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**ITALIAN
EXHIBITION
GROUP**
Providing the future

IN COLLABORATION WITH



ACIMAC
Association of Italian Manufacturers of
Machinery and Equipment for Ceramics



WITH THE SUPPORT OF



Ministero degli Affari Esteri
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DECORTECH

conference

Rimini Palacongressi - Italy

14 JUNE 2023



 **superfici**

Excimer technology

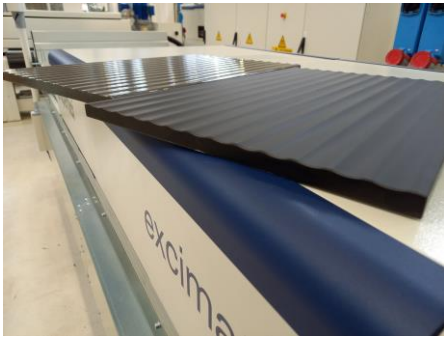
high resistance properties with ultra matt finishing

Curated by: Claudio Baldizzone





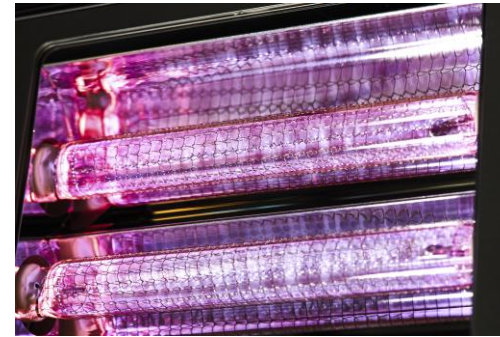
EXCIMERS ? WHAT ARE THEY FOR?



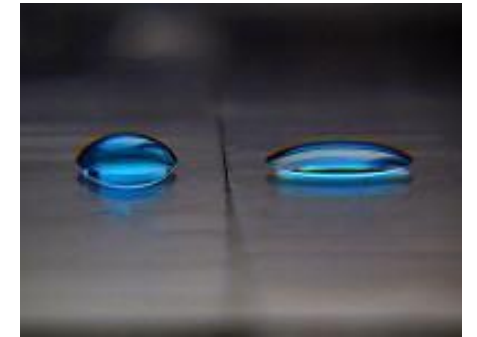
Super Matte surfaces can be achieved **without the addition of matting agents** in the paint.



Boosts the **chemical and physical resistance** of the surface.

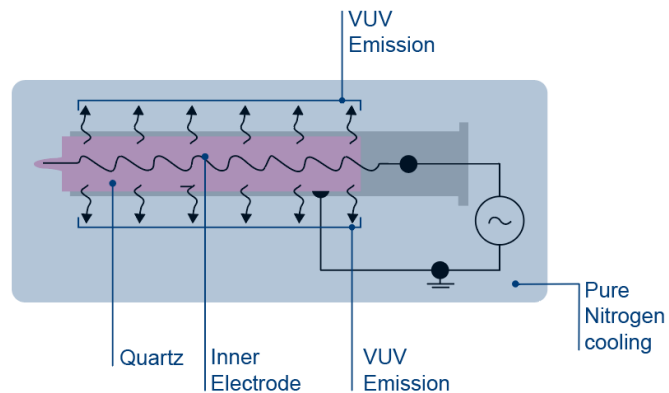


Low migration UV curing, even suitable for food packaging.



Optimizes printing and adhesion **properties on the substrate**.



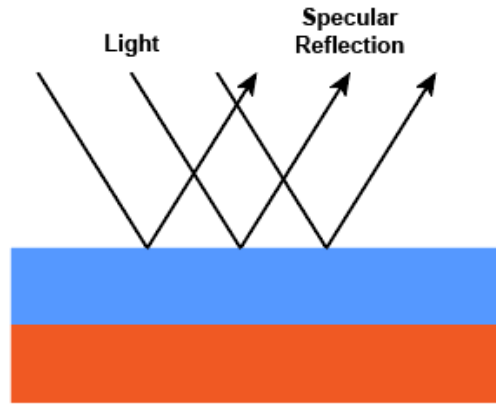


Excimer irradiation is achieved using a **special lamp that emits monochromatically at 172 nm**. Because 172 nm photons are strongly absorbed by oxygen, irradiation must take place in an **inert chamber**, where the oxygen concentration is kept below specific levels by the use of nitrogen.

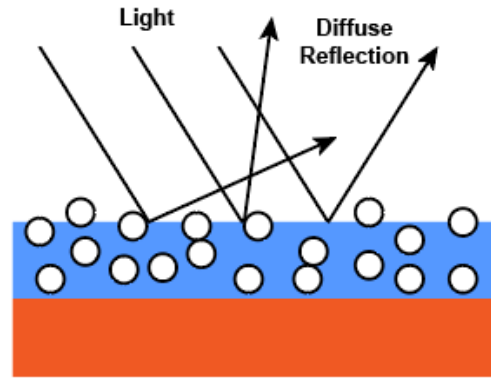


Irradiation at 172 nm changes the **surface structure** of the film thus avoiding light reflections and a **high opacity finish**.

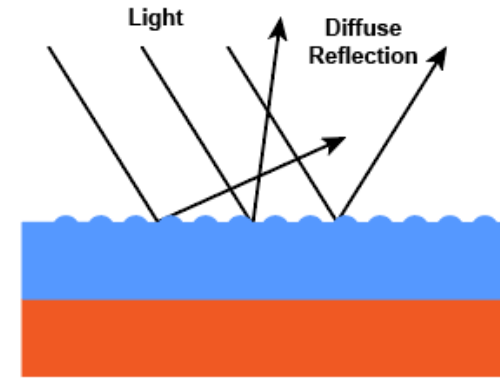




Glossy Varnish



Conventional Matting



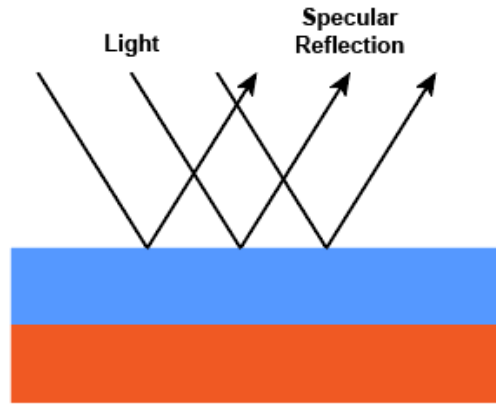
EXCIMER Matting



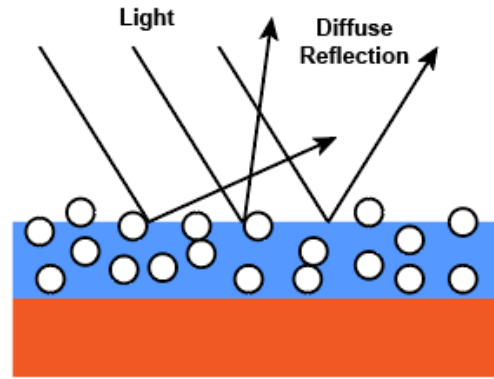
Irradiation at 172 nm achieves a **physical matting** of the lacquered layer without the addition of matting agents in UV coatings.



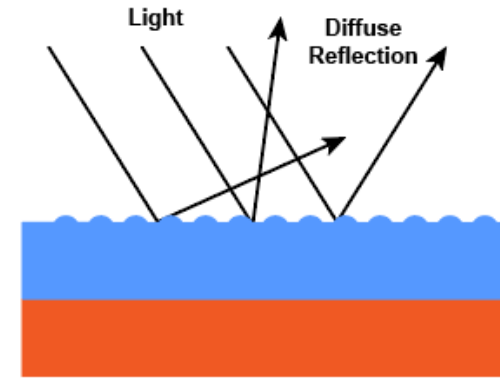
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Glossy Varnish



Conventional Matting



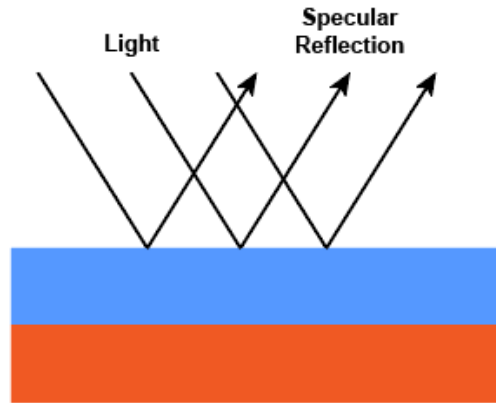
EXCIMER Matting



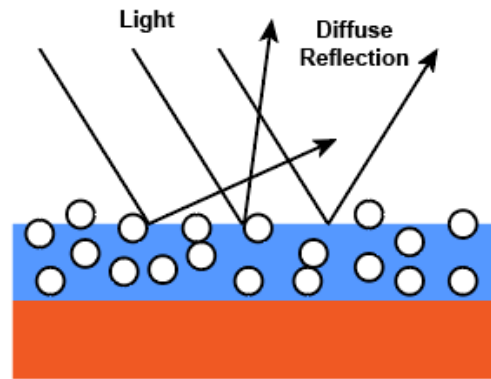
Gloss levels from 0 to 20 are easy to reach.



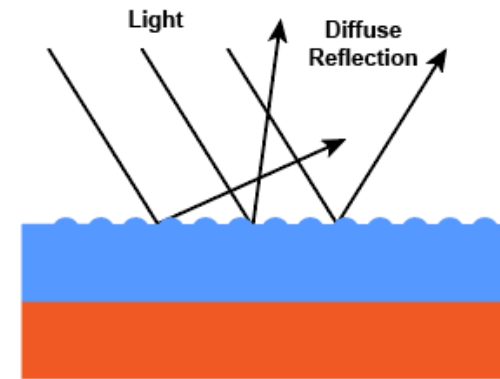
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Glossy Varnish



Conventional Matting

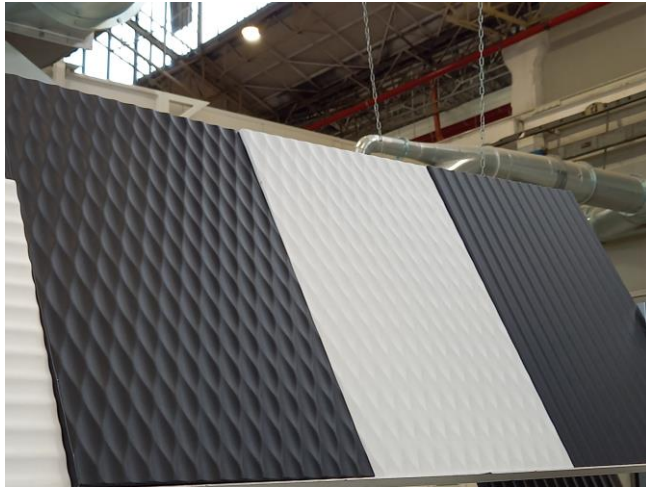


EXCIMER Matting



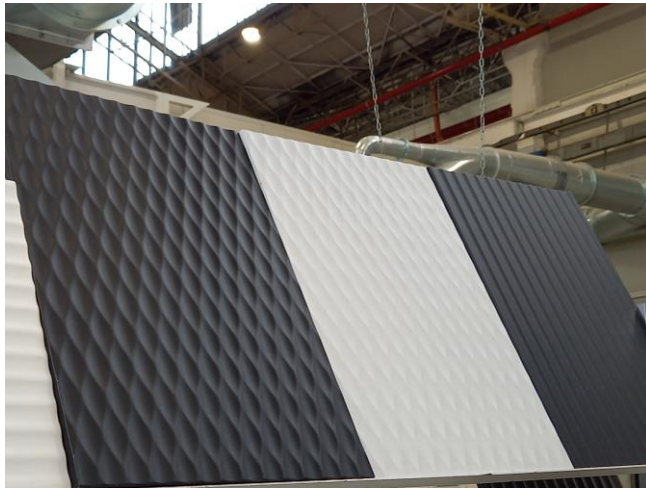
Absorption of the strong short wave 172nm radiation leads to additional surface polymerisation , resulting in surface shrinking.

Surface becomes **micro-structured and appears matt**. This effect is called physical matting. After through curing with UV, a low gloss surface with **increased hardness** is achieved.



No matting agents needed.



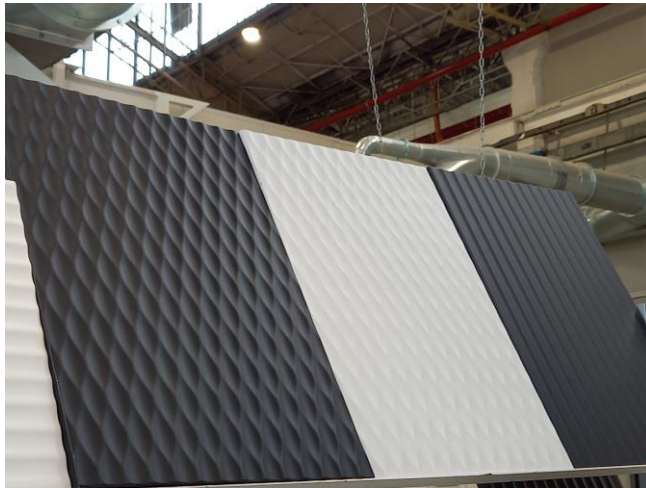


No matting agents needed.



Ultra matt gloss levels possible.





No matting agents needed.

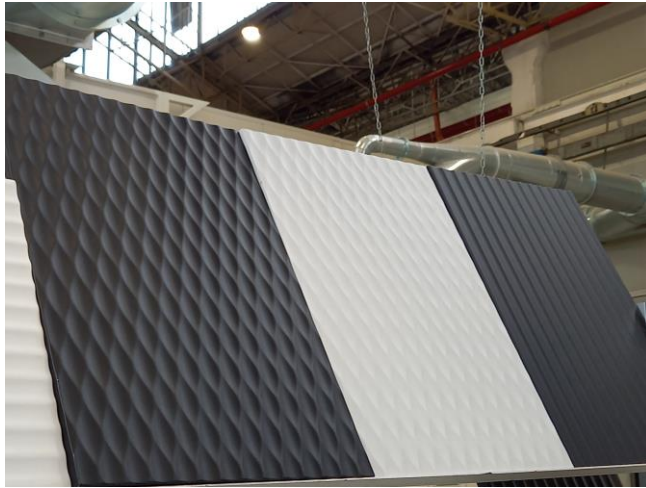


Ultra matt gloss levels possible.



Creates very uniform matt surface.





No matting agents needed.



Ultra matt gloss levels possible.

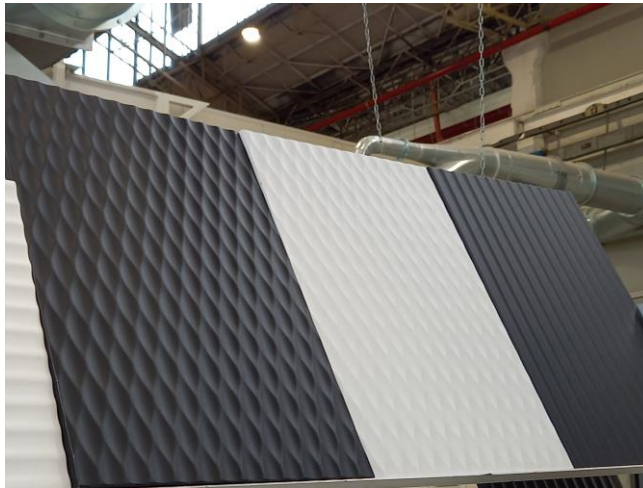


Creates very uniform matt surface.



Soft silky touch.





No matting agents needed.



Ultra matt gloss levels possible.



Creates very uniform matt surface.

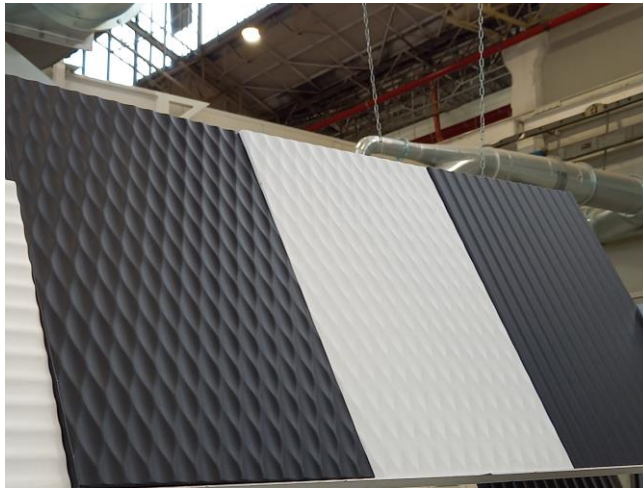


Soft silky touch.



Increased surface hardness and scratch resistance.





No matting agents needed.



Ultra matt gloss levels possible.



Creates very uniform matt surface.



Soft silky touch.

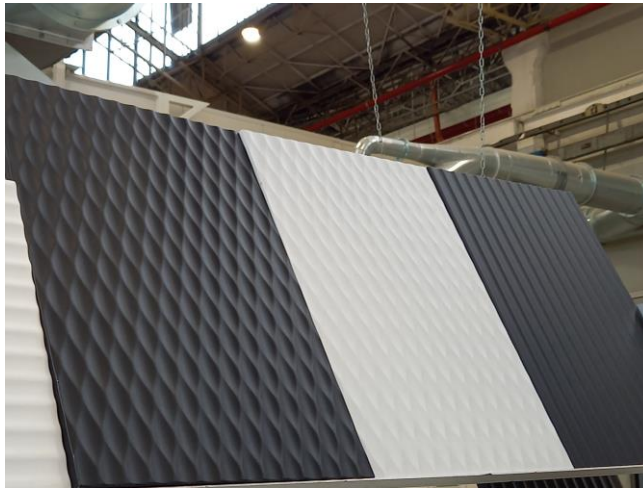


Increased surface hardness and scratch resistance.



Improved chemical resistance.





No matting agents needed.



Ultra matt gloss levels possible.



Creates very uniform matt surface.



Soft silky touch.



Increased surface hardness and scratch resistance.

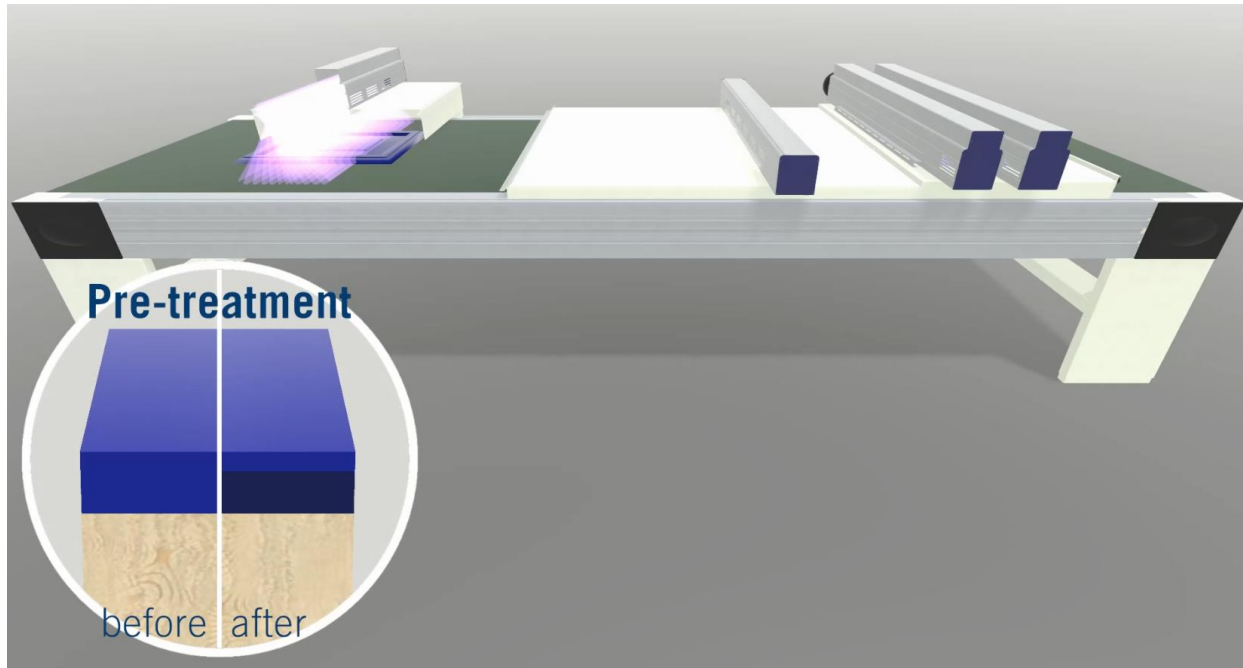


Improved chemical resistance.



No fingerprint effect.

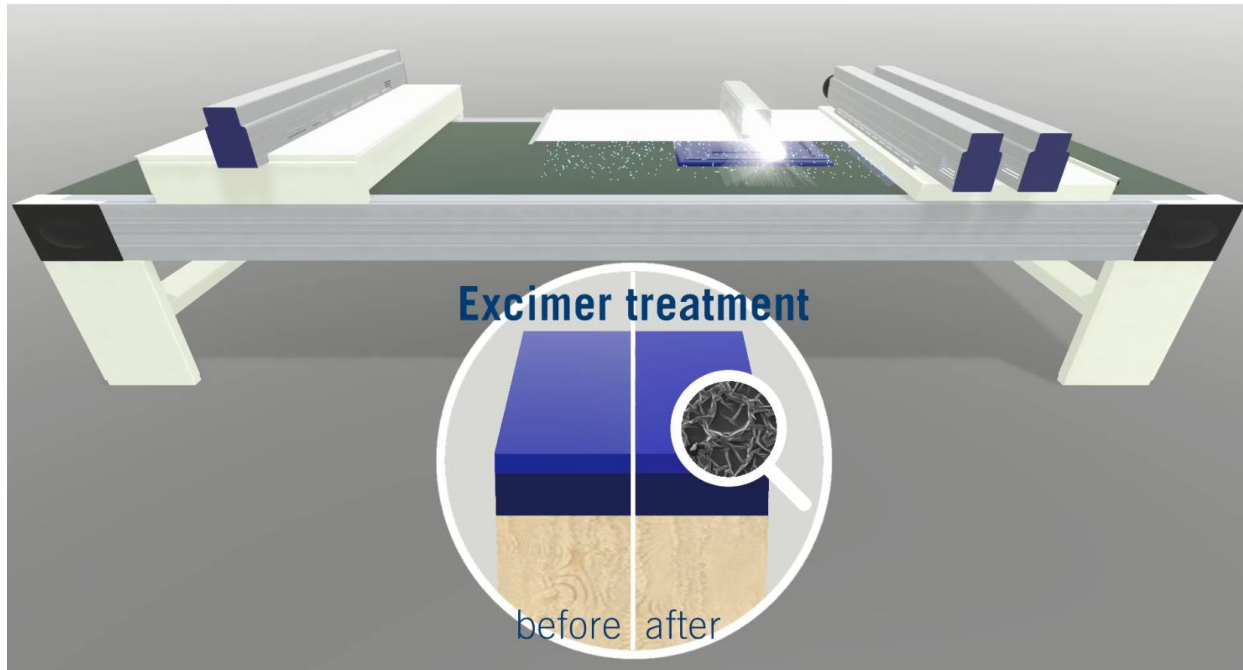




UV LED pretreatment

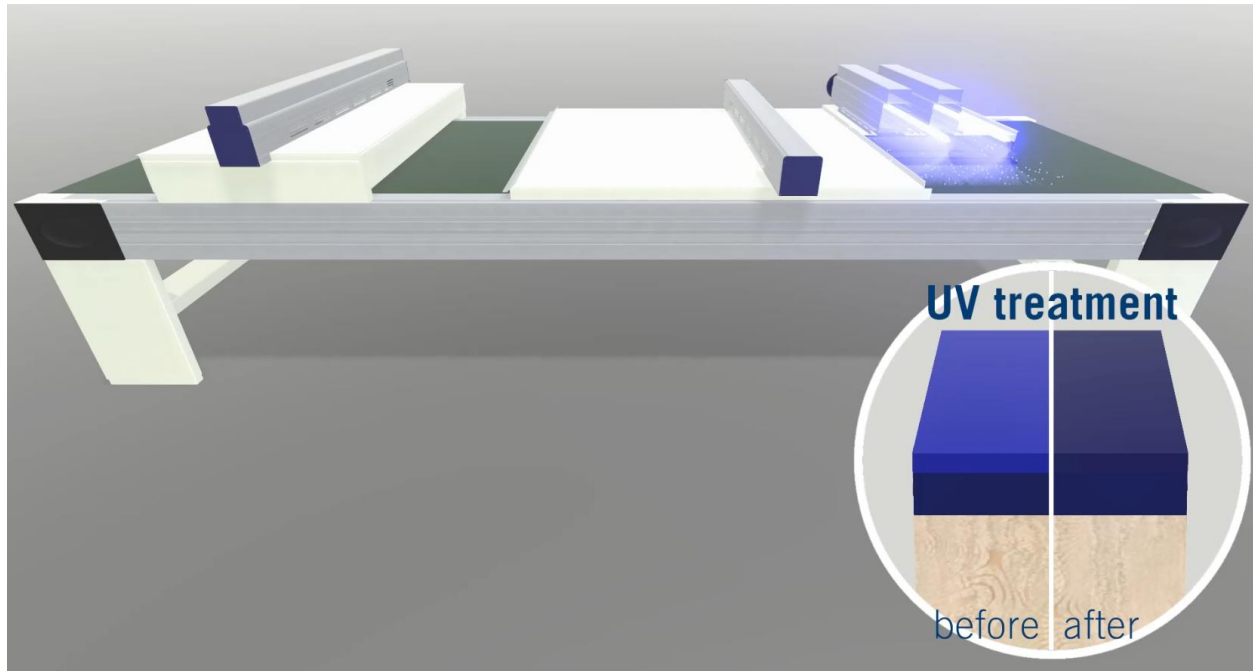
A **partial deep curing** of the lacquer layer is activated by using a **395 nm LED source**. LED power should be properly adjusted according to the desired final effect. Sometimes low pressure UVC lamps can also be used instead. (reduced yellowing effect).





EXCIMER treatment

A **micro-structured cured surface skin layer** is formed by the 172 nm irradiation. The thin cured layer floats on the only partially cured lacquer. To avoid the absorption of 172 nm photons by oxygen and formation of ozone, the whole **curing process must take place under nitrogen** with a residual oxygen concentration of less than 100 - 300 ppm. (according to lacquer formulation)



UV LAMPS final curing

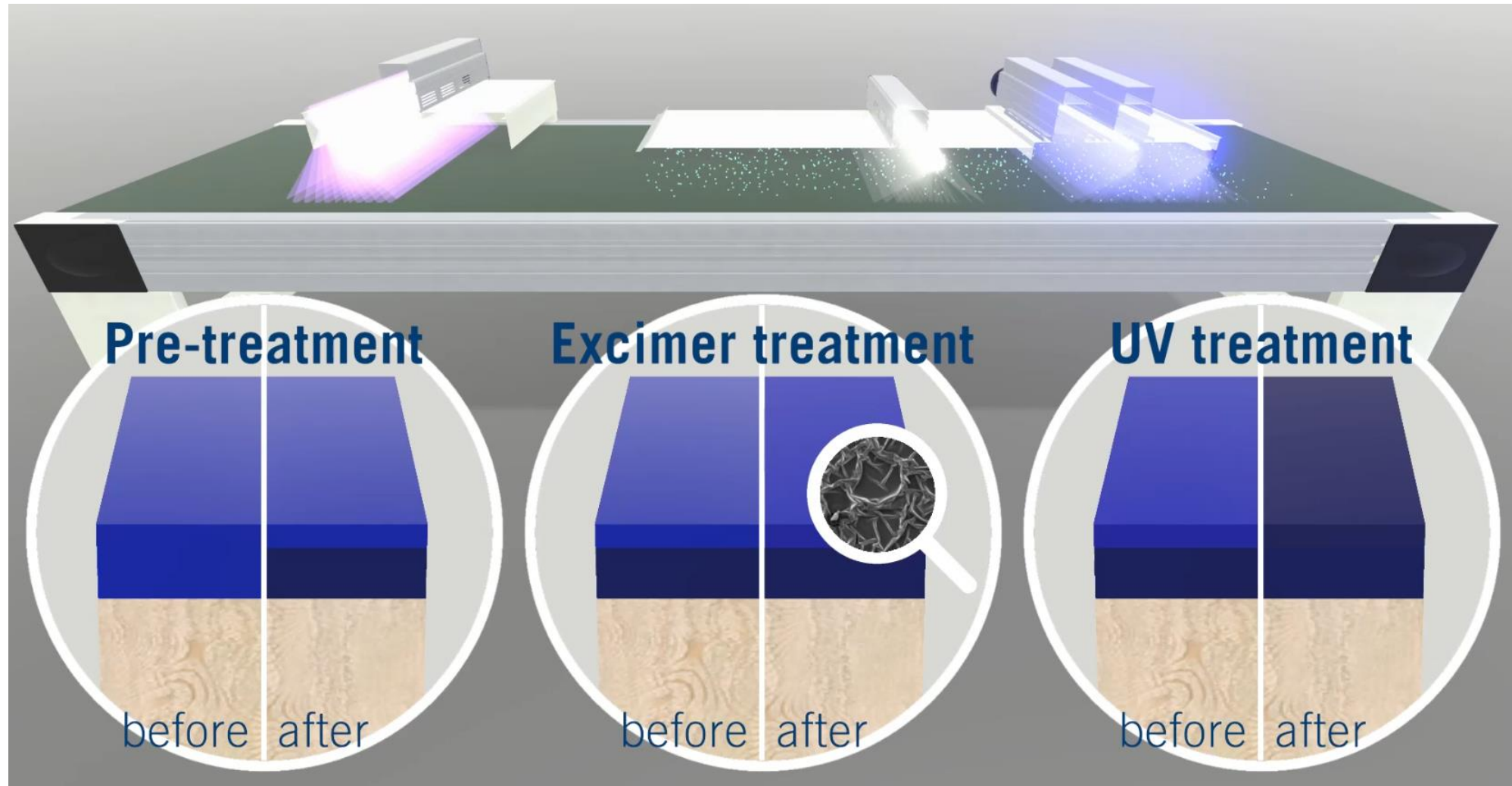
Through **curing with UV achieves the final hardness of the coating.**

UV final curing can also take place in a inert environment , thus increasing the final hardness of the cured surface.

Very low gloss level can be achieve
(standard examples: 1,5 gloss at 85 degrees or 2,5 gloss at 65 degrees).



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Parquet Application



Panel Application



Extra Matte



Resistant & anti-scratch



Anti-fingerprint effect



Extra Matte



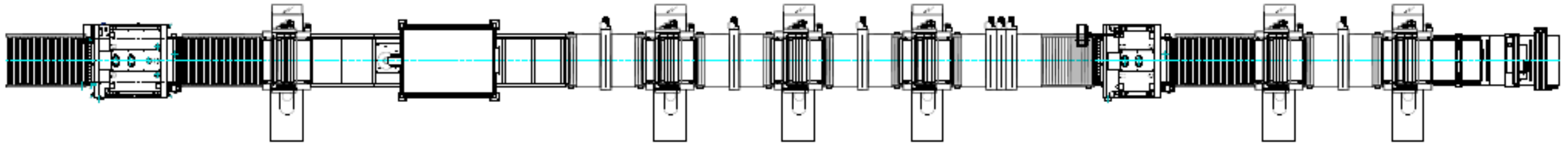
Soft and velvet touch sensation



Anti-fingerprint effect



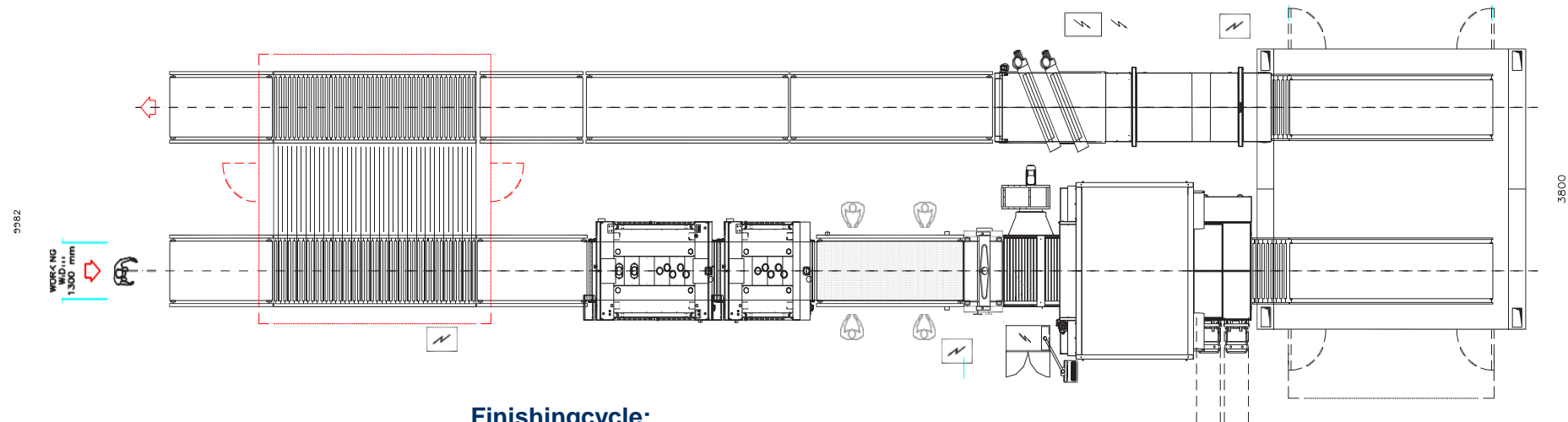
Parquet Application



Finishing cycle:

1. calibrating, sanding, 3D carving /structuring (if required), brush sanding
2. surface cleaning, stain application by sponge roller, stain drying
3. base coat application 20 gr/m2, UV gelification by 1 UV lamp
4. base coat application 20 gr/m2, UV gelification by 1 UV lamp
5. base coat application 20 gr/m2, UV gelification by 3 UV lamp
6. intermediate sanding
7. top coat application 25 gr/m2, UV gelification by 1 UV lamp
8. top coat application 25 gr/m2, UV pre-treatment, Excimer treatment, Final UV curing

Panel Application



Finishing cycle:

1. 3D carving (if required), brush denibbing, surface cleaning
2. spraying application of isolator, one hour gelification time in vertical dryer
3. first base coat application by spraying, flash off in vertical dryer - 1 hour, UV curing, brush denibbing, edge denibbing by manual touch up
4. surface cleaning, second base coat application by spraying, flash off in vertical dryer - 1 hour, UV curing, brush denibbing, edge denibbing by manual touch up
5. surface cleaning, third base coat application by spraying, flash off in vertical dryer - 1 hour, UV curing, brush denibbing, edge denibbing by manual touch up
6. surface cleaning, top coat application by spraying. flash off in vertical dryer - 1 hour
7. UV pre-treatment, Excimer treatment, Final UV curing.





SOFT STRENGTH

Thank you for your attention!

Crave to know more?
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