series: the Hyper V series, which is specially designed for inline treatments and the SUE series, which has been optimised for stationary irradiation.

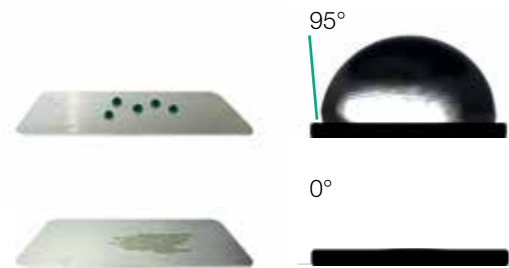
Surface Cleaning

- ◆ The material to be cleaned is irradiated with short-wavelength vacuum ultraviolet (VUV) light at a wavelength of 172 nm.
- ◆ Due to the high photon energy of 7.2 eV, organic substances such as dust, fats, and oils, as well as oxide layers in some cases, can be broken up and broken down into molecular fragments.
- ◆ Ozone is formed in the atmosphere between the excimer module and the substrate, which oxidizes and dissolves the molecular fragments.



The result: a clean surface.

Surface Activation



- ◆ Surface activation uses 172 nm excimer radiation to remove impurities or passivation layers and simultaneously form hydrophilic molecular groups.
- ◆ The result is a clean surface with increased and homogeneous surface energy and improved adhesion properties.
- ◆ The surface energy determines the wettability. This is measured by the contact angle between the surface and the liquid.

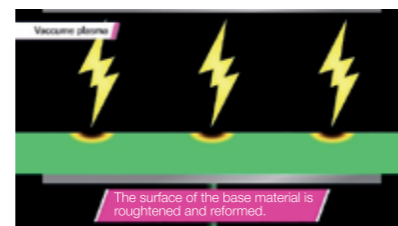
The result: a significant improvement in the printability, coatability, and bondability of the substrates.

Excimer technology allows surfaces to be pretreated very gently and evenly; therefore, it is particularly suitable for demanding materials, such as monofilms and wafers.

Advantages over Corona and Plasma Treatments

- ◆ Excimer lamps emit little or no heat and are therefore considered “cold” radiation sources. The surface to be treated is not exposed to thermal stress.
- ◆ Since the main effect of the treatment is based on photons, the excimer treatment is very uniform and does not lead to microscopic changes of the surface.
- ◆ Surface structures, such as those found in membranes, are preserved and not damaged.
- ◆ The process is much gentler and is ideal as a cleaning and activation method in the manufacture of display solutions, semiconductor chips, printed electronics, battery components, functional surfaces in the automotive industry and lab-on-a-chip devices.

Plasma treatment



Excimer radiation



Excimer SUE Series

Excimer modules for stationary treatment of substrates. Particularly suitable for surfaces such as wafers, PCBs and glass. Applications include electronics and semiconductor manufacturing, sensor fabrication and many others.

Features

- ◆ Different standard sizes from 150 – 300 mm
- ◆ Very good homogeneity over the entire radiation area
- ◆ Constant intensity mode for stable processes
- ◆ Quartz window for high purity environments

Technical data SUE series

Wavelength (nm)	172
Intensity (mW/cm ²)	10 – 50
Lamp lifetime (70% in h)	1000
Irradiation size (mm)	□ 150 – 300
Homogeneity (%)	< ± 10
Number of excimer emitters	3 – 4
Constant intensity mode	partially available
Power consumption (W)	300 – 1200
Nitrogen consumption (l/min)	20 – 50



Excimer Hyper V / Hyper V ST Series

Excimer modules for inline treatment of substrates. Suitable for activating and cleaning the surfaces of films, paper and metals. Ideal for use in the production of special films and OLED screens, in bonding and matting processes.

Features

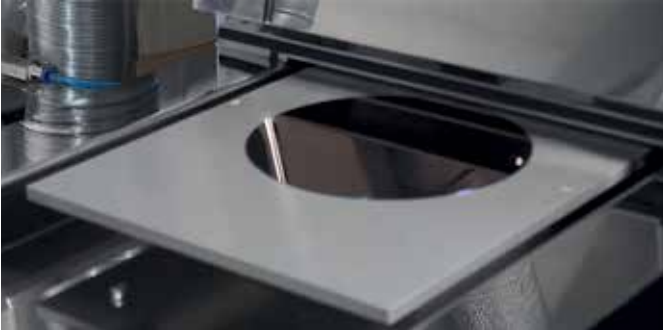
- ◆ Different irradiation sizes from 300 mm to 2200 mm width
- ◆ Test modules available
- ◆ Flat excimer with the highest intensity on the market
- ◆ Process gas, such as nitrogen, for special applications (optional)
- ◆ Long lifetime of 1500 hours and more

Technical Data Hyper V / Hyper V ST Series

Wavelength (nm)	172
Intensity (mW/cm ²)	> 170
Lamp lifetime (70% in h)	1500
Irradiation size (mm)	300 – 2200
Homogeneity (%)	< ± 10
Number of excimer emitters	1 – 3
Constant intensity mode	partially available
Power consumption (W)	600 – 6000
Nitrogen consumption (l/min)	optional



Typical Industries and Applications



Semiconductor Industry

Wafer cleaning



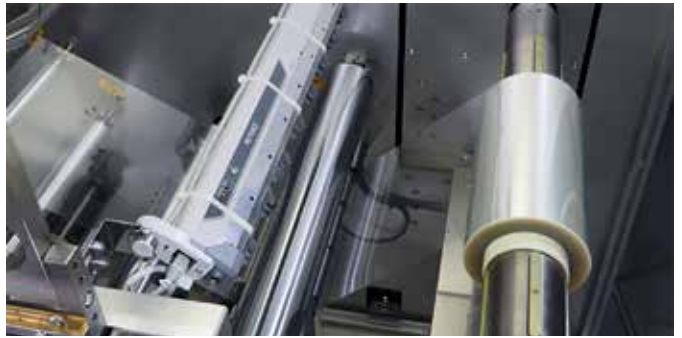
Automotive and Sensor Industry

Cleaning and pre-treatment of foils, metals, and glass



Electronics Industry

Display manufacturing and printed circuit board production



Packaging Industry

Matting and surface functionalisation of films

Further Information

For more information on our excimer modules, please visit our website or contact us directly at +49 8094 906 0.

Developing Solutions Together

Ushio is a partner that listens to your ideas and requirements. Let us optimise your processes according to your specifications and expectations. Use our expertise to develop a tailor-made solution that matches your needs.

USHIO

USHIO EUROPE B.V. - Headquarters
The Netherlands | +31 20 446 9333
sales@ushio.eu | www.ushio.eu

USHIO GERMANY GmbH
Germany | +49 8094 906 0
sales@ushio.de | www.ushio.de

USHIO U.K., LTD.
United Kingdom | +44 129 625 6067
sales@ushio.eu | www.ushio.eu

USHIO FRANCE S.A.R.L.
France | +33 134 64 94 94
sales@ushio.eu | www.ushio.eu

Intended use: Specifically designed and exclusively approved for use in industrial applications that require a particularly high UV output

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