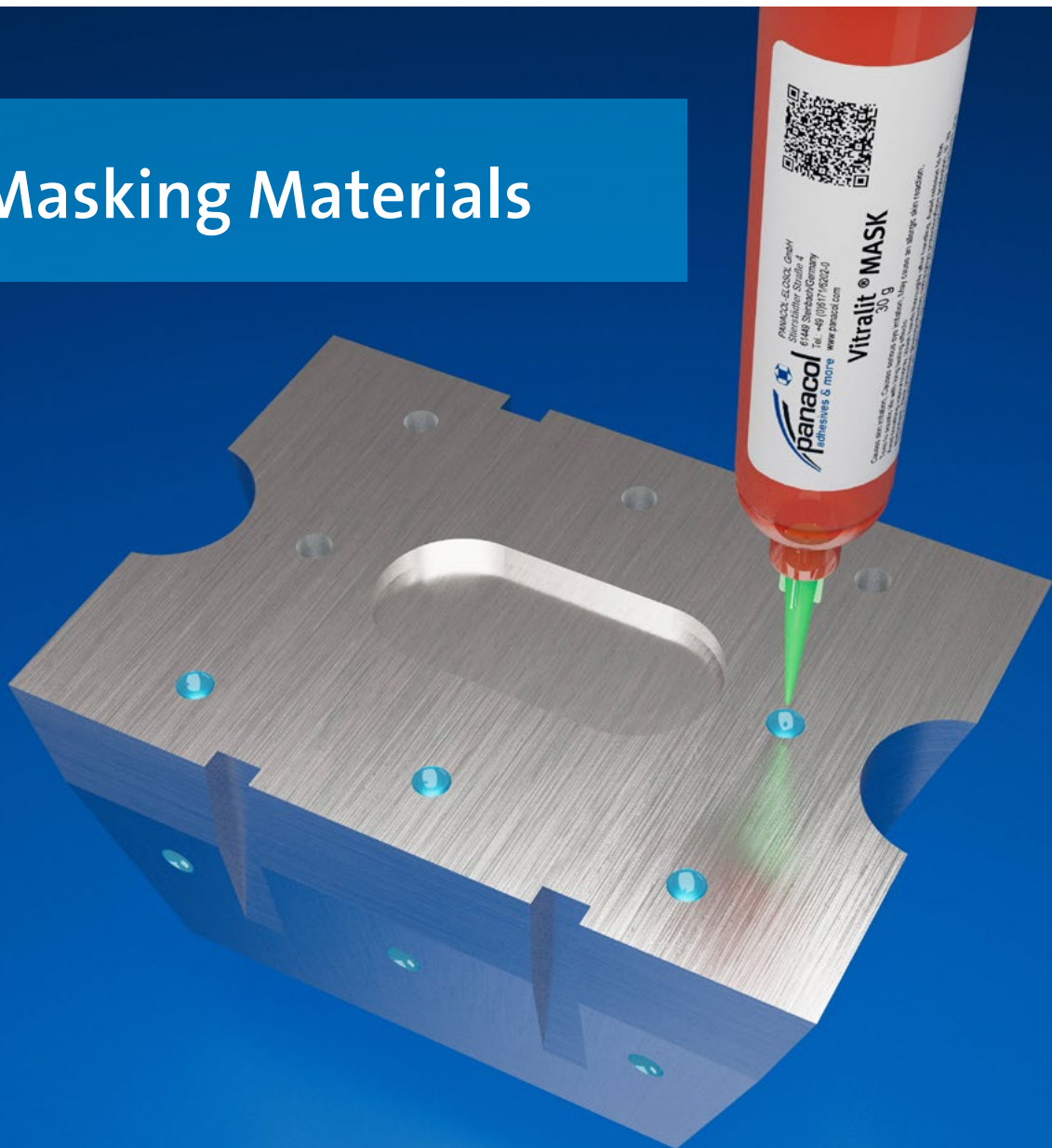


UV Masking Materials



Temporary Surface Protection for:

- Plating
- Sandblasting
- Anodizing
- Powder Coating
- Surface Finishings

Features of Hoenle UV Masking Materials

- Quick to apply
- Solvent-free
- Superior protection for complex geometries
- Suitable for manual or automated removal
- Reduces application and processing costs

UV Mask Application Methods

Hoenle UV masking materials are single component, liquid compositions that can be easily applied using various methods. These UV masking materials can be manually dispensed from syringes or cartridges. They can also be applied by dipping the components into the mask, or by spraying the mask onto component surfaces. The UV masking process can be automated and integrated into existing production lines using robotic dispensing or screen printing. Many factors should be considered when choosing which dispensing method or system is best for the application. These factors include part size, cycle time, UV mask volume and packaging, placement tolerance, and of course, budget. Selection assistance is obtainable from Hoenle applications engineers. Their in-depth knowledge of compatible, commercially available dispensing systems can simplify the conversion to Hoenle's UV masking process.

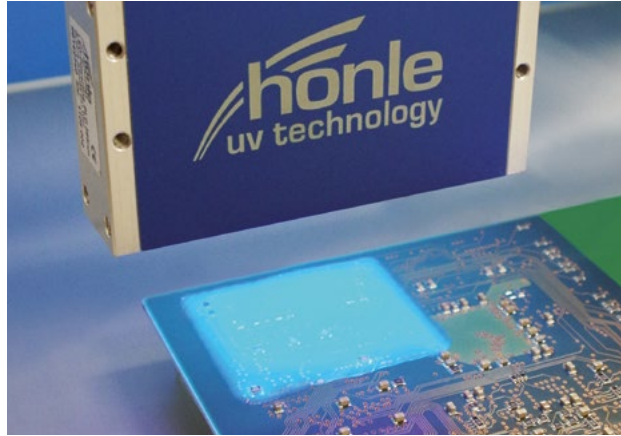


UV Mask Selection

Many processes can have the same generic category description such as grinding, plating, peening, etc. However, individual processing techniques, velocities, temperatures, and chemical solutions can vary as mandated by manufacturer's specifications. For this reason, it is highly recommended that UV masking users consult with Hoenle applications engineers when selecting UV masks for each of their intended processes. Our product knowledge and extensive experience with UV masking applications ensures that the best UV mask and curing options are selected based on your specific requirements.

UV Mask Curing

All Hoenle UV masking materials can be cured with LED curing systems. Broad spectrum UV lamps, (discharge lamps) can also be used, but significant process efficiency and cost reduction is attainable from LED curing. As a member of the Hönle Group, Hoenle offers a broad selection of high intensity LED curing equipment that is manufactured in Germany by Hoenle AG. LED heads and arrays are compact, and can be positioned to create optimized curing processes offering the shortest possible cycle times.



UV Mask Removal

Hoenle UV masking materials offer several options for quick and residue-free removal. The removal options include:

- Dissolving in agitated water or in an ultrasonic tank
- Peeling at room temperature
- Peeling at elevated temperature (pre-treatment with hot air or water)
- Oven burn-off (>900°F/500°C)



Choosing the appropriate UV mask removal option is dependent on the component configuration, type of process, and the allowable cycle time for completion. When fully cured, the Hoenle UV masking material can be categorized as an industrial plastic, and should be disposed of in accordance with local regulatory requirements. Wastewater containing the water-soluble UV mask must also be disposed in accordance with local regulatory requirements. An analysis of the water may be required in order to identify the proper disposal method as residues from the manufacturing or overhaul process may be present. Exhaust emissions from burn-off grade UV masks are adequately removed with filters or scrubbers typically incorporated in furnace exhaust ducts.



Variety of UV Masks

Hoenle high performance UV curable masking materials are suitable for a variety of applications and industries. They are primarily designed to provide temporary surface protection for surface finishing applications including blasting, peening, and electroplating/anodizing. These UV masking materials can also be used when applying aggressive paints, powder coats, and heat resistant coatings. They are formulated to resist prolonged immersion in heated solutions of acids, degreasers, chemical stripping agents, and plating baths. For high-value metal-alloy components, these UV masks can be applied to form scratch resistant shells for safer handling and transportation. In a similar fashion, the useful life of fixturing that is used in processes such as grit blasting and peening can be extended with Hoenle's UV mask materials.

Hoenle UV masks are perfectly designed to replace traditional application methods including temperature resistant tapes, waxes, solvent or water-based coatings, lacquers, and reusable boots. Applying these traditional masks is typically labor intensive. Depending on geometry, a single component may require hours of masking time. In addition, performance is not always consistent with traditional masks. Loose fitting boots, voids, and low adhesion tapes generate costly rework processes and scrap of high-cost components. Hoenle UV masking materials can be applied quickly, accurately, and provide dependable, edge-to-edge surface protection.



Turbine Component Masking

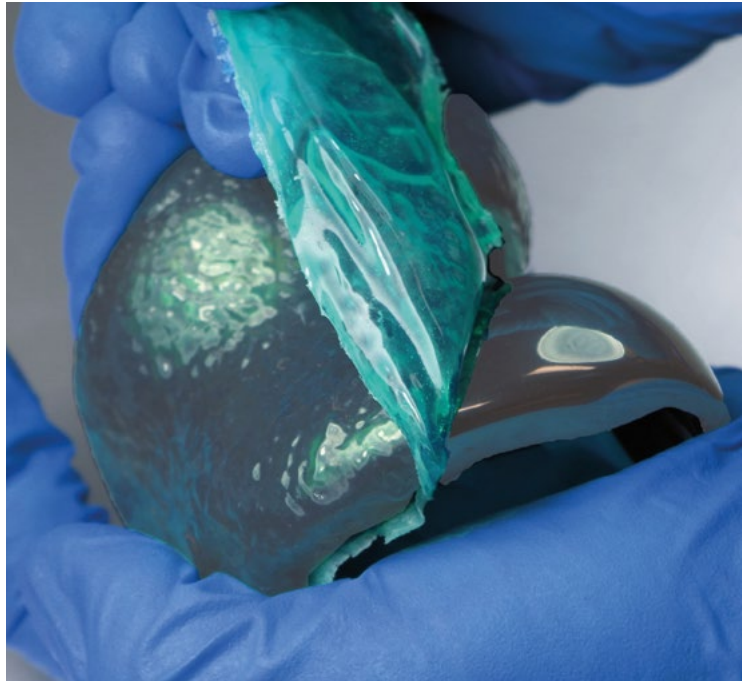
UV curable masking materials from Hoenle are ideally suited for turbine component production and subsequent overhaul and repair operations. These UV masks provide the performance required for acid stripping, grinding, shot peening, plating, air flow testing, plasma coating, and some HVOF processes. In many lower impact processes, UV mask removal can be accomplished by a simple room temperature peel or a hot water dip and peel. For nickel alloy components that

undergo very rigorous processing, more resilient UV masks are utilized with substantially higher adhesion. Removal is best accomplished through incineration. Existing ovens used for component heat treating are usually sufficient for the required incineration process. Hoenle's UV mask materials will burn cleanly, leaving no residue. Turbine blades, vanes, stators, nozzles, and transitions can be processed faster and with more consistent results.

UV Masks for Orthopedic Devices

A segment of the Medical Device Industry can also benefit from these UV masking materials. Orthopedic implants made of metal alloys are exposed to grit blasting, polishing and coating processes. They require masking that provides superior surface protection and flawless performance. This is achievable with Hoenle's UV masking materials. They are ideal for masking orthopedic screws, plates, and prostheses. The masks come off cleanly, leaving no residue behind.

The advantages of using Hoenle's masking products to protect high-value, labor intensive components and assemblies are significant:



Advantages of UV Masks

- › Solvent-free, single coat application
- › Conforms precisely to component geometry
- › No surface residue after removal
- › Cures in seconds for continuous in-line processing
- › Easy application and removal after processing
- › Consistent performance for improved quality



Each of these advantages can be dollarized to reflect the actual process cost savings derived from using Hoenle UV curable masking materials.

Hoenle UV Masking Materials

As an aid to product selection, an overview of Hoenle UV Masks is shown in the table below.

Process	Vitalit® Mask					
	20100	20101	E-20102-G	20102-G GEL	20104	20107
Air Plasma/HVOF		x	x	x		
Acid Strip		x	x	x		
General Plating		x	x	x		
Plating of Nickel Alloys		x				
Anodizing			x	x		x
Grit Blast	x		x	x	x	x
Shot Peen	x		x	x	x	x
Machining or Grinding	x	x	x	x		x
Polishing	x		x	x		
Laser Drill						
Airflow Test						
Paint						x
Powder Coat						x
PCB Assembly/Coating						
Plastic Surface Masking						
Viscosity (mPas)	200 - 400	10,000 - 40,000	8,000 - 15,000	50,000 - 70,000	14,000 - 17,000	40,000 - 60,000
Features	Moderate adhesion water soluble mask	Hard, highest adhesion, acid resistant	High adhesion, durable, green color	High viscosity, thixotropic gel version of 20102-G	Moderate adhesion	Moderate adhesion
Application Method	Spray, needle, spatula	Syringe needle, spatula	Needle, spatula, dip, spray	Syringe needle, spatula, dip, spray	Syringe needle, spa- tula	Syringe needle, spatula, spray
Cure Method*	UV	UV or heat	UV	UV	UV	UV
Removal Method	Dissolve in hot agitated water	Incinerate @ 900°F or higher (approx. 500°C)	Peel after hot water soak, 2-3 minu- tes @min. 176°F/80°C	Peel after hot water soak, 2-3 minu- tes @min. 150°F/65°C	Peel @ room temperature	Peel after hot water soak, 2-3 minu- tes @min. 122°F/50°C
	*Note: Appropriate wavelength for UV curing and temperature					

If required, Hoenle can modify existing products to create customized UV masking solutions for unique component designs and processes.

Vitalit® Mask							
20108	20109	20110	20111	20114	20115	20116	20117
x					x		x
x					x	x	
x					x		x
x					x	x	
	x		x				x
	x						
x					x		
				x			
	x	x					
	x	x	x				
	x	x	x				
			x				
			x				
7,000 - 9,000	15,000 - 40,000	50,000 - 70,000	30,000 - 50,000	90 - 150	thixotropic	50,000 - 70,000	20,000 - 30,000
Lower viscosity than 20101	Low adhesion	Very thick, low adhesion	Mask for protective coatings, wave solder, white color	Low viscosity cavity fill	Controlled flow properties, extremely clean burn-off	High viscosity cavity fill	Highest adhesion peelable mask, green color
Dip, spray	Syringe needle, spatula	Syringe needle, spatula	Needle, spray, jet dispense	Syringe needle, pourable	Dip, spray	Syringe needle, spatula	Syringe needle, spatula, spray
UV or heat	UV	UV	UV	UV or heat	UV	UV or heat	UV
Incinerate @ 900°F or higher (approx. 500°C)	Peel @ room temperature	Peel @ room temperature	Peel @ room temperature	Incinerate @ 900°F or higher (approx. 500°C)	Incinerate @ 900°F or higher (approx. 500°C)	Incinerate @ 900°F or higher (approx. 500°C)	Peel after hot water soak, 2-3 minutes @ min. 150°F/65°C

for secondary heat curing can be obtained from the TDS.

Process Solutions with Hönle UV Technologies

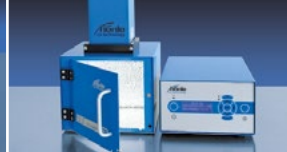
Hoenle AG is an international supplier of UV technology and offers curing units with UV LEDs and conventional medium-pressure lamps. Hönle and Hoenle attach great importance to joint research and development. The combination of decades of experience leads to optimally coordinated high-tech system products for bonding applications.

LED Spotlights
High-intensity punctiform
UV irradiation

Blueprint



LED Cube



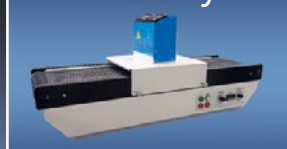
LED Curing Chambers
Reliable protection against
UV radiation

LED Line Emitters
High-power arrays with
individual length

LED Powerline



Convey LED



LED Conveyor Belts
Can be combined with LED
Powerline or LED Spot for
high output

LED Floodlights
Homogeneous light distri-
bution with high intensity

LED Spot



UV Meter



UV-Measurement
Measurement of intensity
and dose for reliable process
monitoring

UV Sources	Dimension in mm	Available Wavelength in nm	Intensity in mW/cm ²	Cooling
LED Spotlights	Light emission up to Ø 20	365/385/405	up to 20.000	air-cooled
LED Line Emitters	Light emission width 10/20/40, length variable	365/385/395/405/460	up to 25.000	air and water-cooled
LED Floodlights	Light emission 20x20 / 40x40 / 100x100 / 200x50	365/385/395/405/460	up to 30.000	air and water-cooled
LED Curing Chambers	Inner dimension 180x180 / 350x350	365/385/395/405/460	up to 5.000	air-cooled
LED Conveyor Belts	Belt width 110 - 520	365/385/395/405/460	up to 25.000	air and water-cooled

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