Conformal Coating: Application, Removal, Quality Specifications

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Conformal coating is used to protect printed circuit boards (PCBs) from operating conditions that impede function and performance. Factors such as chemical intrusion, exposure to heat/moisture, particulate contamination or temperature extremes can lead to assembly failure. Conformal coatings are applied in very thin layers on top PCBs to generate the necessary component defense. Selecting a supportive application method is as important as choosing the appropriate coating material; PCB malfunction and failure can result in either case, if the wrong decision is made.

Conformal Coating Application Methods

Operationally, conformal coatings are applied to the surface of PCBs and related electrical components, to insulate and protect them during use. Coatings improve PCBs' performance under any circumstances, but are especially valuable for their functional tolerance to harsher working environments.

Liquid coatings are so-termed because they are applied to PCBs by means of wet methods, primarily by brush, dipping (component immersion) or automated/manual spraying. The primary liquid coatings are constituted from acrylic, epoxy, silicone or urethane resins. A fifth coating material, parylene, uses a chemical vapor deposition (CVD) method to apply the substance to substrates in a gaseous form.

Material selection is largely dependent on the type of PCB being coated and its function. Selecting an inappropriate coating material inevitably leads to product malfunction or breakdown. Equally as important is selection of the coating method most suitable to the film material and PCB-operation; a bad match can also cause poor performance and device failure. As well, application results are dependent upon process humidity and temperature, requiring further attention pre-coat and careful monitoring through application and curing.

Brush Application

Here, the selected wet coating is manually applied onto the PCB with a brush. This method has the benefits of:

- relative ease applying the coating to the designated regions of the PCB surface, and
- cost-effectiveness for small-batch production.

Manual brush-coating has several disadvantages, which can emerge regardless of the operator's experience or level of skill. The surface of some PCBs may be complicated or irregular, making it difficult to apply an even coat across the designated PCB-area. Coats that are too-thin provide inadequate protection, leaving the component vulnerable to infiltration from external agents (moisture, oil, etc.). Overly thick conformal films are prone to cracking, similarly exposing the PCB; cracking of too-thick films occurs especially during thermal cycling. In addition, brushing allows only one side of a PCB to be coated at a time, slowing production.

Dipping Methods

Dipping immerses a PCB entirely in a fluid conformal solution; the film forms around the assembly while submerged. The dipping process can be done manually, but use of automated equipment is becoming more common. Typically, PCBs attached to a mechanical arm are lowered into a dip-tank containing the liquid coating; immersion rate is set by the quantity of assemblies being coated.

Advantages of the dip method include reliable coating penetration under components and generally fast processing, outside of intensive manual masking , which slows production time. Further disadvantages include:

- erratic edge/tip coverage despite thorough immersion in the dip tank, and
- often inconsistent coating thickness.

Also, coating problems can emerge if an assembly's components are situated too-closely on the circuit board, limiting immersion's efficiency reaching all areas of the assembly.

Automated/Manual Spraying

Spray applications can be exceptionally cost-effective. A well-trained operator can provide superior coating surface-quality, in comparison to other liquid application methods. At the same time, robotics has become a key component of high volume spray application jobs. Automated spray procedures generate enhanced project accuracy, resulting in better coatings produced faster. Dedicated spray booth applications offer efficient medium-level production. Manual benchtop spray coating is recommended for smaller-scale rework and repair assignments.

Spray coating provides these advantages:

- high-level production volume,
- enhanced edge/tip coverage,
- reduced masking, and
- better film uniformity.

Disadvantages include:

- over-application, leading to thicker coats than recommended for optimal assembly performance,
- diminished film-penetration under components, and
- blooming/cobwebbing.

This is the case with either a well-trained application technician or robotics – automated aerosol spray procedures -- which

- generate enhanced project accuracy,
- very efficiently for high-volume spray assignments,
- leading to better coatings produced faster.

Chemical Vapor Disposition (CVD)

Chemically inert parylene uses a vapor-phase, chemical-vacuum polymerization process – CVD – to convert powdered parylene dimer into a gaseous form, in a vacuum. Conversion occurs on a molecule-by-molecule basis, allowing parylene to penetrate the most minute surface crevices of the substrate, tightening even multi-layer elements with uniform, pinhole-free coating. CVD's primary benefits include:

- production of consistently high-quality conformal films
- that resist chemicals, corrosives, moisture and solvents,
- with outstanding dielectric properties and minimal thermal expansion.
- True, micron-thin conformance to substrate contours protects PCBs'
- function/performance through an exceptional range of operational conditions.

CVD-applied parylene coatings are successful in the nanometer range making them very useful for MEMS/nano-technologies.

CVD's disadvantages include:

- greater expense than any liquid technology,
- small batch-size/greater turn-around time, and
- difficulty reworking/repairing coatings.

Summary

Selecting the best material/application method for your coating assignment prolongs assembly service-life and promotes optimal performance. Diamond MT's 30 years' experience combines with its staff of highly-trained personnel, quality materials and process solutions to generate optimal implementation of your conformal coating assignments.

Selecting the Right Method of Conformal Coating Application

Application methods must first reflect the targeted substrate's susceptibility to the coating material. Liquid coatings – acrylic, epoxy, silicone and urethane – each possess specific performance properties. Optimal protection and operational efficiency depend on

- matching the coating material's specific properties with an application process
- supporting good interaction between the coating and the PCB,
- leading to reliable assembly performance.

Doing so also limits development of coating defects prior to initiating the coating process.

Choosing the most appropriate coating method is dependent on material considerations, of both:

- the PCB's purpose and performance expectations throughout its lifespan, and
- the resin's properties (chemical, electrical, physical, etc.).

Selection criteria include:

- coating compatibility in relation to PCB function,
- operational temperature range,
- sources of potential contamination (chemical, moisture, salt/sand, etc.), and

- specialized, project-specific conditions (coefficient of expansion requirements, etc.).

Regardless of the method used, ensuring robust, stable and uniform coverage requires coating thickness of 1-2 millimeters, another factor determining choice of application method, relative to resin selection and assembly function.

Optimal coordination between PCB type/use, coating material and application method achieves the coating quality specified by assignment directions. Matching application equipment and procedure to project requirements assures technical replication, making the coating process more efficient and less costly, thus generating enhanced film-uniformity during application. Factors of:

- throughput time – coating application speed,
- curing time,
- material cost, and
- rework

also figure in the overall selection of coating application method.

Spray Application

Either manual or automated spray techniques can be used for all liquid coating materials. Very cost-effective, spray applications also offer better coating surface-quality than other liquid application processes. Automated spray procedures enhance project accuracy, for high-volume spray assignments; masking requirements are reduced.

Dipping Methods

All four liquid coatings can employ dip-immersion processes for producing conformal films; large product-batches of epoxy respond very well to machine dipping procedures.

With dipping, electrical assemblies are immersed completely in the selected liquid solution; coating coalesces around the PCB during immersion. Dipping can be enacted either manually or with automated equipment. In either case, assemblies are submerged in a dip-tank containing the coating solution.

Unlike spray methods, dipping offers dependable under-component penetration. Extensive manual masking can be necessary, but dip processes are otherwise quick to finish. However, if an assembly's components are situated too-closely on the circuit board, coating problems may develop. Also, despite thorough immersion in the dip tank, inconsistent edge/tip coverage is a potential disadvantage, as are cases of irregular coating thickness. Dip process operators do not require higher level technical skills.

Brush Application

Manual brush-coating is recommended for smaller-batch acrylic and urethane assignments. Epoxy brush application is generally limited to work requiring extreme masking or development of prototype assemblies. Silicone brush-work is typically restricted to touchup operations, where the focus is reworking imperfect surfaces.

Simple and cost-effective, brushing is best-suited to small-batch production; it is too time-consuming to be feasible for larger-scale assignments. Among other process disadvantages:

- Only one side of an assembly can be coated at a time, slowing production.
- Complicated/irregular PCB surfaces interfere with application of uniform film-coating.
- Overly thick films readily crack during thermal cycling, leaving the component vulnerable to infiltration by moisture, oil, salt/sand, and external agents.
- Overly-thin coats similarly produces inadequate protection.

These problems can develop regardless of the operator's experience or level of skill.

Summary

A conformal coating's operational effectiveness depends largely on the selection of an application method that reflects the PCB's functional environment and expected longevity.

Spraying can be used for all liquid coating materials. In addition to high volume advantages, spray booth applications are effective for medium-level production. Manual benchtop spray coating is recommended for smaller-scale rework and repair assignments.

All four liquid coatings accept dip processes for creating conformal films; machine dipping is especially effective for coating large product batches with epoxy.

Despite procedural drawbacks that slow production, liquid brush application is recommended for acrylic and urethane. For epoxy, prototype assemblies or those requiring a lot of masking benefit from brush application. Brush coating for silicone is used primarily during coating touchup operations, reworking imperfect surfaces.

Conformal Coatings: Application Equipment and Quality Standards/Specifications

Conformal Coating Application Equipment

A variety of coating equipment is available for use in the conformal coating process. The most important for liquid coatings are described below.

Spray Booth

Dedicated spray booth conformal coatings are very cost-effective for medium- and higher-level production, with easy, even film application using a high-quality spray gun. Thorough ventilation is necessary to efficiently remove fumes generated by the process. Although manual spray coating is acceptable for low-batch assignments or rework, it is slow. Human error causing inaccurate application and varied coating thickness both generate rework, making manual spray less reliable for original coat. At the same time, manual spraying is suggested for assignments where components geographical layout will not accommodate a programmable spray coating approach.

Aerosol spray procedures can be automated for greater coating accuracy and faster production time. Manual and aerosol coating methods use liquid film material diluted with solvents to achieve an assignment-specific viscosity; spray application commences at a 45 degree angle, directed from all four quadrants.

Spray booth application produces surface finish quality often superior to all other methods. Repeat application generates optimal coating finish and protection. Robotics are increasingly used for high volume spray assignments. Whether the process is manual or automated, the objective is obtaining a combination of solvent dilution, nozzle pressure, and spray-pattern to meet assignment objectives.

Atomized spray coating provides a thinner film pass; however, if selectivity is required, application must proceed more slowly or the assembly's edges will be left with a feathered/fuzzy film finish. In addition to multiple spray booths for higher batch assignments, Diamond MT employs a range of HVLP spray guns for manual spraying processes, to accommodate customers' smaller orders.

Dip Machine Processing

Dipped conformal coatings are frequently applied by automated equipment. Dipping -- immersing PCBs in a coating solution -- is the most commonly-used liquid method, where high-volume turnaround is needed. Fast, dipping typically suspends an assignment-designated number of PCBs from a mechanical arm. Lowered into a dip-tank containing the liquid coating, their immersion rate is determined by total order-quantity.

Pre-dip preparation confirming no coating penetration into incorrectly masked keep-out areas is essential for dip machine coating. In addition to rapid processing, assured coating thickness is a major advantage of dipping. However, thin edge/tip coverage can result.

Variables that need to be considered include rates of immersion/withdrawal, and viscosity of the coating material. Masking is always rather intensive, slowing the process.

Very efficient for conformal film application, automated dip coating can be readily adapted for all volume production, large or small. Completely submerging the PCB in liquid coating material contained in the dip-tank, this method ensures the entire assembly is covered, including underneath components and around 3D boards with difficult topography. Moreover, there is no waste of coating material with dipping or need for subsequent over-spray.

Drying Cabinet

The drying cabinet extracts air surrounding recently coated circuit boards, curing and storing them following film application. This stage of the process simultaneously dries PCBs and removes potentially hazardous fumes, left behind during coating. The presence of either

- particles trapped under the coating's surface or
- uneven film thickness
- interfere with its purpose of providing the assembly's specified conformal protection.

The drying cabinet helps eliminate these problems. Physically, each PCB unit within the cabinet is positioned to be stationary, minimizing contact of airborne particles with the coating surface. Perhaps more important, coating-flow is eliminated, so the wet coating does not develop areas of uneven thickness.

Inspection Booth

Studying the recently-coated PCB with intensified, long-wave UV lighting in an inspection booth is recommended. The dark, enclosed space provides an ideal environment for examining the still-fluorescing film. Inspection detects regions of the coating surface that require manual touchup. The inspection booth is also the station where electrostatic discharge (ESD) points are attached to the PCB, to prevent development of any ESD issues during operation.

At Diamond-MT, we utilize two inspection booths; one for inspection and one for coating touchup.

Quality Management/Performance Certifications for Conformal Coating Firms

Conformal coatings differ in their material-specific performance properties as protective films for electronic assemblies. Knowing the operational characteristics of various coating-types and their functional association with assembly components supports successful film application. Issues that confound conformal coating selection and application result from potential post-application problems like:

- abrasion,
- corrosion,
- mismatched CTEs,
- outgassing,
- trapped moisture/residue, and
- rework/repair.

To this end, a range of professional standards and specifications have been created for conformal coatings to assure quality control of operational and material conditions.

Quality certifications are awarded firms that meet industry-best standards/specifications. Receiving certification represents a firm's commitment to providing customers superior conformal coatings, ensuring optimal function, performance reliability and product-life.

These certificates are awarded conformal coating firms with appropriately implemented quality management systems (QMS) for their products and processes:

American National Standards Institute (ANSI), ESD S20-20 – Sets standards for protecting electrical/electronic parts, assemblies and equipment susceptible to ESD damage.

AS9100C – A widely accepted quality management system released by the Society of Automotive Engineers and the European Association of Aerospace Industries for aviation, space and defense applications, AS9100C focuses on development/documentation and administration of QMS for conformal coating, with a commitment to customer support.

International Organization for Standardization (ISO) 9001:2015 – An independent international, non-governmental organization, ISO provides world-class specifications for products, services and systems, to ensure quality, safety and efficiency. 9001:2015 is awarded firms that consistently provide products/services meeting customer satisfaction and applicable statutory/regulatory requirements, through QMS.

IPC 9001 -- The Association Connecting Electronics Industries, IPC is a global trade organization accredited by ANSI for developing classification-standards pertinent to the conformal coating industry. IPC's Class 3 Standard for Coating Requirements provides guidelines for maintaining reliable performance under challenging operational conditions. Like

ISO 9001:2015, IPC 9001 specifies QMS-guidelines for customer satisfaction through ongoing systemic improvement, while conforming to applicable statutory and regulatory requirements. As an industry leader, Diamond MT has been a member of the IPC since January 2012. Other IPC standards applicable to provision of conformal coating services include:

IPC CLASS 3 Standard for Coating Requirements - Class 3 — High Performance Electronic Products -- Includes products where continued high performance-on-demand is critical, minimal equipment downtime, and uncommonly harsh end-use environments, as for life-support or other critical systems.

IPC-7711/7721: Rework and Repair – Delineates appropriate processes for removing and replacing conformal coating; also stipulated are procedures for modification/repair of laminate material, conductors, solder, and plated through-holes.

IPC-A-610 Acceptability Standard – Provides illustrations of quality-acceptance requirements for PCB/assembly performance, that exceed minimal end-item operation criteria. Coating thickness requirements are set by IPC-A-610, according to the coating material and assembly function. Also provided are product classifications, according to function, in three categories. More explicitly:

- *CLASS 1 -- General Electronic Products*, those whose primary requirement is efficient assembly function.
- *CLASS 2 -- Dedicated Service Electronic Products*, focuses on extended PCB life and performance, where uninterrupted service is preferred but not critical, and end-use conditions are insufficient to cause assembly failure.

- *CLASS 3* -- *High Performance/Harsh Environment Electronic Products*, where minimal equipment-downtime and consistent performance-on-demand is required in harsh end-use environments, including aerospace, military, fire-control, life-support, or similar critical-system functions.

IPC-CC-830: Dictates appropriate qualification and conformance requirements for conformal coatings, delineating optimal-confidence criteria, and minimum test-redundancy for all conformal coatings types, encompassing three categories:

- Testing each product batch for quality of processes/materials for the specific coating assignment.
- Assuring quality-retention for a specified performance-duration, tested every two years.
- Coating quality conformance under these conditions, tested every year.

IPC-CC-830B -- Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies – sets standards for maximal confidence in conformal coating performance under military-grade/ruggedized performance conditions.

***National Aeronautics and Space Administration* (NASA)-STD-8739.1** -- An independent agency of the executive branch/U.S. federal government responsible for aeronautics/aerospace research and the civilian space program. Sets practice/documentation requirements for reliable conformal coating of PCBs and related electronic assemblies, including fabrication/inspection procedures for:

- NASA-generated assignments,

- specialized coating processes,
- supplier innovations, or
- technological changes
- customized to program applications,
- for obtaining cost-effective, best-quality coating solutions.

National Aerospace and Defense Contractors Accreditation Program (NADCAP) Audit Criteria for Circuit Card Assemblies AC7120 Rev A – NADCAP provides QMS accreditation for firms doing business with the aerospace industry. For conformal coatings:

- *AC7120 Rev A* sets test guidelines/performance criteria for conformal coating use on aerospace/defense PCBs/assemblies. *Section 14, Coating and Encapsulation* provides specific auditing standards for conformal coating.
- *AC7109* provides audit criteria for liquid conformal coatings.
- *AC7109/2/Audit Criteria for Vapor Deposited Coatings Physical Vapor Deposition (PVD)-Chemical Vapor Deposition (CVD)* covers audits for coatings like parylene, using vapor rather than liquid application methods.

Unfortunately NADCAP does not have a conformal coating specific specification, so it is impossible for coating-only companies like Diamond-MT to become NADCAP certified.

Surface Mount Technology Association (SMTA) – Provides instruction/accreditation for conformal coating application, masking and rework/removal processes, including those for microsystems and emerging technologies.

Summary

Advantages of spray coating are high batch volume, reaching the level of 1000’s of PCBs/week. Compared to the dip method, overall masking is reduced for spray coating, which also offers enhanced edge/tip coverage and thickness uniformity. However, achieving the desired coating thickness requires multiple passes; also, lower-level coating penetration under components results, in comparison to machine dipping. The relative advantages of each method need to be considered before initiating the coating process.

Accredited quality specifications/standards present achievable and necessary performance benchmarks for application of coatings to PCB/assembly substrates. Diamond MT recognizes the importance of aligning coating types and processes according to these standardized specifications, supporting product quality, while meeting clients’ and the industry’s material and operational performance requirements.

Removing Conformal Coating

Failures of PCBs and similar electronic assemblies can occur despite the protection of conformal coating.   Contributing reasons include:

- Incorrect selection of coating methods/materials related to the assembly's use.
- Poor manufacture or stresses to the assembly during operation.
- Challenges to the coating's integrity – bubbles/voids, inadequate masking, poor adhesion/surface finish, uneven thickness.

As with selecting an appropriate coating pre-application, conformal coating removal requires matching removal methodology with coating type and the component's function.

Major Removal Methods

Matching the removal method to the coating material, its age, thickness and the PCB's specific function is an essential first-step to the removal process. Proper identification of the coating material, and its original application method, are also basic to efficient removal. Coating removal is determined by:

- the type of coating material used,
- the PCB's components/their position on the board,
- the film's material, its thickness, and
- effect on the substrate.

Once these have been identified, determination of the appropriate removal method is possible. Major removal methods include:

- Chemical solvents are most-used for removal for liquid coatings. However, because no single solvent will remove every coating material with the same degree of efficiency, selection of best-choice chemical solvent is dependent on coating-type. The solvent butyrolactone is frequently used for acrylic removal. Methylene chloride or hydrocarbon-based solvents are recommended for silicone, methanol-base/alkaline activators and ethylene glycol ether-base/alkaline activators for urethane. Solvents are generally ineffective for epoxy and chemically-inert parylene.
- Cost-effective laser-ablation offers precise removal, to a single micron, but because each laser pulse separates only a minute segment of the existing film coverage, it can be slow. Generally a one-step procedure, laser is particularly good for parylene removal, re-converting the solid film back into a gas or plasma.
- Cheap, environmentally-safe micro-abrasive blasting (abrasion) can be focused onto minute board-segments (an individual test node), or an entire PCB. Automated or operator methods direct project-specific formulas of abrasive media/inert-gas/dry air through a tiny nozzle onto targeted surfaces. Resultant coating debris are disposed by filtration; grounding devices dispel electrostatic potential. Abrasion can effectively remove all liquid coatings and parylene.

- Mechanical removal techniques include grinding, scraping, cutting, or sanding coating from the surface. Time-consuming, thorough masking of non-removal surfaces is necessary. Less dependable than other removal techniques, poor mechanical processing can damage the coating/PCB. Acrylic, epoxy and urethane coatings respond to mechanical methods, as do thicker silicone films. If needed, scraping works for parylene.
- Plasma is frequently used when highly-selective coating removal from specific components within an assembly is required. Parylene responds to plasma spot-removal. However, this fine-scale procedure is also effective for removing coatings from entire PCBs.
- Peeling is suggested only for specialized removal. For instance, thickly-applied silicone films can respond well, using a dull knife/blade to slit the film, then peeling it from the PCB by hand.
- Thermal uses a soldering iron, at very high temperatures that can generate toxic fumes. It is difficult to manage; longer-duration exposure can overheat temperature-sensitive components, negatively impacting solder joints, leaving surface residue and de-laminating/discoloring remaining surfaces. Frequently used for durable epoxy coatings. Thermal methods have some use for acrylic, silicone and urethane; spot-removal is most recommended, especially for parylene.

Industry Standards

Prevailing industry standards provide appropriate process guidelines for conformal coating removal. **IPC-7711/7721**, Rework, Modification, and Repair of Electronic Assemblies, imparts best-practice procedures for removing conformal films from PCBs. IPC-7711/7721 standards detail coating removal methods determined by their impact on the film, its thickness, and effect on the substrate. **IPC-CC-830** defines conformance guidelines for all conformal coatings; film removal is frequently required when IPC-CC-830 requirements for each coating type's overall quality conformance are unmet during application.

Skill and Conformance Requirements

Operator experience and skill influence film removal. Appropriate material identification is necessary prior to commencing removal. Better-equipped to correctly identify coating characteristics, skilled professionals determine best-method removal procedures with greater accuracy. They can also implement removal procedures within the constraints of conformance issues like the PCB's environmental, functional, and serviceability requirements, improving the removal process.

Summary

Recognizing differences in conformal coating types and their interactions with the components/materials they protect is as important to their removal as it is to original covering process. To accurately determine correct procedural guidelines, consulting prevailing industry standards -- IPC Standards 7711/7721 -- is recommended. Diamond MT removes conformal coating cost-effectively, minimizing downtime and risks to PCB assemblies, with established quality processing based on IPC-7711/7721 standards and guidelines. Since removal processes can vary from simple to complex, it is important to correctly match the removal methodology with both the type of coating material used, and the PCB's project/purpose. To learn more about reworking conformal coating, download our whitepaper now.

About Diamond MT

Diamond MT was founded in 2001 as a firm specializing in contract applications of conformal coatings for Department of Defense and Commercial Electronic Systems. Since our beginning, Diamond MT has established a reputation for providing the highest quality services in the industry. Our commitment to quality, integrity, and customer satisfaction combined with an unmatched expertise in applications and processes has provided every one of our customers with superior results.

Diamond MT operates out of a freestanding 12,000 square foot building in Johnstown, Pennsylvania, which is located 60 miles southeast of Pittsburgh. Diamond MT is located near three major interstates and is supported by the Cambria County Airport, which serves as a primary freight terminal for south central Pennsylvania. Diamond MT maintains a strict program per NSI ANSI Standard 20.20 for ESD protection. All work areas are safeguarded with the latest in protection devices including wrist straps, garments, and workstations.

Quality Assurance: Diamond MT's quality manual ensures every employee is focused on continuous improvement and service excellence. Our ESD safe facilities stretch over 12,000 square feet dedicated to your conformal coating requirements. We are continually researching and updating our equipment to make sure we are providing the best ESD protection available.

All employees have been trained in proper ESD procedures. We operate at a class 3 level to ensure the job is done right the first time and to the highest quality standards set forth in accordance with the MIL-STDs, IPC, J-STDs as well as having our biomedical and ITAR certification. Furthermore, all assemblies are tracked through every step of the process with documentation/serialization spreadsheets as well as each assembly going through a 100% visual inspection.

Diamond MT has a strong organization consisting of highly motivated personnel, modern facilities, and diverse capabilities. Diamond MT represents one of the most modern, well-equipped facilities in the region. Diamond MT offers a highly skilled workforce, rapid turnaround manufacturing and high reliability through an established quality program, along with experience of commercial manufacturing requirements, competitive pricing and on-time delivery.

Rapid Turnaround: Diamond MT understands that oftentimes conformal coating is overlooked because it's the last step in the process. We are committed to serving the industry with rapid turn times for parylene, (normally 10 business days) with expedited service in as little as 2-5 business days depending upon the complexity and quantity.

For liquid coatings, our normal turnaround time is five business days; again with expedited service in as little as 2-3 business day turns. We understand that there are times you'll need a project completed FASTER. We will accommodate your needs in a budget friendly manner. This service is offered on a FIFO basis.

Diamond MT is committed to providing clients superior conformal coating specifications and standards, generating highest performance products for aerospace and all other applications. For a further list and description of Diamond's commitment to manufacturing standards and specifications, please see: http://www.paryleneconformalcoating.com/standards-specifications.

To learn more about Diamond MT, please contact us today!

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