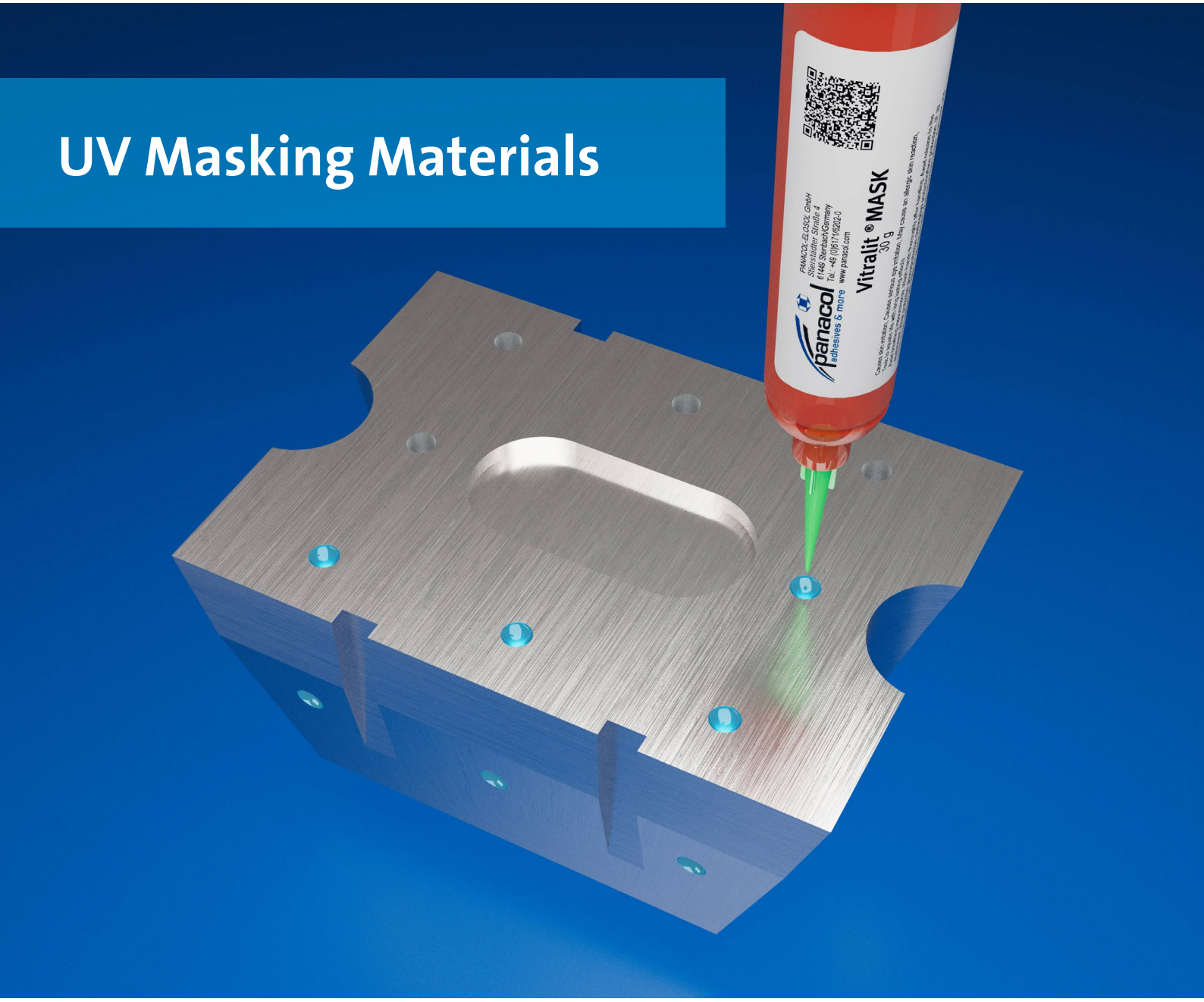
hönle group

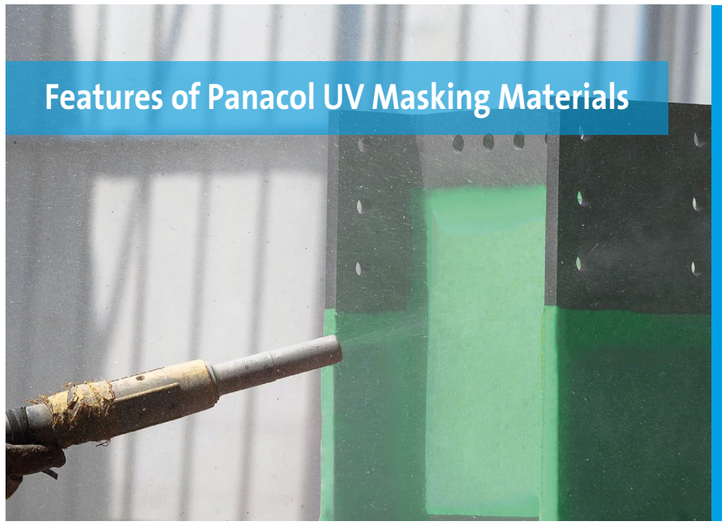
panacol adhesives & more

# UV Masking Materials




**Temporary Surface Protection for:**

Plating
Sandblasting
Anodizing
Powder Coating
Surface Finishings

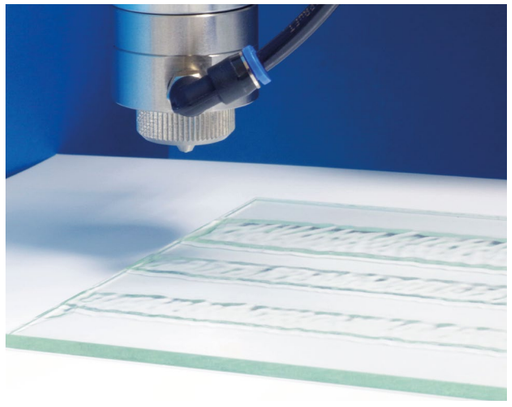


## Features of Panacol UV Masking Materials

- 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

Panacol 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 Panacol applications engineers. Their in-depth knowledge of compatible, commercially available dispensing systems can simplify the conversion to Panacol's UV masking process.



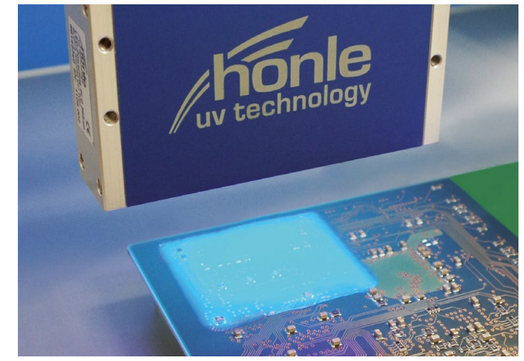
## UV Mask Selection

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 Panacol 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 Panacol 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, Panacol offers a broad selection of high intensity LED curing equipment that is manufactured in Germany by Dr. Hönle AG. LED heads and arrays are compact, and can be positioned to create optimized curing processes offering the shortest possible cycle times.

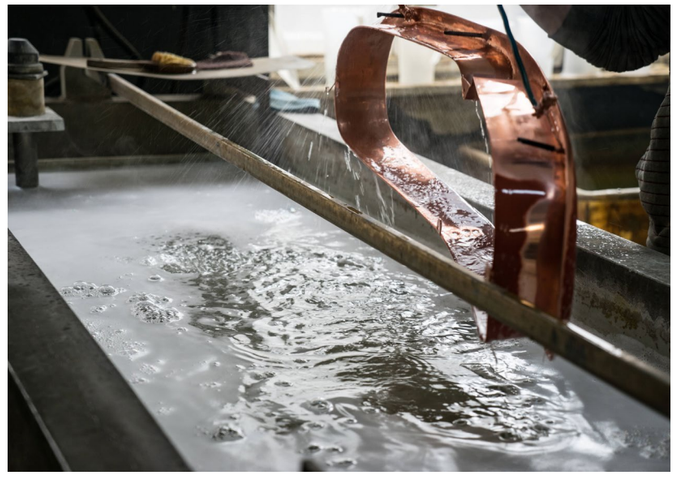


## UV Mask Removal

Panacol 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)

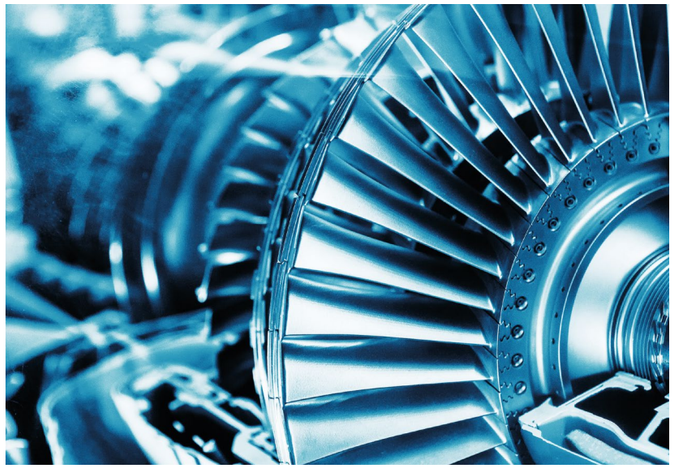
Choosing the appropriate UV mask removal option is dependent on the component configuration, type of process, and the allowable cycle time for completion. When fully cured, the Panacol UV masking material can be categorized as an industrial plastic, and should be disposed of in accordance with local 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

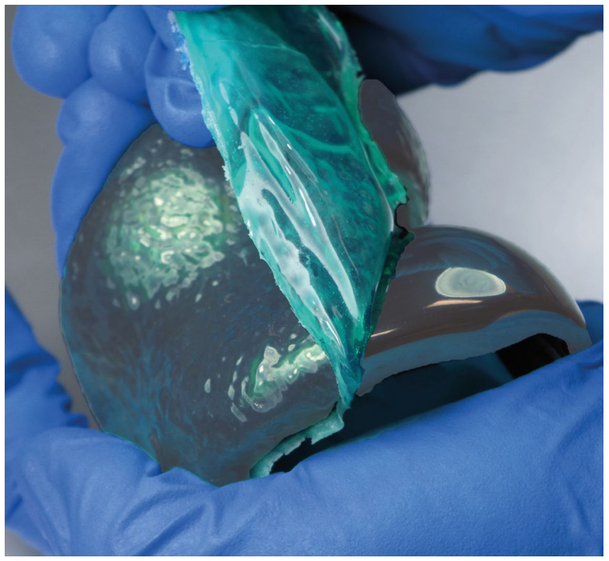
Panacol high performance UV curable masking materials are suitable for a variety of applications and industries. They are primarily designed to provide temporary surface protection for surface finishing applications including blasting, peening, and electroplating/anodizing. These UV masking materials 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 Panacol's UV mask materials.

Panacol 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. Panacol UV masking materials can be applied quickly, accurately, and provide dependable, edge-to-edge surface protection.



## Turbine Component Masking

UV curable masking materials from Panacol 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. Panacol'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 Panacol'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 Panacol-USA's masking products to protect high-value, labor intensive components and assemblies are significant:

- 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 Panacol UV curable masking materials.

## Panacol UV Masking Materials

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

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

| Process | Vitralit® Mask | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20100 | 20101 | E-20102-G | 20102-G GEL | 20104 | 20107 | 20108 | 20109 | 20110 | 20111 | 20114 | 20115 | 20116 | 20117 |
| Air Plasma/HVOF | | x | x | x | | | x | | | | | x | | x |
| Acid Strip | | x | x | x | | | x | | | | | x | x | |
| General Plating | | x | x | x | | | x | | | | | x | | x |
| Plating of Nickel Alloys | | x | | | | | x | | | | | x | x | |
| Anodizing | | | x | x | | x | | | | | | | | |
| Grit Blast | x | | x | x | x | x | | x | | x | | | | x |
| Shot Peen | x | | x | x | x | x | | x | | | | | | |
| Machining or Grinding | x | x | x | x | | x | x | | | | | x | | |
| Polishing | x | | x | x | | | | | | | | | | |
| Laser Drill | | | | | | | | | | | x | | | |
| Airflow Test | | | | | | | | x | x | | | | | |
| Paint | | | | | | x | | x | x | x | | | | |
| Powder Coat | | | | | | x | | x | x | x | | | | |
| PCB Assembly/ Coating | | | | | | | | | | x | | | | |
| Plastic Surface Masking | | | | | | | | | | x | | | | |
| Viscosity (mPas) | 200 - 400 | 10,000 - 40,000 | 8,000 - 15,000 | 50,000 - 70,000 | 14,000 - 17,000 | 40,000 - 60,000 | 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 |
| 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 | 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 |
| Application Method | Spray, needle, spatula | Syringe needle, spatula | Needle, spatula, dip, spray | Syringe needle, spatula, dip, spray | Syringe needle, spatula | Syringe needle, spatula, spray | Dip, spray | Syringe needle, spatula | Syringe needle, spatula | Needle, spray, jet dispense | Syringe needle, pourable | Dip, spray | Syringe needle, spatula | Syringe needle, spatula, spray |
| Cure Method* | UV | UV or heat | UV | UV | UV | UV | UV or heat | UV | UV | UV | UV or heat | UV | UV or heat | UV |
| Removal Method | Dissolve in hot agitated water | Incinerate @ 900°F or higher (approx. 500°C) | Peel after hot water soak, 2-3 minutes @min. 176°F/80°C | Peel after hot water soak, 2-3 minutes @min. 150°F/65°C | Peel @ room temperature | Peel after hot water soak, 2-3 minutes @min. 122°F/50°C | 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 |
| | *Note: Appropriate wavelength for UV curing and temperature for secondary heat curing can be obtained from the TDS. | | | | | | | | | | | | | |

## Process Solutions with Hönle UV Technologies

Dr. Hönle AG is an international supplier of UV technology and offers curing units with UV LEDs and conventional medium-pressure lamps. Hönle and Panacol 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

### LED Curing Chambers
Reliable protection against UV radiation

### LED Line Emitters
High-power arrays with individual length

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

### LED Floodlights
Homogeneous light distribution with high intensity

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

| UV Sources | Dimension in mm | Available Wavelength in nm | Intensity in mW/cm² | 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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