



MOLY RESIN™

Professional Firearm Finishes Product of John Norrell Inc.

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Discover Moly Resin

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Moly Resin and Norrell's Moly Resin are product trademarks of John Norrell Inc. Moly Resin is a thermally cured phenolic coating initially developed for aluminum AR-15/M-16 receivers and stainless steel sound suppressors. Today, Moly Resin is used throughout the firearms industry by gun shops, firearm parts manufacturers, gunsmith schools, home DIYers, and law enforcement agencies for ordnance usage on equipment and weapons. The Moly Resin application process is also very attractive to start-up manufacturers that want to avoid elaborate and expensive metal finishing investments. The low temperature activated catalyst hardens and bonds the coating to all metals to create a hard, durable, chemical and a heat resistant state-of-the-art firearm finish. Our goal is to provide an array of popular colors that match closely to those being currently used in the firearms industry and military, as well as, vintage colors for special firearm restoration projects. The application process is relatively simple and is based on the use of an inexpensive air brush followed by curing in an oven.

MOLY RESIN COLORS

BLACK FLAT SOCOM (Matte) - Current common black flat color used by Colt, Bushmaster, etc. for the AR-15 & M-16 and other USGI type firearms starting mid-1980's to current. This is the original flat color submitted for testing and evaluation to the U.S. Special Operations Command.

BLACK SEMI-GLOSS - Black with just a slight gloss sheen. Also may be called Black Satin. Frequent color and sheen you may find on many imported AK type rifles, HK MP5, UZI, and also matches many commercial U.S. made hunting rifles and handguns.

BLACK GLOSSY - Black with a glossy sheen that exceeds Black Semi-Gloss. Depending on metal preparation technique, the coating can be applied to look extremely glossy and shiny and match some high gloss application needs.

GRAYISH-BLACK FLAT - Dark gray-black flat color that matches the most common production colors of the earlier Colt AR-15 (model SP1) and M16A1 from the 1970's to mid-1980's. Also used commonly for XM receivers. When desired, if the curing temperature and bake time are raised a slight green hue/tint can be produced to replicate the greenish color of old Parkerized U.S. Military rifles resulting from them being stored in Cosmoline. Adding O.D. Green to the base color, however, is the most predictable and repeatable means to add a color tone to a base color.

GRAYISH-BLACK SEMI-GLOSS – Dark gray-black but with a slight sheen. Also may be called Gray-Black Satin. This color is also popular in closely matching the older Colt AR-15 (model SP1) and M-16A1 but when a slight amount of gloss sheen is desired. When desired, if the curing temperature and bake time are modified a slight green hue/tint can be produced. Adding O.D. Green to the base color, however, is the most predictable and repeatable means to add a color tone in a base color.

GRAY FLAT - Gray Flat is one shade lighter than Gray-Black Flat. The older Colt AR-15 and M16 colors varied slightly from one production to another. Gray Flat is a slightly lighter variation. Gray Flat examples can also be seen in some WWI and WWII firearms.

LIGHT GRAY FLAT - A lighter gray with no black tones. Sometimes called machinery gray. Close match to some colors used by various militaries on some heavy machine guns in WWI and WWII. Also seen on some on East European subguns. A good choice for making a lighter camo pattern.

GRAYISH-GREEN FLAT – This is a close match to U.S. Military dark green ammo cans and is a darker version of the of the U.S. Military O.D. Green.

O.D. GREEN – Olive Drab Green is the official color of U.S. uniforms from WWII through introduction of camouflage patterned BDU's in the 1980's.

FOLIAGE GREEN - A greenish shade of gray found along with slate gray and sand colors in the U.S. Army's new UCP (Universal Camouflage Pattern) on ACU uniforms. This color is sometimes also called Lichen or Agave Green, and Tango Down Foliage Green, etc.

TAN FLAT (Flat Dark Earth) - The latest Tan color adopted by the U.S. Military for Middle Eastern desert colors. Spec 30118 color, Fed spec 595B. Common TAN color used by many AR-15/M16 manufacturers.

BROWN FLAT – Basic U.S. Military brown color used for equipment and camo.

COYOTE BROWN FLAT – This is a more recent color match used by numerous AR-15/M16 polymer stock and forearm manufactures. Just slightly darker than standard Tan Flat Dark Earth. Note: Manufacturers of polymer parts may unintentionally have slightly different shades of their intended color in each run of parts.

MAGPUL TAN (FLAT DARK EARTH) - Matched to Magpul Tan (Flat Dark Earth) stocks and forearms. Note: Manufacturers of polymer parts may unintentionally have slightly different shades of their intended color in each run of parts.

MAGPUL STEALTH GRAY FLAT – Matched to Magpul Stealth Gray stocks and forearms. Note: Manufacturers of polymer parts may unintentionally have slightly different shades of their intended color in each run of parts.

MAGPUL O.D. GREEN FLAT – Matched to Magpul O.D. Green stocks and forearms. Note: Manufacturers of polymer parts may unintentionally have slightly different shades of their intended color in each run of parts.

RED, WHITE, BLUE AND YELLOW FLAT – These are flat medium shades of popular colors used for special firearm projects or camo patterns. Yellow require a white base undercoat to get the full best yellow color.

PINK SEMI-GLOSS - True full pink color in semi-gloss satin sheen used for special projects. Perfect for creating gift ideas the female shooter. A good color comparison would be a match to the pink color of Pepto Bismol.

STAINLESS STEEL SATIN – Close match to the appearance of glass beaded stainless steel. A pleasantly close match to stainless. Used primarily to make aluminum and regular steel parts mimic a stainless appearance.

CLEAR COAT SATIN – Moly Resin without any pigment coloration. May be used over cured colored coating or directly on metal for special purpose use.

BURNT BRONZE FLAT – This is a flat match to the unique metallic color being used in the firearm industry.

About Moly Resin

Moly Resin is a thermally cured phenolic coating specifically developed for ordnance usage on equipment and weapons. The low temperature activated catalyst hardens and bonds the coating to create a hard, durable, chemical and a heat resistant state-of-the-art firearm finish. The coated surface forms a barrier to salt water, acids, oils, strong powder and bore cleaners while sustaining high temperatures associated with firearm suppressors and barrels.

Moly Resin will adhere to all properly prepared metal surfaces including aluminum, stainless steel, titanium, copper, silver solder, and Parkerizing. Moly Resin darker colors are formulated with molybdenum disulfide (Moly lubricant). The original Moly Resin coating was initially developed in 1980 for aluminum AR-15/M-16 receivers and stainless steel sound suppressors.

The application process is relatively simple and is based on basic common sense methods of basic painting techniques. The basic process is to: Clean / Blast / Coat / and Cure. Wash with soap and water or degrease, prep the metal surface or apply to a suitable existing surface – coating with an airbrush using numerous light passes and harden the coating in an oven for an hour.

There are numerous brands and types of coatings used in the firearms industry and all have their origins based on industrial applications. Moly Resin is a phenolic used in the manufacturing of billiard and pool balls, high voltage insulators and circuit boards. Other brands and types of popular firearm coatings currently on the market include ceramics (used in stoneware and porcelain), epoxy (marine repair), Teflon (skillet anti-stick coating), and automotive coatings (thermo plastic acrylics). Moly Resin phenolic offers the best combination of desirable coating characteristics in regard to chemical resistance, hardness, temperature resistance, flexibility and ease of application.

Moly Resin has a unique property beyond its hardness, corrosion and heat resistance that makes it extremely easy to use and store. All advanced specialized coatings of any brand or type require a chemical additive hardener for the coating to cure and harden (molecules cross-link). Many types of coatings require this hardener to be added to the coating at the time of use, therefore, requiring the coating to be used quickly before the coating starts to set and harden. Left-over coating is wasted. Moly Resin has the hardener already mixed into the coating but is protected from hardening by a temperature activated catalyst. The catalyst activates the curing and hardening process only when it is heated to its oven curing temperature. This eliminates waste and allows for easy airbrush cleanup.

Moly Resin Application Instructions

Overview

Moly Resin was specifically designed for firearm owners for application in your shop or home. In the past, a firearms finish was obtainable only by vinting, anodizing, bluing or Parkerizing. The preparation and application process of Moly Resin is based on simple common sense standards used in the painting industry. There is a short learning curve in producing perfectly coated firearms for your pleasure and others. Degrease, prep the metal, pre-heat parts, airbrush spray with Moly Resin and cure in an oven. The use of an inexpensive and easy to use airbrush for application allows you to reproduce the same level of quality as do firearm manufacturers and professional refinishing shops. See our Frequently Asked Questions (FAQ) section for details on specifics not answered in the following information. If ever in doubt of your skill or how a part will look, it is a good idea to use a small piece of scrap metal to practice with before coating your firearm.

Metal Preparation

Moly Resin Thermal Cure coatings will adhere to all metals when the metal surface is prepared correctly or the metal already has a suitable finish for good coating adhesion. The best adhesion to a metal surface for any type or brand of coating is when it is applied to a surface that has a slight texture. Metal that has been air blasted with a fine media like garnet, aluminum oxide or fine sand is an excellent method of surface preparation. Another excellent alternative is to place Moly Resin over a Parkerized surface since the phosphate action of Parkerizing creates a textured crust on the metal. Placing Moly Resin over an anodized or blued surface will suffice also if the surface is not polished or very slick. Chrome, nickel and other surfaces that are very slick are not good choices for coatings unless these surfaces are lightly blasted to create some texture. Lightly blasting to scuff the surface is not meant to remove the chrome or nickel finish or anodized finish. If your parts to refinish are scratched, have slick worn spots, dings, marks, etc., it may be best to air blast fully to get down to fresh clean metal for best cosmetics of the final product and also for best adhesion. For best uniform finish, we don't recommend blasting some parts and not blasting other. The get all parts to cosmetically match perfectly you would want the same metal texture under the finish.

Air Blasting and Media

The surface of the parts before blasting should be clean and free of any oils, grease or debris etc. Best cleaning methods can be as simple as soap and water or solvents like Acetone, alcohol, spray automotive brake cleaner, ultrasonic cleaning, etc. The best prep is to air blast with fine media to create a uniform slight texture on the metal to create the best surface for adhesion. You can also use the blasting process to blend out fine scratches and surface imperfections. We recommend medium-fine grit size of Garnet or aluminum oxide (60 to 100 grit size).

Fine sand works well too and is technically called #4 Sand but may also be labeled as Play Sand at Home Depot, Lowes, etc. Generally speaking, glass beads are not adequate in preparing a surface for coating since glass beads polish the surface and don't create an adequate texture. A blasting cabinet can be used if you want to recycle the media or a simple inexpensive hand held blasting gun used in your back yard is an easy way to blast. These hand held units can be found at Sears, Harbor Freight, TP Tools, etc. They have a bottle attached to the bottom to hold a couple quarts of sand.

To create a consistent metal texture especially when blasting firearms that have both steel and aluminum parts, we recommend you cut your air pressure to 40 to 50 psi for aluminum and for steel we recommend 60 to 80 psi. Exceeding 80 psi does speed up the blasting process but may be too aggressive for the texture cosmetics you may seek and that higher pressure will break down the media much more quickly into dust, especially if you plan to recycle it in a blast cabinet.

Once the surface is blasted, the dust from the blasting media should be washed off or blown off with clean compressed air. If you use water to wash dust off the blasted parts, blow the metal dry quickly with clean air or dry the parts in the oven to prevent any metal oxidation or rust that may start to form on the fresh surface.

Agitation (shaking the bottle)

It is very important that Moly Resin products are shaken long enough to remove all the pigments off the bottom of the bottle and place them into solution. A quick shake or two is not adequate. Spraying without the full pigment load mixed into solution will produce unsatisfactory results in sheen and color. We provide the product in a clear bottle so you can see when the pigment is fully in suspension. If you let your airbrush sit too long with a bottle attached without agitation, the pigment can also settle out on the bottom on the bottle.

Airbrush

The best sprayer for Moly Resin can be an inexpensive and simple to use external mix airbrush. The most common run \$10 to \$50 and can be found at discount stores in the craft departments. They can be powered by air can, an automobile spare tire, or air compressor regulated down to 25 to 30 psi. An airbrush is a precision tool but easy to use. Professional automotive or commercial spray guns will spray way too much coating and can easily create undesirable cosmetics. Remember, you are coating your firearm and small parts and not spraying an automobile, house or boat. An external mix airbrush mixes the coating and air on the outside of the airbrush at the nozzle. This keeps the coating from running through internal parts of the brush like an internal mix model. External mix airbrushes are much easier to clean than an internal mix model. You want to avoid any sprayer that does not allow you to adjust the volume or spray pattern size. A Badger Model 350 is a perfect airbrush to use that is inexpensive. Regulate the air pressure from air source for the airbrush to about 25 to 30 psi. Very inexpensive knock-off models of the Badger are at Harbor Freight are below \$10 (#62294 Central Pneumatic) and work fine also in the short term. The nozzle parts are interchangeable. If you plan to do a lot of spraying and want a long term use airbrush that is comfortable to hold for extended periods of time you may find the more expensive Binks/Wren Model 59-1002B (medium nozzle) as a great choice for very frequent use.

It is always a good idea to place some type of small inexpensive disposable inline air/water filter in your airline just before it goes to the airbrush. Walmart and other paint store have these. These small filters clean the air to make sure water, compressor oil, etc. does not spray out along with the coating.

Airbrushes can be cleaned easily running some MEK through the brush to flush it out. Other cleaning methods are to occasionally do a full cleaning by submerging the entire brush in a Tupperware type container with MEK solvent and let it soak. The MEK will dissolve coating deposits and make the brush look and act new again. If you disassembly the nozzle, it only takes a couple minutes to do to clean out of any coating debris. Generally, running MEK though the assembled brush after you run coating through it is all that is needed to keep the brush clean and working from spray session to the next spray session.

Oven

A home cooking oven can be utilized to provide the curing heat to harden the coating. Simply support parts with some metal hooks made from wire or bent paper clips.

If you are frequently refinishing, a more convenient heat source is to make a vertical oven using a “school locker.” A vertical oven allows you to hang barrels and complete barreled receivers along with other parts. An inexpensive broiler/toaster oven can be purchased at Walmart and the parts of the oven (coils, timer, thermostat, etc.) can be built into the school locker and creates a perfect oven for curing. Place the locker on wheels and you now make it mobile to roll out when you need it.

Hanging Parts in an Oven

There is always a way to hang a part in an oven. Use pieces of wire to make hooks or bend large paperclips to create a hook on the end of the wire and hook it through a hole in a part. If the part does not have a hole for a hook, simply place alligator clips on the end of the hooks and clamp the alligator clip a place on the part that will hold it. When spraying, reposition the alligator clip as needed to make sure you have the entire part coated. Wires with large clamping devices can be used too such as battery charger clamps. You can also cure barrels that are longer than your home oven by curing each end of the barrel separately. Hang the barrel in the oven with one end sticking out and cover the gap between the door and oven with aluminum foil to hold the heat in. Once the end of the barrel in the oven is cured, reverse the process and cure the other end of the barrel.

Pre-Heating

Once the metal has been prepared, the parts should be hung in an oven to pre-heat them for coating. Preheating the metal lets you greatly reduce having runs, fish eyes, and other common cosmetic issues. Preheating makes the process very forgiving, especially for those new to using an airbrush. The temperature of the metal should be heated to a minimum of 150 f. when coating so the heat can evaporate the solvents immediately to avoid runs. This also creates the flattest sheen. Preheating the parts near the same temperature that you will cure at (300 f) is common since by the time you take the part out of the oven, hang it to spray, etc., the temp of the metal will have dropped significantly. The higher pre-heat temperature of the metal can give you a flatter sheen of the coating. Best semi-gloss sheen produced with low temperature pre-heat (100f-150f). Pre-heating also lets you know if you have adequately degreased your parts as oil will run out of any crevice you did not clean.

Application of the Coating

The airbrush nozzle adjustment should be set to spray a light mist as you coat with an air pressure regulated down to about 25 to 30 psi. BEST FLAT SHEEN - The best cosmetics for FLAT Sheen products are achieved by 6 or 7 light passes to coat an area rather than 1 or 2 heavy passes. Applying in light passes also allows you to spray from numerous angles and directions so you can apply the coating uniformly. If you are spraying a flat color but you are getting semi-gloss or glossy sheen results, you need to correct your technique. You are either spraying too much coating volume and wetting the metal or you are trying to cover an area with one or two passes. If you want a flat coating to have the appearance as a flat sheen, don't wet the metal as you spray, keep the volume cut back on the nozzle and spray in numerous 6 to 7 light passes. If you see wet spots on your metal surface when spraying you either are spraying too much volume of coating, spraying too close to the metal or trying to coat an area in too few passes. You can always reheat your parts as needed to keep them hot to evaporate the solvents when the coating hits the hot metal. Keep the airbrush moving so you don't hold it in one spot and wet the metal. When done correctly, your coating should be fairly dry to the touch after spraying before you place the part in the oven for curing. Exception: BEST GLOSSY SHEEN - For best sheen using semi-gloss colors including Glossy Black, spray on metal near room temperature for the highest gloss sheen. Glossy black will be sticky before curing so don't touch until cured. For the smoothest finish of semi-gloss colors you may want to wet the metal when spraying.

Heat / Curing the Coating

After you have coated your parts adequately, the parts should be cured in an oven. Inspect your parts carefully before curing to make sure you sprayed them to your standards before final curing. Moly Resin can be removed with Acetone or MEK before curing. After curing you can't remove it with a chemical so you will need to re-blast. We have an ongoing \$25 reward for anyone that can find a chemical that can be safely used to remove cured Moly Resin. While chemical resistance is an extremely important positive characteristic of cured Moly Resin, since you can't damage it with gun cleaning solvents, oils, bore cleaners, it stresses the importance of making sure you've got the parts looking like you

want them before curing. You can, however, re-heat and touch up later if you missed a spot. To remove cured Moly Resin you will likely need to re-blast the parts.

The chemicals in Moly Resin that allow it to harden are already in the Moly Resin. Moly Resin products are not typical paints and unless heated will be dry but not hardened. The hardening catalyst is fully activated at 300 degrees and the minimal cure time should be 1 full hour. Curing for a longer time is fine but not required. Heating the parts to cure at lower temperatures for longer periods of time will not adequately harden the coating. Curing at higher temperatures for a longer time can be counter-productive. See special cure instructions for Glossy Black and Grayish-Black Flat or Semi-Gloss.

Special Curing Instructions

Glossy Black Moly Resin needs to be cured at 315 to 325 f. The highest gloss of the product is when coating over metal room temperature and may also be placed over pre-heated metal but may produce slightly less gloss. Practice on a small piece of scrap metal to check your technique.

The Grayish-Black Flat and Grayish-Black Semi-Gloss coatings have a unique characteristic in that if you cure at the normal temp of 300 f. at one hour they will produce a grayish-black color. If you raise the temperature and cure for a longer period of time, the color will take on a greenish hue that is similar to old Parkerized U.S. Military rifle that were stored in Cosmoline grease and turned slightly green. This green hue is very desirable for some users of the product.

Best gray-black semi-gloss sheen is achieved by only pre-heating metal to about 100 degrees.

Special Curing Instructions for Grayish-Black to create greenish hue to the grayish-black color is below. The green hue heating cure results are somewhat unpredictable but some customers have perfected the process. It should be noted that the best repeatable and predictable way to add a green tone to a dark color such as black or grayish-black is to add some of the O.D. Green color.

Color Desired	Temperature	Oven Time
Grayish-Black	300 f.	1 Hour
Green Hue Gray-Black	325 to 350 f.	1.5 hours or longer

When attempting to create the green hue, it is important to keep checking the oven to catch the green at the depth of color you desire. The longer it is left at the higher temperature the greener it will become. We suggest you practice on a piece of scrap metal first to get familiar with the process.

Oven Temperature Accuracy

Home ovens are notorious for producing inaccurate temperatures. We recommend you check the accuracy of your home oven with a small inexpensive thermometer (homeware department at Walmart). Compensate with the oven temp dial to get the oven to the desired temperature for curing if you oven is inaccurate.

Testing for Adhesion and Curing

If in doubt that you have adequately cured (hardened) the coating there are a couple simple tests you can quickly do. If the coating has not been cured, it will wipe off down to the metal with a paper towel wet with Acetone or MEK. If cured, you will get very color that will color the paper towel. If you have concerns about whether you have provided a proper surface for best adhesion, take a piece of duct tape and apply to the cured surface and then rip it off. If no coating comes off with the tape, especially at joints and edged areas, then you are good to go.

Clean up and Thinning

After spraying, a good clean up solvent is Acetone or MEK. An easy cleanup method is to simply run some MEK or Acetone through the airbrush from an airbrush bottle. This will flush the coating out of the nozzle. Occasionally for a more thorough cleaning soak the airbrush in MEK. No thinning is needed for the coating as it comes ready to spray. MEK and also Acetone are available at Home Depot or any paint store. If, for some reason you need to thin the coating, such as leaving the cap off the bottle off for an extended period of time and solvent has evaporated making the coating thicker, you can add just a little bit of MEK. Before curing you can use MEK for cleaning and removing coating from parts that you may wish to re-spray. Once cured with heat, the coating can't be removed with any type solvent we are aware of. So make sure your part looks perfect before curing.

Shelf Life

Moly Resin is a thermally cured coating, therefore it is temperature sensitive. Storage should be in a cool area that is out of the sun. Room temperature storage in your shop is fine and under normal conditions you should expect a minimum one year shelf life. For extended storage times you may want to keep it in a refrigerator. Storing in a metal can rather than polymer bottle will also extend its shelf life. We offer our coatings in metal cans if you request it.

The downside to a metal can is that you can't tell exactly when all the pigment is in solution since you can't see through the bottom of a can.

Spray Booth, Masks and Gloves

As with all spray coatings, the use of a standard paint mask is recommended as paint fumes should not be inhaled on a repeated basis. Spraying outdoors behind your shop or home is convenient and may not require a paint mask in a well ventilated area. If you are frequently refinishing and have a corner of your garage or other location then you may want to build a small spray booth. A spray booth can easily be made out a few 2x4 studs and clear plastic sheeting and can be built in a corner of a garage. As a door use a screen door and cover with a clear sheet of plastic. A simple and inexpensive squirrel cage fan can be used to vent fumes to the outside through a hose. A standard paint spraying respirator mask should be worn to keep from breathing in solids and fumes when spraying. We recommend a standard type mask with filter that you will find at Home Depot, WalMart, etc. Gloves are important also to keep from getting the coating on you as with all types of painting but most important is that you do not want to be touching parts before curing with your fingers and getting oil, marks, etc. on the parts. The best gloves are thin disposable Nitrile gloves you can find at any paint store and Harbor Freight. Latex and PVC Poly type thin gloves fall apart and dissolve when using MEK or Acetone.

Coating Plastics

Moly Resin can be used to coat some polymers and plastics. The limitations on coating plastics is related to whether your polymer stock, pistols grip, forearm, etc. can safely be heated to 300 f. and held at that temperature for an hour. Some polymers are safe and others are not. There is always the risk of warping, melting or cracking an unsuitable polymer. If you do cure a polymer, keep in away from the heating element as you do not want radiant heat.

Rusted and Pitted Parts

Moly Resin is used often for firearms restorations where rusting and pitting has unfortunately already occurred. The goal is to blast the entire firearms and concentrate on the rusted and pitted areas so the rust is clean out of the pits. The firearm can be coated as usual at that point. By using flat colors like flat black you can reduce the notice of the pitted areas. You can also fill the pit in with silver solder, bronze, etc. and sand it down flush and then apply Moly Resin. How well you hide the pitting if you fill it in will be based on the quality of the metal preparation you performed.

Touch Ups

Moly Resin may be applied over an existing cured Moly Resin finish for a touch up. Cured parts with an unfortunate "slipped screw driver scratch", for example or other marks can be touched up with the airbrush and the part re-cured. Take the damaged part, wipe it clean of solvents and adjust the airbrush nozzle to spray a very small mist of coating and then lightly touch up the scratch to blend it out. Then re-cure the part at its normal cure temperature and time.

Firearm Disassembly

Moly Resin may be used for cosmetic refinishing and/or as a protective coating against the elements. When used as cosmetic finish, it can be unnecessary to disassemble the firearm down to each individual piece. In many instances a larger sub-assembly of parts may be coated without breaking it down into small pieces. You may blast, preheat, spray, and cure as one large piece since the airbrush will allow you to apply a coating to recesses and cavities and avoid more difficult disassembly.

Specifications Appearance – When applied correctly, the bonded coating will appear uniform in color, smooth with a slight texture like Parkerizing, and free from cracks, runs, sags, scratches, pin holes, fish eyes, bubbles and foreign matter. Always test spray a scrap piece of metal to test application skill and technique.

Thickness – The optimal thickness of the coating should be less than .001” thick unless a thicker coating is desired. Keeping the coating thin allow parts to be easily reassembled.

Hardness – ASTM-D-3363 test results for scratch (mar) and gouge hardness rates phenolic resin at a hardness that exceeds 9H. 9H is the hardest rating for a coating under test method BS3900-E19:15015184.

Lubricity – The darker colors of Moly Resin contains molybdenum disulfide which provides excellent anti-friction characteristics. Wear life was tested on Tabor Abrasurf with #CS10 wheel installed @500 grams weight minimum 235 RPMs.

Thermal Stability- The cured coating will withstand 800 f. for 1000 hours minimum and a 1000 hour soak at -125f. Minimum oxidation temperature is 880 f. Thermal breakaway is 1000 f. minimum

Fluid Resistance- Moly Resin thermal cure products will meet 24 hour emersion requirements in the following fluids: aviation gasoline, hydraulic fluid, jet fuel, trichloroethylene, nitric, sulfuric and hydrochloric acids, hydrogen peroxide, gun powder solvents, strong bases such as ammonium and sodium hydroxide and numerous other strong chemicals.

Corrosion Resistance - Moly Resin when applied correctly to sandblasted cold rolled steel will pass test procedures for salt water spray at 1000 hours, salt water immersion at a minimum of 1000 hours, accelerated salt spray test equivalent to 30 years marine atmosphere exposure , and 60 days sea water immersion.

Frequently Asked Questions

1. How much coating is needed to coat a firearm?

Generally speaking, 2.5 oz. of product will coat an AR-15 size rifle when using an airbrush. If you spray too wide a pattern or heavy volume, or use a sprayer other than an airbrush, you may use more product than needed.

2. I sprayed a flat color and the appearance is glossier than desired.

The flat black and other flat colors should be applied to hot metal and in 6 or 7 light passes to get to full coverage rather than sprayed in a single heavy and wet pass that soaks the metal. Wetting the metal or letting the metal cool to room temperature when spraying will produce a glossier sheen. The goal is to spray in light passes so the hot metal will evaporate the solvents so the coating on the metal will be almost dry to the touch.

3. Can I make a flat color have more gloss?

Yes, spray the flat color in heavier passes, low pre-heat temp and wet the metal.

4. Can I spray Moly Resin over an existing coating of another brand and type?

Moly Resin is made to be applied directly to fresh clean blasted slightly textured metal, over Parkerizing or other surfaces that are not polished or slick. Spraying Moly Resin over other existing coatings and finishes may not produce the adhesion needed. This would be true of any brand or type of coating. Bear in mind that a top coat can't be any better adhered to the metal surface than the pre-existing undercoat. Additional coats of Moly Resin may be applied over itself before or after curing. If you cake the coating on heavy you will generally not get the cosmetics you desire.

5. The coating comes off the metal after baked in the oven when I use common household chemicals.

Moly Resin products need to be cured at 300 degrees for one hour to adequately activate the hardening catalyst. Check your oven temperature for accuracy in the location of the oven you placed the part for curing. Use an inexpensive oven shelf thermometer from Walmart. Before curing, Moly Resin can be wiped off with alcohol, acetone and many other solvents. Once cured, these solvent may have no impact on Moly Resin. This is a good reason to get the parts looking exactly like you want before you cure them.

6. Can I cure Moly Resin at a lower temperature than 300 degrees by baking it longer?

No, the hardening catalyst chemical is not activated at lower temperatures. This temperature threshold keeps Moly Resin from prematurely hardening or degrading until it is triggered by its designed curing temperature.

7. Can I make Moly Resin harder by curing longer or at a higher temperature?

The desired compromise between hardness, flexibility and durability is achieved at 300 degrees for all colors but Glosy Black. It should be noted that curing with a longer duration or at higher temperatures other than 300 degrees with our flat or semi-gloss Grayish-Black Moly Resin produce will a green hue/tint that is desired by our military collectors. See curing instructions for Grayish-Black.

8. *I used a glass bead blaster to prepare the metal, pre-heated, coated and cured but the coating does not adhere well.*

Don't use glass beads to prepare the metal surface. Because glass beads are smooth and round, they polish a surface rather than create a slight texture needed for coatings of any brand or type.

In addition, as glass beads breaks down under pressure against the metal surface, the metal can become coated with glass. Sand, aluminum oxide, garnet, etc. make much better blasting media.

9. *The coating does not adhere well to certain places like edges and sharp angles areas.*

It is very common during the blasting process to think in terms of blasting the flat surfaces and missing the edges that join the flat areas together. Be sure to directly blast the edges so you get the textured surfaced needed for best adhesion.

10. *Some of the parts I spray have wet shiny spots on them.*

You are holding the airbrush too close to the surface and spraying too much coating in that one spot and may also have let the metal cool down. Spray many light passes to coat the metal, keep the airbrush moving as to not over-spray a single spot and keep the metal warm. If your metal cools down as you are spraying, hang the part back in the oven for a few minutes to raise the temperature. Keeping the metal warm to hot to evaporate the solvents immediately as the coating hits the metal. This eliminates runs, fish eyes, and other problems.

11. *When I pre-heat some parts, oil runs out of the metal. I keep wiping it off but it keeps bleeding out.*

Some firearms have joints, cavities, and other areas that are hard to degrease. If you have done all you can to clean and degrease these problem areas, with soap, chemicals, etc., there is one way to around this problem and that is to spray the part after the part is just warm in the oven before, the grease starts to run out again. The idea is to get the Moly Resin on the metal before this oil runs so it will be on top of the coating. Many times the oil can be wiped off the Moly Resin after you have fully cured the parts. You don't want grease or oil under the coating as it will block adhesion.

12. *When I spray, the coating appears to be thin and almost clear. I have to use a lot of coating to color the part.*

Other times it sprays thick.

These two issues are related. Moly Resin contains heavy pigments that settle out on the bottom of the bottle. You must adequately shake and agitate the bottles to mix in all of the pigments. Some colors of Moly Resin may have as many as five separate pigments in the bottle. Shaking well to get all pigments into solution is a key preparatory action to take to keep the color of the coating from a bottle to be the same from start to finish. The pigments will also settle out in the bottom of your airbrush bottle if you delay in spraying.

13. *I'm (actually my wife) is concerned with me using out home cooking oven for curing my gun parts.*

There can be an odor as you cure your parts in the kitchen oven, especially, if you place parts in the oven immediately after spraying. We suggest you spray and let the parts completely dry off the solvents someplace other than the kitchen before placing them in the oven. Other suggestions are to do your refinishing when your wife is not home or make some type of deal with her. A more permanent solution is to build a small oven from a small school locker and use broiler/toaster oven parts in it that you rob from an inexpensive counter top oven from Walmart.

14. *After curing the coating on my AR-15 firearm parts, they look very dry, lighter and flatter than the desired finish.*

Moly Resin is available in numerous colors and shades of colors. Assuming you chose the correct color shade, the parts right out of the oven will be ultra-dried out, flat and void of any oils due to the heat. Place some light oil like REM Oil on the parts and wipe the oil back off. This will give the coating a richness and bring out the full color. You can also polish the coating with a cloth cotton rag to buff up more sheen if desired.

15. *Aren't Moly Resin and other firearm coatings just really paints, just better than normal paints, but nevertheless paint?*

No. In the paint industry, the term "paint" technically applies to coatings that harden by solvent evaporation or in some instances reactive with oxygen to create a film. The solvent evaporation leaves behind a hard film that is referred to as the paint. Most paints can be dissolved back into their original solvent or slightly stronger solvent. This is why "paints" are not suitable for firearm refinishing since bore cleaners, and other common solvents will remove them.

Moly Resin and most other firearm coatings are called specialty coatings and harden by a chemical catalyst that lets various chemicals in the coating react and turn into a different substance. These chemicals are held inactive until the catalyst is triggered. Once these coating is cured, the coating no longer can be dissolvable in the strongest solvents, acids, etc. In additional "specialty coatings" can be applied in film thickness much less than a paint.

16. How can I remove Moly Resin from my firearm without blasting with media?

There does not appear to be a chemical that will remove cured Moly Resin. If you wish to remove the coating before curing, it may be wiped off with Acetone, MEK, and common solvents. Moly Resin's resistance to chemicals is one of the strong attributes of the product.

17. Can a camo pattern (including digital patterns) be done with Moly Resin?

Numbers of our customers use Moly Resin for creating simple, as well as, elaborate camo patterns. As with any camo project there is skill needed and attention to detail required. The basic question with creating a camo pattern is whether to cure each color separately as you add it to your design or wait until all the colors are sprayed and then cure at the end. Either method will work. It is slower curing one color layer at a time but much more forgiving in handling the parts especially if you are using masking tape, etc. Curing all the colors at the end is more difficult since you have to be much more careful in your process.

18. Can I mix Moly Resin colors to make new shades and colors?

While the resin base itself may be compatible, some of the pigments are not. Generally speaking, the darker colors mix best with other darker colors while lighter colors may mix best with other lighter colors. We would suggest you experiment mixing the colors, test spray on some scrap metal and cure to see how well it works for your needs. You can always test the adhesion of a color mix to see if it will perform for you by wiping it with Acetone or another solvent.

19. When I coat and cure my parts with Grayish-Black Moly Resin, the color changes and turned out to have a green hue and tint.

The answer is that you cured at a temperature higher than 300 degrees. If you did not do this on purpose check the accuracy of your oven. Flat and semi-gloss Grayish-Black Moly Resin has a unique characteristic in that the curing process can be altered to create two colors. Grayish-Black color is created by curing at the normal temperature of 300 degrees for one hour. If you are seeking a Grayish-Black with a green tint like WWI and WWII collectors want, then increase the cure time and temperature. See special curing instructions for Grayish-Black Moly Resin. The most predictable and repeatable way, however, to add a green tint to a dark color is to add some O.D. Green Moly Resin to your base color.

20. What is the shelf life of Moly Resin and how should I store it?

Shelf life of Moly Resin is a year or longer stored in a room temperature location. If stored in a cool location you may find it will still be usable much longer. It is not uncommon to use it several years when stored in metal cans. We can provide it in metal if you request when you place the order. Test a piece of scrap metal to check if some aged Moly Resin is still good. If it sprays well, looks good after curing, can stand up to wiping with Acetone or MEK and does not pull off the surface when using duct tape to test it, then you are in good shape.

21. Can I coat and cure Moly Resin on plastic/polymer parts?

The question should actually be, "Will the polymer parts such as the stock, forearm, pistol grip, etc. withstand the curing temperature and not be damaged." Plastic/polymer parts are injection molds that use a wide variety of polymer resins with different characteristics regarding the amount of heat the polymer will take and not shrink or crack. While we do have a number of customers that use Moly Resin on polymer parts of one type or another, we suggest you check with the parts manufacturer as to the heat range of the specific polymer.

Pricing - Shipping is Free. All thermal colors are the same price.

8 ounce bottles - \$30.00 each, Quart bottles - \$70.00 each, Gallon (four quart bottles) - \$184.00 (\$46.00 quart)

Cost Analysis - 8 oz will coat 2.5 AR-15 type rifles, one quart will coat 10 AR-15 type rifles and one gallon will coat 40 AR-15 at cost of \$4.60 per rifle.

Product Ordering:

Moly Resin products may be ordered on our website: www.MolyResin.com or www.JohnNorrellArms.com using a credit card or Paypal.

There is no shipping charge for UPS ground shipping. We only ship UPS ground. Product can't be shipped by air or USPS. You may also send postal money order to the below address. We can also do a direct Paypal transaction. We only ship within the 48 contiguous states and don't ship to Alaska, Hawaii, or foreign countries.

When packaged for shipping, we will notify you via e-mail and UPS will send you a tracking number.

Contact:

John Norrell e-mail> SMG1022@sbcglobal.net

John Norrell Inc.

13529 Saddle Hill Dr.

Little Rock, AR 72212

Fax 501-225-7864

Refinishing Services

For those of you that would like the thermal cure Moly Resin finish on your firearm parts but do not have the desire, time or space to do the work yourself, we offer that service on a limited basis. We don't offer any custom color mixes or special curing techniques. We leave the color experimentation and custom projects to our customers.

Scheduling your Project:

We will schedule your project with you to provide the quickest turnaround time. Please contact us at smg1022@sbcglobal.net with your inquiry and a refinishing technician will contact you. Firearms should be sent to us disassembled and without the wood or plastic forearms and stocks. Our goal is to provide quality refinishing at a reasonable price with quick turnaround. Generally, turnaround is about 10 days to 14 days.

Examples of Refinishing Prices: (Any parts that include a firearm receiver will be shipped requiring a signed receipt.)

AR-15 stripped upper or lower receiver \$60 each (\$120 pair) plus \$25 return shipping. Small parts

AR-15 complete set of parts \$140 plus \$25 return shipping. Add \$25 for small parts.

AK set of parts \$140 plus \$25 return shipping. Add \$25 for small parts.

Pistol slide (stripped) \$50 plus \$20 shipping.

Suppressor (screw-on) \$50 plus \$20 shipping.

Shipping:

Firearms and parts may be shipped directly to us for refinishing since we are a licensed firearms manufacturer. You do not need to have a local firearms dealer ship for you unless you prefer. Any firearms parts that include firearm receiver or frame require us to return these to the original sender at the original address. When shipping include instructions and color selection in the package along with name and return information with street address. You may send a postal money order with your firearm parts or we can use PayPal. In regard to Paypal, you do not need to have a Paypal account. Paypal will process your credit card without you having a Paypal account directly with them.

Return Shipping Charges and Insurance:

We ship exclusively using UPS. We will need your street address, e-mail address, phone number, and the value you want your parts insured for. All returned projects are shipped UPS ground unless other arrangement are made. In regard to insurance, please note that UPS charges \$.80 per \$100. Example: A \$500 firearm will have an insurance charge of \$ 4.00 whereas a \$10,000 Class III firearm will have an insurance charge of \$80. ATF and UPS require that packages containing a serial numbered receiver or firearm frame are shipped requiring requiring an adult signature. Your returned parts will be automatically insured for only \$100 unless you state in your instructions a higher amount to insure and provide insurance funds at .80 per \$100 of additional value.

Class III –NFA Firearms

In regard to Class III firearms, no ATF form 5's are required by BATF to ship C-3 firearms for repair / refinishing to a licensed manufacturer, however; please attach a copy of your existing ATF form with the current address showing that the firearm is registered in your name.

Please contact us by e-mail at: smg1022@sbcglobal.net with inquires as to which firearms or parts we will refinish, the cost and turnaround time.

Material Safety Data Sheet

SECTION I

Identity (as used on label):	MOLY RESIN
Chemical Names:	Solid Film Lubricant Coating (thermal cure)
Chemical Family:	Specialty Phenolic Resin
Formula:	Complex Mixture
Blended and Bottled by:	John Norrell Inc. 13529 Saddle Hill Dr., Little Rock, AR 72212

Hazardous Materials ID System (HMIS)

Health: 2 Flammability: 3
 Reactivity: 0 Special Note: none

SECTION II - Hazardous Components and Toxicity

	<u>Concentrations</u>
Phenol (Cas # 108-95-2) ACGIH TLV: 5 ppm (skin) OSHA PEL: 5 ppm (skin)	Trade Secret
Ethanol (CAS #64-17-5) ACGIH TLV: 1000 ppm OSHA PEL: 1000 ppm	< 30 %
Molybdenum Disulfide (CAS #1317-33-5) ACGIH TLV: 10 mg/m3 as MO OSHA PEL: 10 mg/m3 as MO	Trade Secret
Methyl Ethyl Ketone (Cas # 78-93-3) ACGIH TLV: 200 ppm OSHA PEL: 200 ppm OSHA STEL: 885 mg/m3 Eye and skin irritant and may cause CNS in humans	>50 %
P.M. Acetate (Cas # 108-65-6) ACGIH TLV: No Listing OSHA PEL: No Listing	Trade Secret
Methyl Isobutyl Ketone (Cas 3 108-10-1) ACGIH TLV: 50 ppm OSHA PEL: 50 ppm	<10%
Residual Formaldehyde (Cas # 50-00-0) ACGIH TLV: 1ppm OSHA PEL: 3 ppm Irritating to skin, eyes, and mucous membranes. Carcinogenicity: Animals=yes, humans-indefinite	Trace
Cellosolve Acetate (Cas # 111-15-9) ACGIH TLV: 5 ppm (skin) OSHA PEL: 100 ppm (skin)	Trade Secret
Stainless Steel (Powder)* (Cas # 7429-90-5) ACGIH LTV: No Listing OSHA PEL: No Listing <i>* used only in the Stainless Steel Moly Resin</i>	<10%
Inorganic Barium Compound ACGIH LTV: 0.5 mg/m3 OSHA PEL:0.5 mg/m3 Mild skin and eye irritant. Carcinogenicity: animals and humans- no	<10%
Toluene (Cas #108-88-3) AGCIH TLV: 100 ppm OSHA PEL: 100 ppm	<10%
Isopropyl Alcohol (Cas # 67-63-0) AGCIH TLV: 400 ppm OSHA PEL: 400 ppm	Trade Secret
Xylene (Cas #1330-20-7) ACGIH TLV: 100 ppm OSHA PEL: 100 ppm	<10%

SECTION III - Chemical & Physical Characteristics

Boiling range	165 f. to 180 f.
Density	8.1
Vapor Pressure	NA
Melting Point	NA
Vapor Density (air =1)	>1
Evaporating rate	NA
Solubility in H2O	Moderate
Appearance / Odor	Gray-black liquid, organic solvent odor Silver colored liquid, organic solvent odor Volatile Organic Compound 672

SECTION IV - Fire and Explosive Hazard Data

Flash Point: 50 f.
 Flammable Limits: LEL 4.3, UEL 19.0
 Extinguishing Media: CO2, Foam, Dry Chemical, or Halon
 Special Fire Fighting Procedures:None
 Unusual Fire and Explosive Hazards:None

SECTION V - Reactivity Data

Stability: Stable
Conditions to Avoid: Open flame
Incompatibility: Strong
Decomposition: Irritating and toxic fumes
Complex Hydrocarbons
Hydrogen Sulphide and Sulfur Dioxide

SECTION VI - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

- Clean spill with absorbent material, Eliminate ignition sources, wear gloves, goggles, and gas mask if ppm are exceeded,.
- Waste disposal method -Dispose of waste in chemical land fill as approved by local, state and federal laws and regulations.
- Precautions to be taken in handling and storing: Ventilate area away from acids, alkalis, and open flames
- Other Precautions: None

SECTION VIII - Control Measures

Respiratory Protection:

- Use NIOSH approved organic respirator if ppm limits are exceeded.

Ventilation:

- Local Exhaust - used to maintain levels below toxic ppm.
- Mechanical - use non-sparking or open flame equipment.

Special: None

Other: None

Protective Gloves: Chemical resistant gloves

Eye Protection: Wear safety glasses or goggles

Other Protective Equipment or Practices: None

INFORMATION ON THIS FORM IS FURNISHED SOLELY FOR THE PURPOSE OF COMPLIANCE WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29CFR 1910.1200

AND SHALL NOT BE USED FOR ANY OTHER PURPOSES.