

Maskant Materials

by APV Engineered Coatings



**Maskant
Materials**

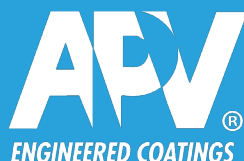


TABLE OF CONTENTS:

3	Introduction
4	What Are Maskants — and Why Do You Need Them?
5	APV's Maskant System: A Complete, Engineered Solution
5	A Modular System for Complex Needs
5	Maskant Powders: Precision Protection
6	Base Powders for High-Temperature Processes
6	Maskants for Lower Temperatures and Specialized Use
7	M-1 Rejuvenation
7	Maskant Binders
8	Water-Based Binders
8	Solvent-Based Binders
9	RTU Slurries
9	Pre-Mixed for Performance
9	Simplified Application
9	Reduced Waste and Rework
10	Tapes, Preforms, and Putty
10	M-1 Masking Tape
10	M-1 Preforms
10	M-10 Masking Putty
11	Diffusion Coating Removal
12	Coating Powder and Specialized Application Equipment
12	P-1 Powder for Pack Diffusion Coating
13	Application Equipment and Process Integration
14	Why Partner with APV for Maskant Solutions

In industries where heat, pressure, and chemistry converge, surface integrity is everything. APV Maskant materials provide targeted protection for industrial applications during high-temperature diffusion coating and chemical vapor deposition processes.

At APV Engineered Coatings, masking is a science. With over 140 years of experience in advanced materials and custom formulations, APV offers a complete system of maskant materials designed to protect completely, perform reliably, and remove cleanly.



What Are Maskants — and Why Do You Need Them?

Maskants are specialized materials used to shield selected areas of a part during high-temperature diffusion coating processes. Their purpose is simple: prevent coating formation or alloy diffusion onto surfaces where the coating will harm and disqualify parts.

In environments where turbine blades operate under extreme heat and stress, the reliability of uncoated zones is just as critical as the coated zones.

Diffusion aluminizing, chromizing, and chemical vapor deposition (CVD) coatings provide resistance to oxidation, corrosion, and wear. However, not every surface of a super-alloy turbine blade can receive the same treatment.

Threaded holes, joints, mating surfaces, and critical tolerances must remain clean and dimensionally stable. That's where maskants provide essential protection.

APV Maskants prevent serious downstream issues. The right maskant helps maintain dimensional accuracy, component longevity, and process repeatability while reducing the need for rework, scrap, and costly inspection delays.

The right maskant
helps maintain
dimensional
accuracy,
component
longevity,
and process
repeatability while
reducing the
need for rework,
scrap, and costly
inspection delays.

APV's Maskant System: A Complete, Engineered Solution

APV Engineered Coatings offers an integrated system of maskant products expertly engineered to function cohesively across multiple coating environments.

A Modular System for Complex Needs

Masking is not a one-size-fits-all process. Successful surface protection depends on having the right combination of materials, each designed to perform a specific role under specific process conditions.

APV's maskant line includes dry powders, binders, slurries, tapes, putties, and strippers, all designed to meet the needs of high-temperature diffusion coating, including aluminizing and chromizing processes. These components can be used individually or in combination, offering the flexibility to adapt to complex part geometries and coating requirements.

Dry powders act as base diffusion barriers. Binders (available in both water- and solvent-based systems) create slurries that provide uniform application and adhesion. Tapes and preforms provide masking in difficult-to-reach areas or irregular surfaces. Specialized putties and strippers round out the system by enabling fine edge protection and safe coating removal.

This level of control gives manufacturers confidence, not only in the masking process itself, but in the performance and consistency of their coated parts. When each component is engineered to work in harmony, the result is a masking solution that's precise, repeatable, and trusted across critical industries.

Maskant Powders: Precision Protection

APV's specialized maskant powders serve as barriers that prevent coatings from diffusing onto designated surfaces during high-temperature aluminizing processes. Each powder is engineered with unique particle sizes and masking properties to suit different coating processes and temperature ranges.

These maskant powders cover a wide range of diffusion coating applications. Whether the goal is to mask complex geometry, create clean transitions, or accommodate multi-step processes, APV's maskant powders offer the flexibility and precision manufacturers rely on.

Base Powders for High-Temperature Processes

The most commonly used powder is M-1, a base metal powder maskant designed for coating cycles above 1500°F. M-1 can be used as a dry powder or combined with APV binders to form maskant slurries. For applications that require sharper edge definition, M-10 offers the same maskant protection as M-1 but with a finer particle size — ideal for tighter tolerances and very detailed coat/no-coat zones.

M-7 is typically applied as an overcoat to M-1 or M-10. This overcoat creates an added barrier during diffusion treatment, forming a protective envelope that remains intact during high heat exposure. M-17 and M-107 maskants are also available where coating processes require additional barrier protection from aluminizing.

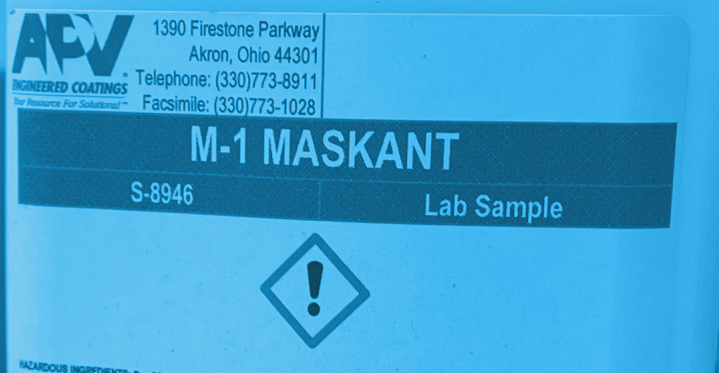


Maskants for Lower-Temperature Processes and Specialized Use

For diffusion coating below 1500°F, APV offers M-8 maskant. This powder is optimized for thermal stability at moderate temperatures and offers easy removal after processing. M-8 powder comes in standard gray color, and can be removed using non-metal tools, reducing the risk of surface damage.

M-8 powder color is also available in red and green to help identify specific areas of protection and avoid confusion.

M-5 powder is also available as a maskant for chromizing applications.



M-1 Rejuvenation

Another specialized application involves the rejuvenation of used M-1 maskant. Instead of discarding spent maskant material, customers may return the spent maskant to APV which has developed proprietary methods to reclaim, recondition and re-sell M-1 maskant. The rejuvenated M-1 has the same performance capabilities as the original M-1 maskant at a cost that is significantly less than the original M-1. This sustainable approach not only minimizes waste but also helps customers achieve substantial long-term savings on material costs.

Maskant Binders

APV offers both water-based and solvent-based binder systems. While powders form a barrier, binders bring structure and control to the masking process. When maskant powder and a binder are combined, they create slurries that are easy to apply, dry uniformly, and perform reliably. Each binder is developed to meet the high standards of industrial coating processes, helping manufacturers maintain process control, reduce variability, and ensure clean separation between coated and uncoated surfaces.

While powders form a barrier, binders bring structure and control to the masking process. When maskant powder and a binder are combined, they create slurries that are easy to apply, dry uniformly, and perform reliably.



Water-Based Binders

Water-based binders are ideal for preparing slurries with APV powders. Once applied and dried, the material volatilizes cleanly in the coating cycle, leaving behind a defined mask line without residue or contamination. APV's water-based options include B-100, B-200, and B-315. These binders are preferred for their low environmental impact and clean burn-off during high-temperature processing.

B-100 binder is a general-purpose system known for its reliable performance for standard applications. B-100 is often paired with M-10 maskant where fine detail is required, particularly for smaller turbine blades.

Alternately, the B-200 binder has a higher viscosity providing greater stability for thicker slurry applications. B-200 is often used with M-1 maskant for larger turbine blades where broader coverage is necessary.

B-315 is a low-VOC option that supports regulatory compliance without compromising performance. It is an excellent choice where environmental considerations are a priority, while still maintaining the reliability expected in high-performance masking systems.

Solvent-Based Binders

For environments where fast drying is essential or where water sensitivity poses challenges, APV's B-4 and B-40 solvent-based binders provide reliable adhesion with rapid evaporation. These binders simplify the masking process by minimizing the time and temperature required for oven drying in many applications.

RTU Slurries

For operations that prioritize speed, consistency, and ease of use, APV's Ready-to-Use (RTU) slurries offer a turnkey solution. These pre-mixed materials eliminate the need for on-site slurry preparation, reducing operator variability, and saving production time.

Pre-Mixed for Performance

RTU slurries are available in formulations based on APV's most widely used powders, including M-1, M-10, M-7, M-8, M-107, and M-18. Each blend is combined with the appropriate binder to form a homogenous, application-ready slurry with extended shelf stability.

Because these materials are pre-measured and expertly mixed at APV's facility, they maintain uniform consistency batch after batch. This level of control supports tight process specifications and helps improve masking uniformity during the coating cycle.

Simplified Application

RTU slurries are easy to apply using standard techniques such as brushing or dipping. Once applied, they dry evenly and hold firmly through high-temperature diffusion cycles. Operators no longer need to weigh powders, measure binder ratios, or adjust viscosity because all of that is handled in advance.

This simplified workflow frees resources on the production floor while supporting a more predictable and repeatable masking process.

Reduced Waste and Rework

By removing the variables tied to manual slurry preparation, RTU slurries help manufacturers minimize waste and reduce the risk of errors that could lead to rework or part rejection. RTU slurries are ideal for facilities focused on lean operations and continuous improvement, offering a reliable way to improve both throughput and quality.



Tapes, Preforms, and Putty

Complex parts often have areas where powders and slurries are difficult to apply precisely. For challenging geometries such as those found on turbine platforms, airfoil roots, and manifold edges, APV offers flexible masking materials in the form of tapes, preformed sheets and putty. These products complement APV's broader maskant system, offering physical barriers that are both reliable and easy to apply.

M-1 Masking Tape

APV's M-1 Masking Tape combines M-1 powder with a clean-burning organic binder in a flexible adhesive format. This tape is particularly effective as a gasket material in tight spaces, such as between turbine blade roots and manifolds, where coating gases are likely to escape onto no-coat surfaces.

APV tape is available in multiple widths with thicknesses around 0.040 inch. It can be supplied with one- or two-sided adhesive backing. The flexibility of M-1 tape allows it to easily conform to curves and contours, creating a tight seal with minimal surface preparation.

M-1 Preforms

M-1 Preforms take the masking tape concept even further. These custom, adhesive-backed gaskets are designed to fit unique part shapes that are difficult or time-consuming to mask using traditional methods. With a standard thickness of 0.050 inches they can be cut or molded to fit exact specifications, delivering precise, effective coverage for even the most irregular surfaces.

M-10 Masking Putty

Not every surface can be covered with tape, preform, or slurry. Some components have small cavities, threaded holes, or irregular features that require a more adaptable masking material. For manufacturers looking to enhance precision masking in complex assemblies, M-10 Masking Putty offers an ideal solution. A highly moldable adjunct to dry and slurry-based systems, its versatility, clean removal, and compatibility with APV's broader maskant system make it a go-to choice for challenging applications.



This putty can be pressed into gaps or formed around edges to create a physical barrier where other materials may not hold as effectively.

Formulated with the same base materials as APV's high-temperature powders, M-10 putty burns off cleanly during processing and maintains a clean release profile. This putty can be pressed into gaps or formed around edges to create a physical barrier where other materials may not hold as effectively. The putty conforms to surfaces, ensuring full coverage and limiting the potential for coating intrusion.

M-10 putty is supplied in 4"x4" pieces and does not require a parting layer to prevent sintering, making it faster to apply and easier to clean up post-process. Once the coating cycle is complete, the material can be removed without leaving ash or residue behind.

Diffusion Coating Removal

APV's ASC 2-N Stripper is a blue, crystalline compound that dissolves in water and is used in combination with nitric acid to effectively remove aluminide coatings from superalloy turbine blades that have been exposed to engine heat. This blend is particularly useful in aerospace turbine overhaul and repair applications, where part inspection requires the complete removal of an existing protective layer before considering reuse.

One of the key advantages of ASC 2-N Stripper is that it works at room temperature. There's no need to heat the solution, which simplifies processing and improves safety for operators. Its granular form also allows for precise mixing and dosing depending on the scale of the operation.



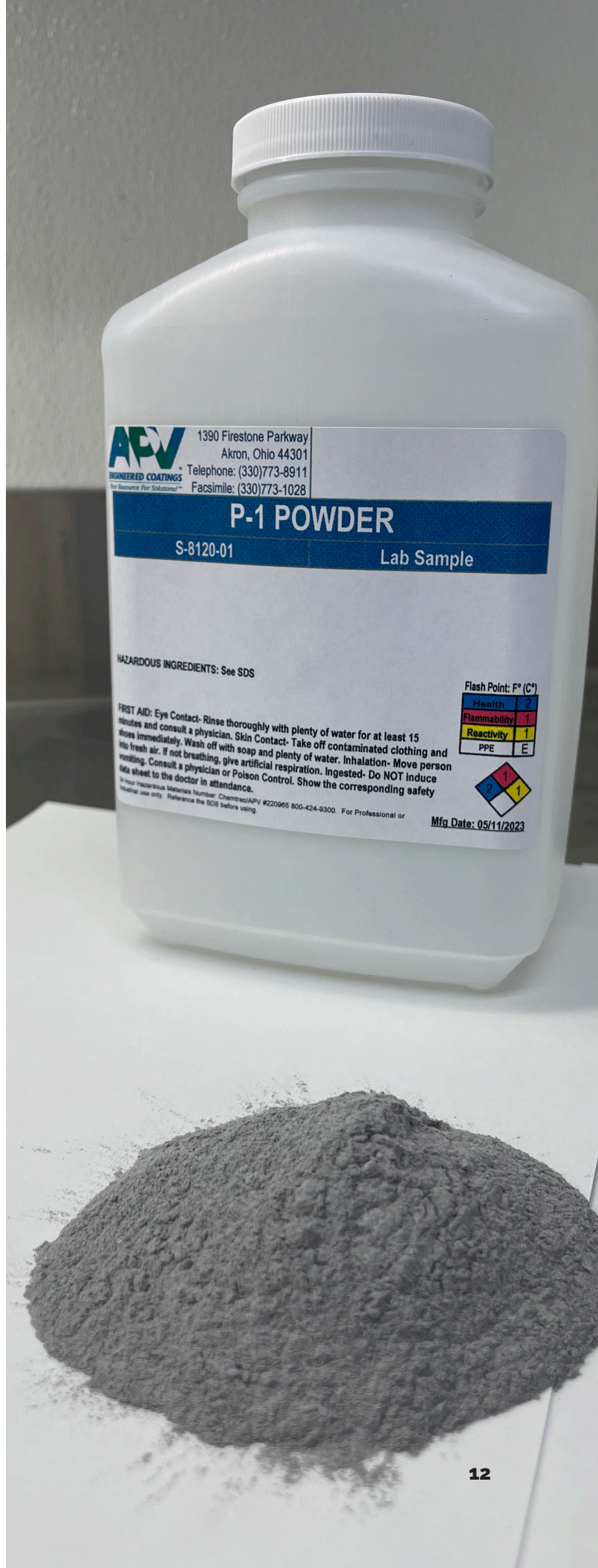
Coating Powder and Specialized Application Equipment

P-1 Powder for Pack Diffusion Coating

While APV maskant products are designed to block coatings, APV also offers P-1 diffusion coating powder. P-1 powder introduces aluminum and chromium during the high-temperature diffusion coating process.

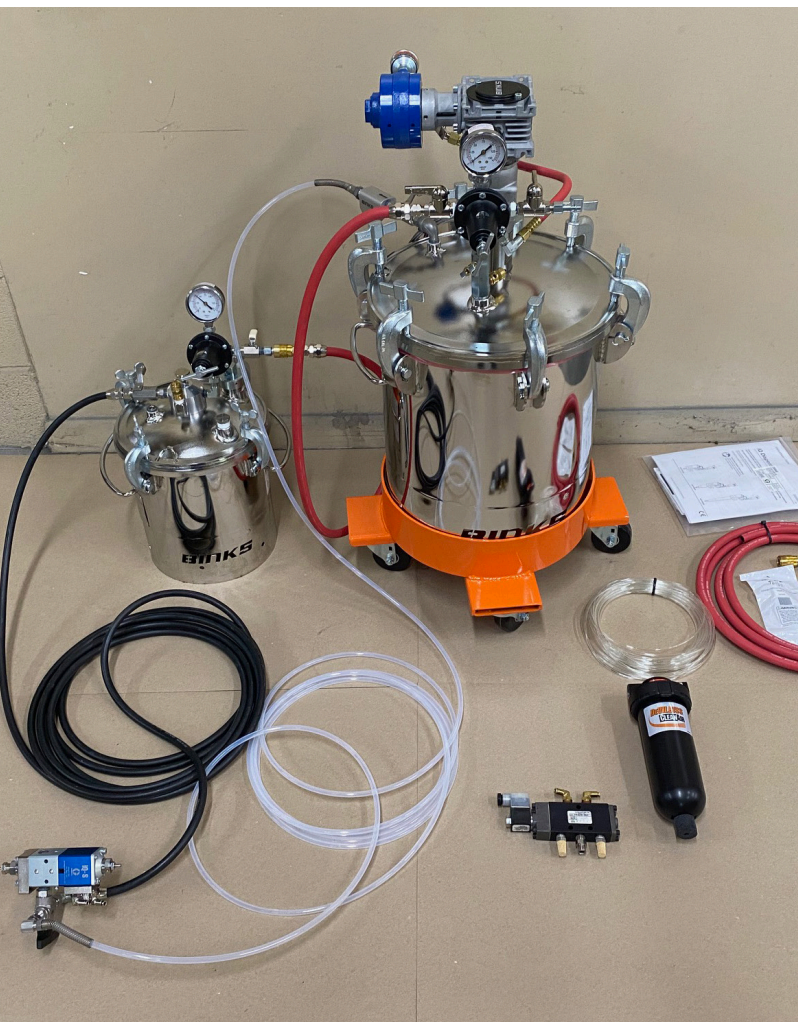
P-1 Powder is a pack aluminizing material used on nickel-based and cobalt super-alloys. During thermal treatment, the powder diffuses aluminum and chromium onto the part's surface, forming a corrosion-resistant layer that protects the component in high-temperature environments. The material is approved under PWA 252 specifications, aligning with strict aerospace standards and offering confidence in critical applications.

P-1's performance makes it ideal for parts exposed to oxidizing environments within turbine engines. The powder is typically used in diffusion coating applications where consistent pack coating behavior is required.



Application Equipment and Process Integration

As industrial coating technologies evolve, so too must the specialized equipment that supports them. APV is committed to advancing the science of masking systems, with a focus on product performance, process efficiency, and operator usability.



APV offers industrial slurry mixing and dispensing equipment designed for precise application in automated systems or manual operations. This equipment reduces process variability and streamlines masking across high-volume production.

Application equipment is custom-designed to meet your exact specifications. Once installed, APV provides ongoing support to ensure smooth operation, including prompt service for any breakdowns or disruptions.

Continual innovation is a core part of APV's approach. By improving both the materials and the methods used to apply them, the company ensures its masking technologies stay ahead of the demands of modern manufacturing.

Why Partner With APV for Maskant Solutions

Choosing the right masking materials is only part of the equation. The expertise behind the formulation, the consistency of the supply chain, and the ability to adapt to complex manufacturing requirements all contribute to a successful outcome. APV delivers on all fronts. Here's why manufacturers around the world choose to work with us:

- **Comprehensive Product Line:** APV offers a full spectrum of masking solutions, including powders, binders, slurries, tapes, putties, stripping products and application equipment. Each product is designed to work seamlessly with others, giving manufacturers the flexibility to build masking systems tailored to their specific processes.
- **Customer Engineering Support:** Our team works closely with customers to develop custom maskant formulations and delivery methods that address unique application needs. Whether it's modifying a binder for improved processing or designing a preform for an unusual geometry, APV offers collaborative development and technical expertise.
- **Proven Manufacturing Capability:** With over 300 pieces of equipment across a 14-acre facility, we have the capacity, and the experienced operators to supply maskant products to our customers at any scale. We also manufacture the application equipment to dispense maskant products.
- **Quality Standard:** APV has been certified to ISO 9001 with design since June 21, 1997.
- **Global Reach With Local Focus:** APV distributes to over 26 countries, but our approach is always personal. We provide responsive support and logistics coordination to meet tight production schedules and evolving regulatory requirements.
- **Commitment to Innovation:** At APV, we don't just supply products — we deliver complete solutions, including custom-designed application equipment to optimize their performance. Our ongoing R&D in maskant technologies ensures that our offerings remain at the leading edge of industry innovation.

As coating requirements grow more exacting, your masking strategy needs to keep pace. APV is ready to help you do just that — with materials built to perform and a team focused on your success. When you partner with APV, you gain a supplier and, most importantly, a trusted team focused on your success.



Conclusion

APV Engineered Coatings is a trusted partner for businesses seeking reliable and efficient masking solutions. Our maskant materials come in various forms, including sprays, pastes, powders and tapes, to provide versatility in application and usage.

APV's maskant materials are formulated to meet various industries' specific requirements, ensuring optimal performance and protection against damage or corrosion during processing. They are designed to be user-friendly and easy to apply, making manufacturing processes more efficient. These maskant products boast superior adhesion and durability ensure long-lasting protection against harsh environments and wear and tear. Colors can be customized to help identify specific areas of protection.

By choosing APV Engineered Coatings as your masking partner, you gain a dedicated team of professionals committed to turning your product ideas into reality and ensuring quality, efficiency and success in every step of the process. **Contact us today to get started!**