



# **PAINTING & WEATHERING**

## **FOR PROPS & REPLICAS**

BY **HARRISON KRIX**  
OF **VOLPIN PROPS**

A COMPREHENSIVE GUIDE  
TO CREATING REALISTIC EFFECTS  
WITH DIY MATERIALS AND TECHNIQUES

# HI. I BUILD SPACE GUNS.

IT'S WORTH SAYING THIS UP FRONT: I AM SELF-TAUGHT.

My name is Harrison Krix. At the time of this writing I've spent the past seven years learning to build replicas and props. I run a company called Volpin Props, specializing in crafting replicas for cosplay and the gaming industry since 2009.

This is an ongoing process of education like any artistic pursuit, and I have come to a point in my professional career where I've accumulated enough tricks in my repertoire to fill a book. I think it's important to note that my education has been one that's largely self-directed. I didn't go to school for this sort of thing, and beyond some classes that could be considered corollary (color theory, for one) my graphic design training didn't translate much in the way of skill into my propmaking career.

Six years ago I decided I wanted to make things from videogames a reality. Armed with little more than ambition and the best tools that \$85 could scrounge off of the used market, I set about teaching myself many of the things you're about to read in the following pages. I believe that with enough determination and practice, anyone can master the theories and processes of painting realistic replica props.

Many of the techniques you'll see in the following pages have been outlined in my many blog articles detailing the work that goes into each project I complete. Often I'm asked for a more in-depth breakdown of the materials and specific processes than the flitting attention of the internet can accommodate. If you're after a detailed look behind the curtain, this is the book for you.



*Photo by Joseph Lin*

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# 01 | INTRODUCTION



This book will assume that you'll be working from a "ready to paint" object, and also that your object is constructed from rigid materials. Some of the techniques shown may work on prosthetics or fabric, but largely the advice contained herein will be best applied to items like weaponry and armor.

A "ready to paint" object means all of the sanding and prep work has been completed.

We'll be starting with the basics of primer and base coating, but you'll need something to paint first.

## WHAT YOU'LL LEARN

The subject matter here would best be described as “advanced hobbyist” level. You’ve probably got a passing familiarity with propmaking, there’s a couple projects under your belt and maybe you’ve got access to a dedicated workspace. Budget is still a concern but you’re willing to spend money on decent products if it means a better outcome. If you’re already running a thriving prop studio with access to fancy HVLP spray guns and catalyzed paint, some (not all!) of the lessons to come might seem introductory. This book is targeted at the person with a spray can and a handful of disposable paintbrushes, looking to bring their work to life.



This is Wally. He’s a \$9 toy purchased during Halloween from a big blue discount department store. Wally and other toys like him are a perfect way to practice your painting without worrying about destroying an expensive kit or dozens of hours of scratchbuilding. Even if you’re not a propmaker or don’t have the ability to build replicas from scratch, there are many builders out there who offer kits of their replicas which you can paint and finish on your own!

You’ll see Wally several times over the course of this book. He’ll be a running example of processes and eventually a show piece for what you can accomplish, even with a cheap kiddie toy as your base.

## OKAY, BUT WHY?

Everyday use can tint the finish of an ordinary object. Given enough time, real world tools begin to show signs of where they've been and how they've been treated. Weathering and painting is the process by which we simulate that story.



While there may not be one specific process that will make or break a project, weathering and painting have the potential to make a beautiful piece lackluster or salvage a few mistakes into a convincing patina.

Props tell stories through their finish; the shine and precision of a freshly built shield communicates it's a new accessory, untested in battle. A rifle covered in scratches and paint chips has seen the front lines repeatedly. Rust signifies neglect, blood splatters indicate ferocity or maybe even mania.



You want your replica to have a past, and that past doesn't have to be "I was painted silver ten minutes ago in the convention hotel stairwell"

Pictured: one year of practice between two identical subjects. Better photography doesn't hurt while you're at it.

## A NECESSARY WARNING

If you follow the processes outlined in this book, the finished product will be a replica with a beautiful faux real-world patina. If that replica happens to be a weapon, you'll need to use a bit of common sense in what you end up doing with it.

If you take a toy gun and cover all the orange plastic with chipped paint and scuffed metal, don't take it out in public. Conventions are a great place to show off your hard work; a post office isn't.



The layperson can easily confuse something like this simple (and wildly out of scale) \$9 plastic gun with the real thing. If you're transporting your props, always keep them covered. Check with convention weapons policies before attempting to bring these replicas to cons.

Similar to the burden of responsibility laid upon the end user in the "Safety Equipment" section, you're at the mercy of your own judgement. Think, be responsible and use common sense.

## 02 | SAFETY EQUIPMENT



### This is important.

Many of the materials used in the techniques that follow contain chemicals with many “x”s and “z”s which do a brilliant job of turning important things like lungs and eyes into cancerous ooze.

For this reason, there will be a handy dandy icon system associated with each process shown. You can reference these images at the beginning of each section and know what to have on-hand should you choose to try it out. It’s impossible to enforce your compliance with any of the following suggestions, but a good set of goggles and a mask costs way less than lung transplants and eye surgery. **You’re in charge of your own safety.**

## SAFETY GEAR ICONS



You need less vesperene gas. Wear a mask, this process is toxic.



Chemical sauna danger: use outdoors or in a well ventilated area.



Don't touch it, or don't let it touch you. Either way, get some gloves.



You'll put your eye out, kid. Goggles or glasses are recommended.



That'll leave a mark. This process is messy; lay down a drop cloth.

## GOGGLES AND GLOVES

Goggles or safety glasses will be used sparingly in contrast with a respirator, but some techniques do require a bit of flinging material around, and the last thing you want is faux rust in your eye. There are many types of safety glasses but I prefer the full face shield variety for keeping pretty. Since I wear glasses it's convenient, and it also fits over my respirator as well. More shielding never hurts.

Gloves do two things: they'll keep paint and solvents off of your hands, but they'll also keep sweat and oils from your fingers off of fragile paint and weathering coats. On many steps of the painting process, it's very important to keep your surface as contaminant-free as possible. Having nice nails is a bonus, but making sure your clear coat dries correctly is really the

best argument for keeping a box of disposable gloves in the shop.

Nitrile is my preferred style, and you can even get them in black to look like an evil mad scientist. Be wary of latex and vinyl, as you can develop allergies to both. Latex can also inhibit the curing properties of some materials!



## RESPIRATORS AND MASKS

There are several versions, but the kind referred to here are reusable half-face respirators. These cover the nose and mouth and incorporate a series of one-way valves to ensure that air is only brought in through the filters. These types of respirators also have a soft rubber mouthpiece which ensures a form-fitting seal. Paper masks are not an adequate substitute! Surgical or dust masks do not filter out many of the chemical particles contained in aerosolized paints. A proper mask usually costs around \$35, and it's more than worth it.

Replacing filters will depend on frequency of use, but to extend the life of your canisters you can store the mask in a plastic resealable bag when not in use. Activated charcoal will bond with airborne contaminants regardless of whether or not you're wearing the mask, and sealing it in an airtight bag will keep the filters from saturating prematurely.

Reusable filters most often seen for respirators are either particulate (dust), gas and vapor (chemical), or a combination filter. If you're only going to own one, the combination filter is the safe bet. A particulate filter will only guard against things like sanding dust and won't protect your lungs from the volatile organic compounds found in most catalyzed paints.



## 03 | PAINTING ACCESSORIES



M96 Mattock Kit from Mass Effect by ZProps

Each individual weathering technique will require a set of specific tools unique to the process. There are several others that aren't necessarily limited to two or three techniques. Generally these make the painting process much easier.

A little time spent sourcing the following bits will streamline your finishing work and result in a lot less stress when it comes to keeping dust and fingerprints away from your freshly painted parts.

For the record: don't paint on your lawn.

## PAINING AND DRYING RACKS

Painting and drying racks are simple to build out of cheap materials. A few sections of PVC, end caps and steel wire makes a great weatherproof rack that can be left outdoors without worry. Suspending a prop from a hook or pin during painting means you have 360 degrees of access to the part and won't miss any recesses or crevices. Small clamps or binder clips are a good thing to have on your paint rack drying hooks; securing these to a screw embedded into your part will avoid blocking areas of the prop with wire while painting.

If possible, try to have a separate drying rack from your paint rack. Over time, accumulated overspray will build up on the hangers and clips on a paint rack and can flake off, usually at the worst possible moment. Having a clump of primer fall into a fresh gloss clearcoat is a level of frustration you should avoid, if possible. If you don't have the space for separate racks, consider making separate hangers for painting and curing, or clean your painting clips thoroughly after each use.



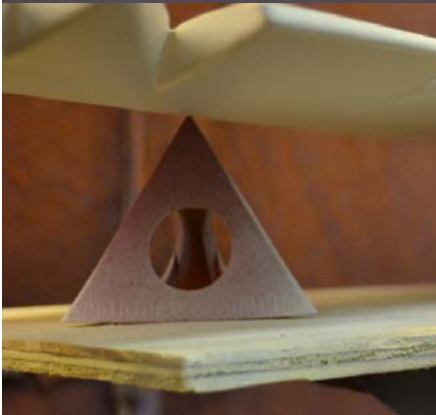
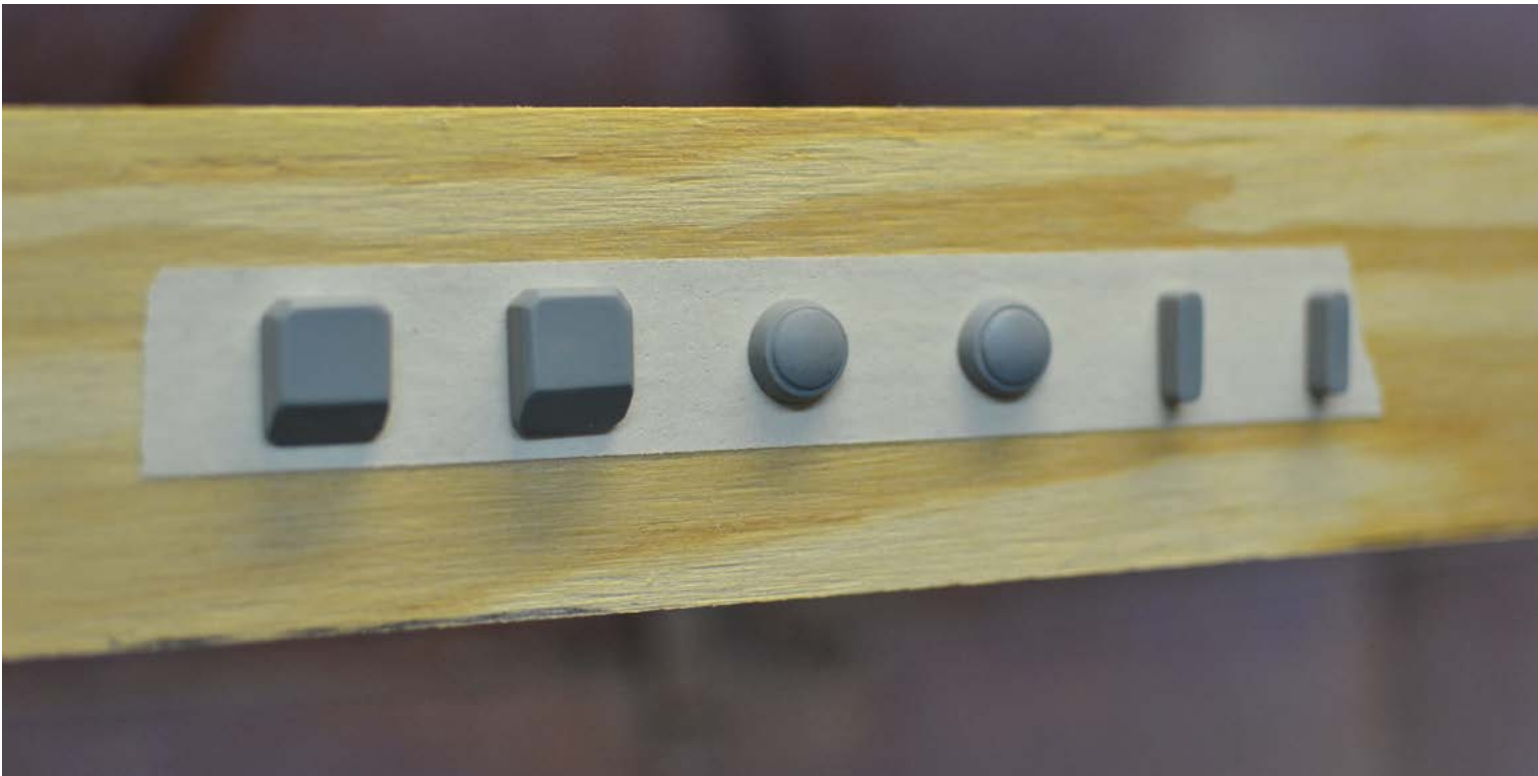
Be aware that paint will "off gas" - meaning it will continue to expel toxic gasses as a result of the curing process - until it is fully cured. You shouldn't bring props inside or into an enclosed space until this process is complete. If you can still smell the fumes, it isn't done curing yet!



## PAINING SMALL PARTS

For very small components, a parts tree will aid the basecoating and clearcoat processes. When tiny pieces may get blasted away by the pressure of an airbrush or spray can, having all small parts mounted to a central spine keeps them sturdy. The base construction is similar to plastic model car kits; small styrene or other disposable plastic is glued to interior component faces. In some cases you can drill small holes for metal pins mounted to a weighted base. In either case, make sure you have a way to easily remove these sprues in a way that don't damage your fresh paint.

Double-sided masking tape is an excellent tool for just that purpose. Yes, it exists! It's precisely what the name implies: paper tape with two adhesive sides. It will hold well on lightweight parts and leaves no residue behind to foul up parts. The adhesive is more aggressive than regular painters tape and can damage or lift more fragile basecoats, so be careful using it on pre-painted surfaces.



Bench biscuits and painting pyramids are another handy thing to have in your arsenal. Not every component will have a space where drilling a hole or gluing a sprue will be optimal. These little guys support your part above a surface to help you paint an even coat up to the bottom lip of a piece. When using these it's best to place your item on a scrap sheet of wood or other tray-like item so it can be easily moved without having to touch the wet paint or the supports. Bench biscuits also have a set of rubber pads on the top and bottom to make sure any delicate paint isn't marred.

## YOUR NEW 360° ARM

If you've been building props for a bit you've probably got enough scrap laying around to make a clamp stand. It's not much more than a spring clamp on a raised arm with a large flat base to counterbalance your parts. When painting something especially heavy, you can add weight to the base for added stability. A clamp stand is the third arm you don't have to worry about covering in paint. These are great when doing detail airbrush work or applying decals, as it allows you to use both hands without worrying about chasing parts across your workbench or scuffing up one side.

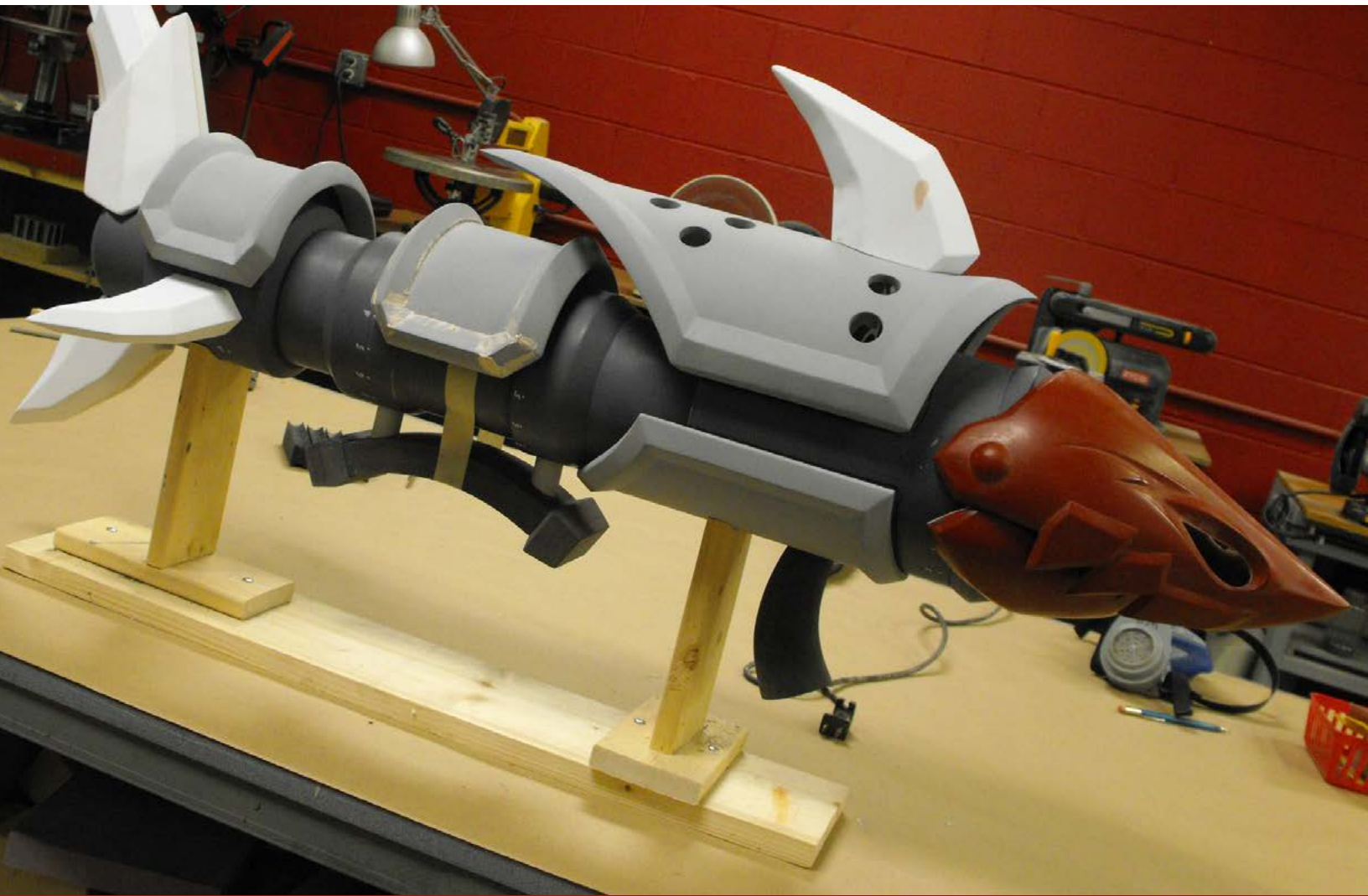
Clamp stands and other jigs work best when mounted to a rotating base, so pair your arm to a cheap lazy susan turntable for the greatest ease of use. Removing the worry about touching wet paint makes for a much more relaxed and comfortable painting experience.



Like paint and drying racks, having duplicate stands and turntables is a good idea. One will become crunchy and covered in paint, and a second kept clean for detail and finishing work. Don't be afraid to modify these rotating platforms to suit your specific build; screw down some brackets or boards until your project is stable while the base rotates. It takes a million screw holes to foul one up, a replacement is about ten bucks, and you'll be much happier if your project doesn't go tumbling off onto the floor.

## PAINTING JIGS

Painting jigs deserve a call-out here as well. These will be custom built per prop and will most likely be single use. With larger weaponry or very complex shapes, it's often harder to find a universal solution like parts hangers or a clamp stand able to hold a replica rigid when doing finishing work. At some point we've all held something between our knees, or perhaps constructed a tower of old cans and workbench flotsam to balance a piece while working on it. Life doesn't have to be like this! Much like with a clamp stand, the materials for your paint jigs will come mostly out of a scrap wood bin that grows with each project. Elegance isn't necessary as much as sturdiness.



The assembly and weathering jig for this Fishbones replica is cobbled together from scrap bits of 1x4" lumber with a thicker sheet of 1x8" board for the base. If it seems wasteful to use all of this material just for a temporary stand, consider the actual cost versus how much your time is worth. Something like the base above would only cost around \$5 in scrap and can easily be taken apart and repurposed later on. Sanding out a fingerprint or repainting your prop because it fell off of a table is far more costly in the long run.

## 04 | SPRAY PAINT BASICS



From a hobbyist perspective, there's not much that can best the accessibility and ease of aerosol spray paint. On the flip side those same cans can be pure bottled frustration to someone just starting out. A quality paint job using rattle cans requires knowledge and patience in equal doses.

I'll do my best to dispense knowledge;  
you'll have to find the patience on your own.

# THE TWO COMMANDMENTS OF SPRAY PAINT, PART... UH, ONE.

## 1: TEST FIRST

Trying out a new brand or color? Maybe the base resin isn't something you've bought before, or you had to use a different primer because your favorite brand was sold out. Unless you've had significant experience with the materials you're using, grab a chunk of scrap and test everything out first. There's nothing more deflating to your artistic drive than seeing two incompatible chemicals interact and destroy hours of prep work. No amount of reference - even this book - can trump personal experience.



While conducting your tests, take notes. Be scientific about this and record a ton of data. How long did your paint cure? Did you expose it to heat in order to cure or was it raining and cold that day? What was the base material, the primer used, the clearcoat, the brand of paint? Coming from someone who has had paint jobs ruined by a specific brand of airbrush cleaner as well as the machine oil residue left over from the manufacture of mixing cups, there is no such thing as too much information when it comes to this sort of data recording.

# THE TWO COMMANDMENTS: THE OTHER ONE

## 2: READ, READ, READ.

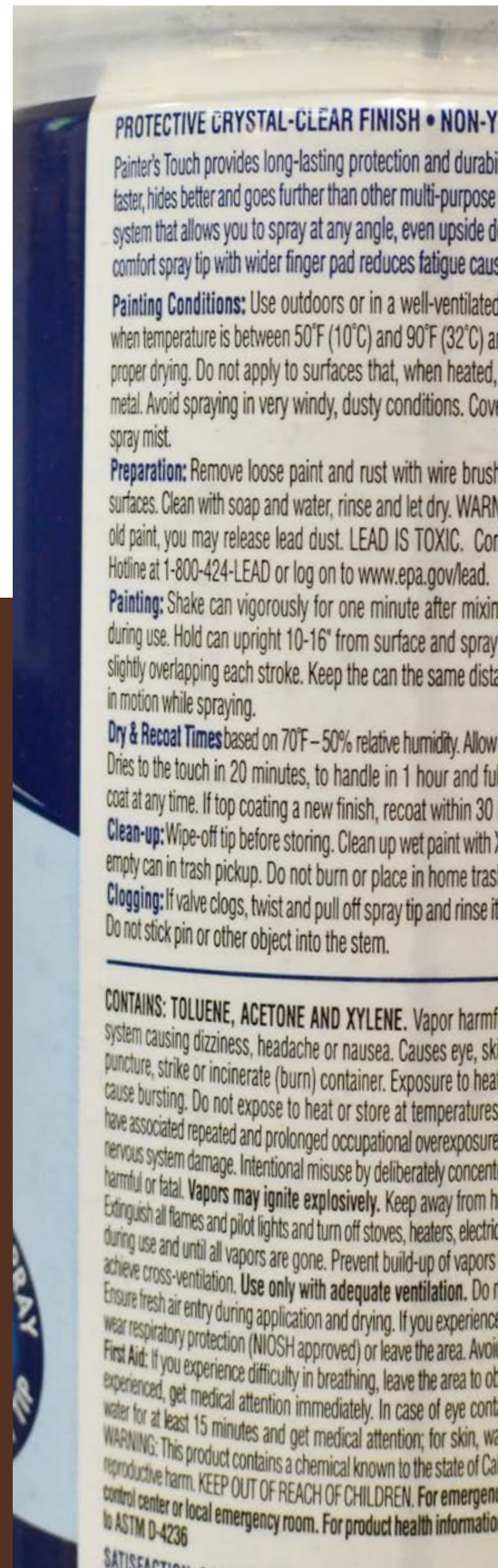
The back of that can of paint sure does have a lotta words on it, huh? Some of this is sales, and a whole lot is safety warnings, but it's not all some jumble to be ignored. Most cans have recommended temperature and humidity ranges for application, and nearly all will list re-coat and clearcoat times. These should be followed as closely as possible. Enamels, for instance, will list recoat times within 4 hours or after 24. Within that 20-hour block of time, new paint will react as the solvent from the fresh layer dissolves the partially cured paint underneath. Within 4 hours the paint isn't cured enough for this to be an issue, and after 24 it's fully cured and the new solvents won't affect the hard shell. It seems rudimentary to say, but follow the instructions.

While we're on the subject of reading, words written on the front of the can tend to be a massive pile of lies. No enamel out of a spray can will "Dry in 10 Minutes!"



This is marketing shenanigans and the mother of the sales writer who penned such nonsense should be ashamed. Read the back; fine print tends to be the more honest kind.

While the paint may be "dry" after ten minutes, this is an important distinction from "cured." Dry paint is set enough to not leave pigment on your hands, but it cannot be handled. Fully cured paint is a tough shell that can take anywhere from 12 hours to one solid week to solidify completely.



### PROTECTIVE CRYSTAL-CLEAR FINISH • NON-Y

Painter's Touch provides long-lasting protection and durability. It dries faster, hides better and goes further than other multi-purpose systems. The unique spray system that allows you to spray at any angle, even upside down. The new comfort spray tip with wider finger pad reduces fatigue caused by spraying.

**Painting Conditions:** Use outdoors or in a well-ventilated area when temperature is between 50°F (10°C) and 90°F (32°C) and proper drying. Do not apply to surfaces that, when heated, expand and contract. Avoid spraying in very windy, dusty conditions. Cover surrounding areas with plastic. Avoid spray mist.

**Preparation:** Remove loose paint and rust with wire brush. Clean surfaces. Clean with soap and water, rinse and let dry. **WARNING:** If you remove old paint, you may release lead dust. **LEAD IS TOXIC.** Call the National Lead Hotline at 1-800-424-LEAD or log on to [www.epa.gov/lead](http://www.epa.gov/lead).

**Painting:** Shake can vigorously for one minute after mixing. Spray during use. Hold can upright 10-16" from surface and spray in slightly overlapping each stroke. Keep the can the same distance in motion while spraying.

**Dry & Recoat Times** based on 70°F - 50% relative humidity. Allow to dry to the touch in 20 minutes, to handle in 1 hour and full cure in 24 hours. Recoat at any time. If top coating a new finish, recoat within 30 minutes.

**Clean-up:** Wipe-off tip before storing. Clean up wet paint with water. Empty can in trash pickup. Do not burn or place in home trash.

**Clogging:** If valve clogs, twist and pull off spray tip and rinse it. Do not stick pin or other object into the stem.

**CONTAINS: TOLUENE, ACETONE AND XYLENE.** Vapor harmful to central nervous system causing dizziness, headache or nausea. Causes eye, skin irritation, puncture, strike or incinerate (burn) container. Exposure to heat causes bursting. Do not expose to heat or store at temperatures above 120°F. Vapors may ignite explosively. Keep away from heat. Extinguish all flames and pilot lights and turn off stoves, heaters, electric appliances during use and until all vapors are gone. Prevent build-up of vapors by achieving cross-ventilation. **Use only with adequate ventilation.** Do not use in enclosed areas. Ensure fresh air entry during application and drying. If you experience difficulty in breathing, wear respiratory protection (NIOSH approved) or leave the area. Avoid breathing vapors. **First Aid:** If you experience difficulty in breathing, leave the area to obtain fresh air. If you experience difficulty in breathing, get medical attention immediately. In case of eye contact, flush with water for at least 15 minutes and get medical attention; for skin, wash with soap and water. **WARNING:** This product contains a chemical known to the state of California to cause reproductive harm. **KEEP OUT OF REACH OF CHILDREN.** For emergency information, call 1-800-424-LEAD or visit [www.epa.gov/lead](http://www.epa.gov/lead). For product health information, call 1-800-424-LEAD or visit [www.epa.gov/lead](http://www.epa.gov/lead). **SATISFACTION GUARANTEED.**

# TYPES OF SPRAY PAINT



The paint types most frequently encountered in aerosol can spray paints are lacquers, enamels, acrylics, epoxies, and (rarely) urethanes. Nearly all of the items on the racks at your local hardware store and art supply shop will be the first three. Epoxy and urethane paints are used more in automotive spray gun applications and require mixing a base material with a hardener in order to cure. While it's possible to purchase them in fancy 2-part spray cans, these are pretty uncommon unless you're going out of your way to find them.

## PAINT INTERACTIONS, OR “THIS OVER THAT”

Problematically, things start to get a bit confusing at this point unless you happen to have a degree in chemistry. Paint types can be deeply complex, with new variations of acrylic-based enamels and waterborne lacquers muddying the clarity of a cut-and-dry formula for application. I’m nowhere near qualified to issue a technical dissertation on the exact properties of chemical interactions, and I also want you to keep reading this book, so I’ll try to stray away from the snares of boring minutia.

This chart covers about 90% of paint, but use it only as a jumping off point. Always refer to paint commandment #1!

		TOPCOAT PAINT TYPE		
		Enamel	Acrylic	Lacquer
BASECOAT PAINT TYPE	Enamel	YEAH! (kinda*)	YEAH!	NOPE.
	Acrylic	Meh.	YEAH!	NOPE.
	Lacquer	YEAH!	YEAH!	YEAH!

\*This is time-sensitive. Enamel paint can disrupt basecoat layers if not sprayed in a very specific manner.

The biggest two take-aways from the chart above is that acrylic paints are pretty stable over nearly anything, while lacquers tend to aggressively eat away anything you spray them onto. Enamels are the middle child, finicky at best but fine if you know how to get them to cooperate. The enamel over enamel interaction can work, but cure times are important to keep in mind. Enamels need to be clearcoated or topcoated within 4 hours of application or after 24; otherwise, solvent interactions can damage the finish.



# ENAMELS



Enamels are known for versatility and very good metallic colors. They tend to cure slower but are more forgiving with layering and chemical interactions than lacquers. Testing with enamels is particularly necessary for some plastics, as enamel solvent can dissolve and damage plastic finishes. This trait does make enamels ideal for painting EVA foam, as it will bond chemically but not dissolve the base material. Enamels are my typical go-to for basecoats due to their wide color availability and general ease of use.



# LACQUERS



Lacquers are tougher and have a much shorter full cure time than enamels. Some Testors lacquers can be handled in as little as an hour, and some specialty paints featured later in this book have the ability to be buffed to a metallic sheen. Lacquers are far more chemically aggressive than other solvent paints and therefore shouldn't be used as a topcoat unless the basecoat is also lacquer. They make for a very durable basecoat but can be more finicky when it comes to tolerances for heat, cold, and humidity. Color and availability is limited outside of hobby shops, and lacquers are typically pricier than other paints.



# ACRYLICS



Acrylic paints are possibly the least simple to summarize. It's widely said that acrylics are water soluble, but many are actually polymer suspensions in a water base. The paint itself is a plastic, and acrylics will become resistant to water after curing. This makes them very chemically stable; acrylics can be used at any time in the weathering process over lacquer or enamel with very little chance of damaging the basecoat layers. Pure acrylic paints (and not acrylic enamels which are an entirely different subset) are difficult to find in a spray can format, so if you're looking to do broad areas of color with these you'll need to source an airbrush.

Acrylics are very diverse and fantastic for weathering coats. They're available in every color imaginable. Acrylics can be mixed with various fillers to achieve textures, gloss or matte finishes, changes in opacity, or metallic flake.



## BASICS OF SPRAY CANS

So that's the what, time for the how. Laying down a smooth, even coat with a rattle can is a skill that takes some time to refine. If you need a single rule to remember, it's this: adding paint is almost always an easy task, but removing excess isn't.

Spray paint is best applied in light coats spaced several minutes apart. Attempting to completely cover your prop in one pass usually results in a thick goopey mess that takes exponentially longer to cure than a similar amount of paint applied in thin passes. This is especially true for lighter colors like yellow and white, where five or six coats may be needed for full coverage. Multiple coats of paint are also advantageous because they provide time to inspect and re-orient your prop. A single heavy coat of paint on a complex shape like a rifle will usually leave some areas blocked and left without any paint coverage whatsoever.

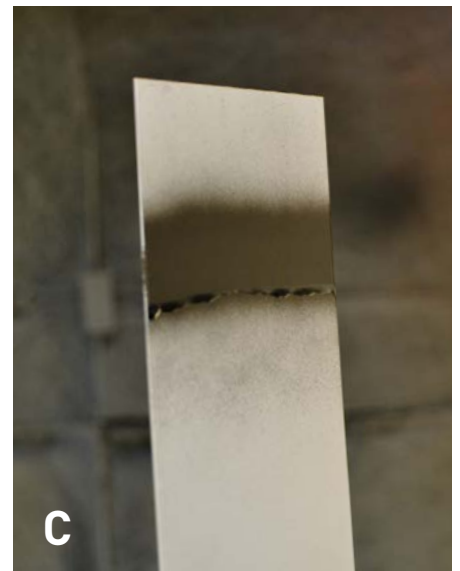
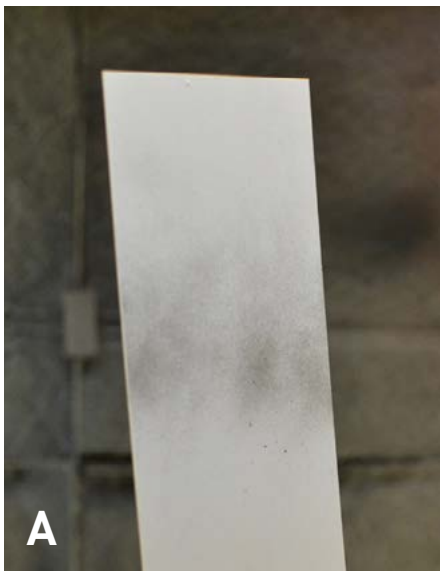


Krylon gloss black enamel: one coat, three, five. A minimum of three minutes elapsed between application of paint layers.



You should be moving the can before you begin to press the nozzle. Starting off to the side of the object being painted will prevent a larger build up of paint on your prop from the initial press of the spray nozzle.

The first press of a spray can nozzle will eject paint at full blast; unlike an airbrush or HVLP gun there's no variable trigger on a rattle can. You have on and off with no real in-between. This means the only way to vary the amount of paint applied to an object is how quickly you move the stream of paint across your prop as it exits the nozzle, and how far that nozzle is from your prop. Holding the can in one spot douses your target in a torrent of paint, very slow movement results in a long series of dripping runs (C), and whipping across the surface as fast as possible gives your piece a very light dusting of color (A). For even coats, quick—not fast—passes work best (B).



## 05 | PRIMER AND SURFACE PREP



FINALLY it's time to paint!

Grab a can of silver, some brown grime, and let's GO NUTS!

Hold on there, tiger. There's a bit more prep left before we pull the trigger and start applying color. If you want your paint job to be durable and smooth, you'll need to apply a primer.

## WHY SHOULD I USE PRIMER?

Primers are designed to act differently from basecoat colors. They act as a binder between your base material (plastic, wood, metal, etc) and your paint, and several are engineered to fill in small imperfections in the surface of your to-be-painted part. While some paints advertise their ability to bond to plastic (typically by using an aggressive solvent which softens the material) or boast that “no priming is necessary” it’s almost always a good idea to prime anyway. Priming increases durability and bonding and can aid with smoother finishes when prepped correctly.



Some plastics, like the polypropylene used in Wally above, are particularly stubborn when it comes to the application of primer and other paints. These plastics are created specifically to avoid stains and marring and must be prepared with an adhesion promoter before moving on to standard paint primer and basecoat.

Regular spray can primer works as a binder between a surface and a topcoat paint layer mechanically – the paint grabs onto a rough surface and cures to it like glue cures into carpet. Some primers can etch into the surface of a part to provide a more solid chemical bond. Adhesion promoter does just that: softening the outermost layer of the plastic when sprayed on, bonding to the surface and leaving a rougher surface ready for paint and other primers to better adhere to.

## SURFACE PREPARATION

If you've got an especially rough surface, consider using a filler primer. As the name suggests, it sprays on quite thick and will lightly self-level, smoothing over shallow imperfections. This isn't a spray-on solution to bad sanding work though, as you'll still need to sand down the resulting coat to get a proper even surface. Filler primer only works on scratches and divots shallower than 1/16" at maximum. Imperfections deeper than this should be handled at the sanding and body filler stages of prop construction. Filler primer is a very soft paint on its own and shouldn't be used in large amounts to fill deep gouges.

Primers also have the ability to be finely sanded, giving your prop a much smoother finish than the build material would typically allow. The smoother the base sculpt is, the smoother your eventual paint job will be. No amount of gloss paint will hide rough sanding and divots, so prep work with primer is essential when you're going for a shiny finish. Sanding a primer coat with a fine grit sanding sponge or 320 grit sandpaper makes a very noticeable difference in the quality of the cured topcoat.



Several passes of filler primer applied over this wonderflex breastplate were able to gradually hide the pebbled texture of the material and make for a more convincing rusted iron look later on.



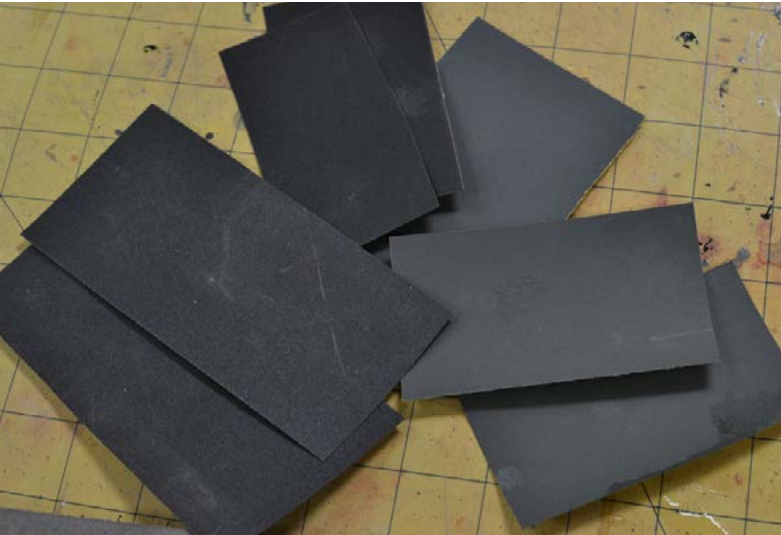
## WETSANDING

Wetsanding is a great way to prep surfaces for an ultra glossy finish, and many primers are designed to be used with wetsandpapers to that end. With sandpaper grits finer than 320 or so, particles removed by sanding a surface tend to “foul” the rough surface of the paper, filling it with paint and rendering it unusable. Wetsanding introduces water as a lubricant, which keeps the sandpaper from being filled with clumps of paint. This technique allows for extremely fine grits to be used, though in the world of replica prop making I’ve found anything over 2000 grit to be mostly overkill.

Make certain your chosen primer is safe for wetsanding first. For example, Krylon brown and black primers are wetsand safe, while the white and gray are not. Some primers, especially those intended for use with acrylic paints, are hygroscopic (they’ll absorb moisture) and will not be paintable after wetsanding. This can result in a lot of frustrating surface cracks as water attempts to evaporate through your topcoat of paint.

## WETSANDING

Start with a clean bucket of warm water, and add a few drops of dish soap. You'll cut strips off your sandpaper and leave it in this bucket to soak before use. It helps to write the grit number on the back, since most look the same and not every scrap will have a number still on it after trimming. While sanding, periodically clean the sandpaper off by rinsing it in your bucket to free up any loaded paint on the surface. This will also keep any small contaminants from making swirl marks on your part. Check the surface of the sandpaper after each rinse; if it's lost its rough feel, chuck it and grab a new piece!



If the surface of the part starts to dry out it might accumulate a clay-like build-up of sanding left overs that will clog the sandpaper. A spray bottle filled with more soapy water will keep the surface slick and free of this build up. Just like sanding at lower grits to refine a shape, you should work up from 400 or 600, through 1000 and further if the ultimate finish of your prop calls for that level of smoothness. Starting right off with a super high grit will not yield the same results and you'll end up going through way more sandpaper than necessary.

Let your parts dry fully before moving on to the next step...

## 06 | BASECOATING



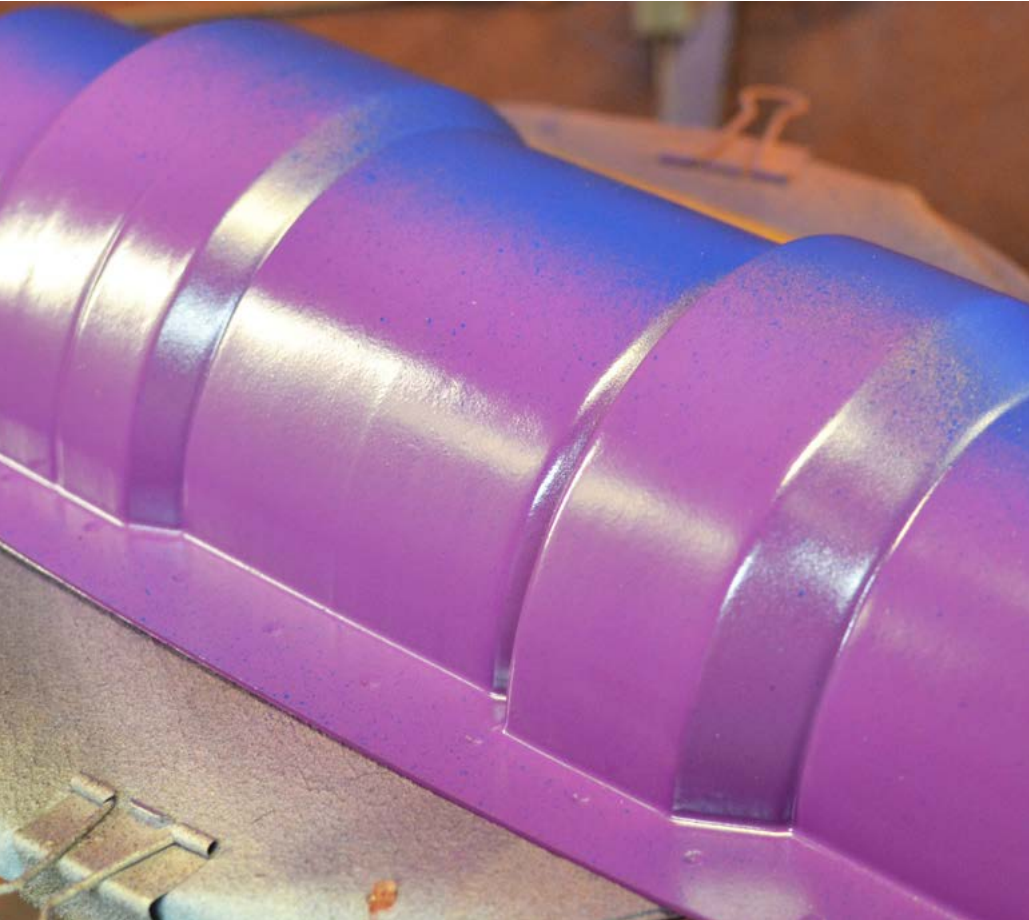
“Basecoating” refers to the stage in which the larger percentage of your prop is painted in its final color.

Weathering introduces a plethora of other hues to a replica, but if you blur your vision a bit and look at something from a few dozen yards away you’ll see one predominant color. That will be your base coat color.

Caveat: as with everything in life, this isn’t a rule set in stone. Some techniques listed further along in this book require basecoating a wholly different color than you might imagine for a convincing finish—black for a steel texture or silver to emulate the look of chipped red paint. The final hue may change, but the process outlined here will largely stay the same regardless of your selected color.

## BASECOAT = SPRAYCOAT

For the purposes of this tutorial, basecoats are applied via spray technique. This can be done with an airbrush or spray cans. Unless you're specifically going for a brushed look it's best to avoid anything with bristles for now. Fundamentally airbrushes and spray cans operate very similarly: liquid paint is aerosolized through a spray nozzle producing small droplets of pigment which coat the surface of the piece being sprayed. As these small droplets blend together the surface color changes to match the paint being used.



That bit is important to keep in mind, because understanding how the paint is settling on the surface of your part is fundamental to achieving a uniform and properly cured base coat. The most common mistake with this stage is an over-application of paint resulting in drips, sags, or uncured layers of thick goopy mess. This also underscores the necessity for proper safety equipment. Spray paint cans use volatile organic compounds as propellants - hydrocarbons like butane and methyl ethyl ether that can cause major health issues. Airbrushes typically use compressed air, but even still the airborne plastic particles of acrylic paints are very harmful to the respiratory system. If it seems like safety is being repeated frequently, it is an essential point. Spend the \$35 on a quality respirator.

The macro shot above shows the small dots of paint that make up a spray finish. The cans were chilled before spraying to exaggerate this effect.

## YOUR APPROACH MATTERS

The process of spray paint application is repeatedly applying tiny droplets of material to a surface in order to change the color. Understanding the mechanics involved will result in better and more even finishes. For starters, most spray patterns are applied in some sort of cone. The nozzle itself is the narrowest point and the spray will widen the further the nozzle is backed away from the surface of the piece being painted. Some cans have a circular cone, while others have a flat “fan” type spray pattern.

Consider you’re painting a flat plane with a square channel recessed into its surface. Paint being applied with a cone-shaped spray pattern will not be able to coat all the surfaces evenly in a single pass.

Multiple passes will be required to apply paint to the entire surface, but consideration should be taken when selecting which areas to paint first. If the larger flat areas are base coated before the recessed spaces, the paint in later passes

used to coat the square channel will overlap and produce thicker coats, resulting in runs or sags.

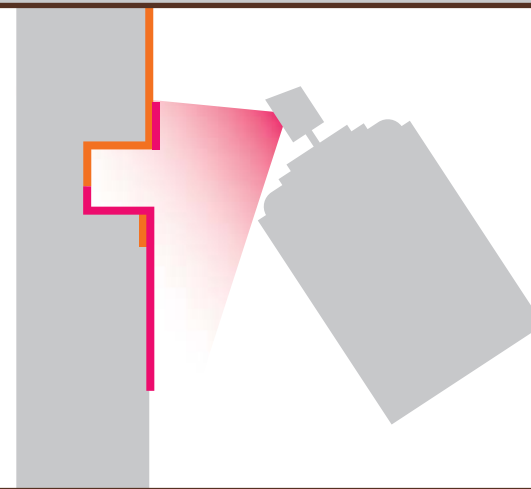
For this reason, recesses and seams should always be painted first. Paint applied in this way will ensure an even coat of color across the entire area of your part. The angle and direction of the spray should be varied in order to fully coat all undercut areas before proceeding to the larger broad surface areas.



Sprayed straight on, recessed areas won't be properly covered with paint.

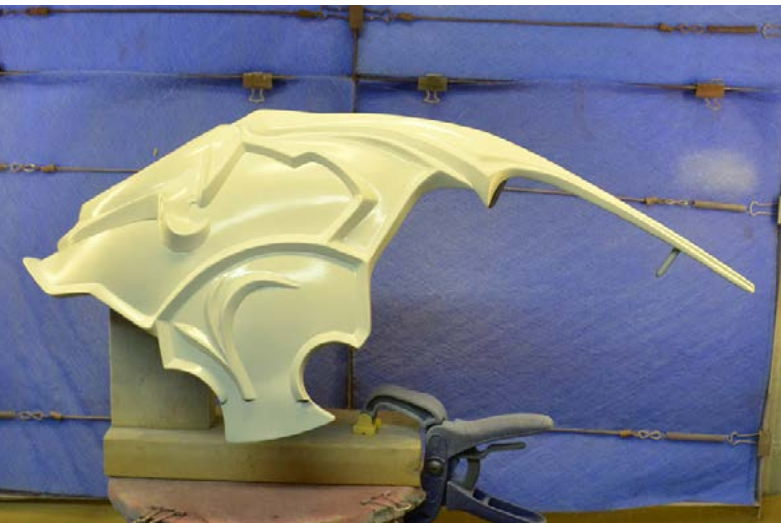
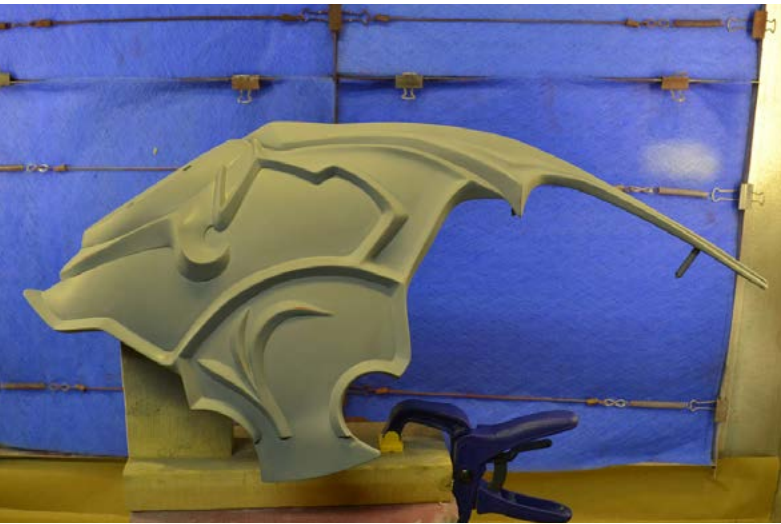


By varying the angle across multiple passes you can ensure even coverage with a minimum of coat overlap. This gets you a smoother finish with less possibility of runs and sags.



## DON'T APPLY ALL YOUR PAINT IN ONE COAT

Multiple thin passes of paint make all the difference in the world. Very few paints encountered by hobbyists will require a single “wet” coat of paint for proper application. In the case of the materials referenced in this book, thin passes of paint will almost always result in a better finish. Applying thin passes with ~5-10 minutes between coats allows the small droplets of paint to flow together for a more even surface while also letting the paint “flash” - drying slightly to the touch without being fully cured. This allows subsequent layers of paint to bond together without inhibiting the curing of the paint beneath. Enamels and acrylics applied in very thick coats will cure on their surface, but the wet paint trapped beneath will take much longer to dry fully, if it does at all.



The very first coat of paint will be especially thin. This is often referred to as a “guide” or “dust” coating. For some colors guide coats aren’t as necessary; silver, flat black and many metallic color enamels tend to coat very well and can be applied in thicker passes than paints like white, gloss black or lighter shades.

Subsequent coats applied after your guide coat can be incrementally thicker, and your final coat of paint should be a more heavily applied pass to ensure that all particles on the surface blend together into a uniform and smooth layer.

## FINISH ISN'T A BIG DEAL

If you've found the color you like, the fact that it's a gloss paint when you want a flat look isn't really a big hurdle to overcome. Once your piece has been painted and weathered to completion, a pass of clear coat will be necessary in order to "seal" the effects and protect all your hard work. Clear coats come in gloss, matte, satin and flat, which will alter the final appearance of your prop accordingly. In the shots below, the replica of Fishbones was initially painted with several different kinds of finishes - satin, gloss and matte - but the final flat clear coat evened everything out.



## PAINT SPRAYS BETTER WHEN WARM

If you've read the back of your spray can (You did, didn't you? We talked about this way back in section 4 - only two rules; test and read. You can remember two rules!) you probably noticed something along the lines of "...apply paint when temperature is between 60°F and 90°F and humidity is below 65%..." The reason for this goes back to how spray paint is applied - liquid paint atomized through a nozzle by the release of compressed gas.



During warmer days, leaving both your parts outside on your painting rack as well as the spray cans in the sunlight for an hour or so before going to paint will help significantly with paint atomization and getting more even, smooth basecoats

Generally, liquids have different viscosities depending on temperature. Think of pancake syrup straight out of the bottle versus having been microwaved. If you need an example, go microwave some syrup. This book will still be here when you get back. Lower viscosity liquids behave more like water, higher viscosities like shampoo.

This rule of temperature holds true for sprayed finishes as well. Those tiny droplets of atomized paint are still a liquid and will react to temperature variations accordingly. Colder paint will not flow together as evenly when applied, resulting in a pitted and rough surface. In extreme cases this can actually build up a rough pebbled layer of paint dust as the small droplets of pigment build up but don't blend together.

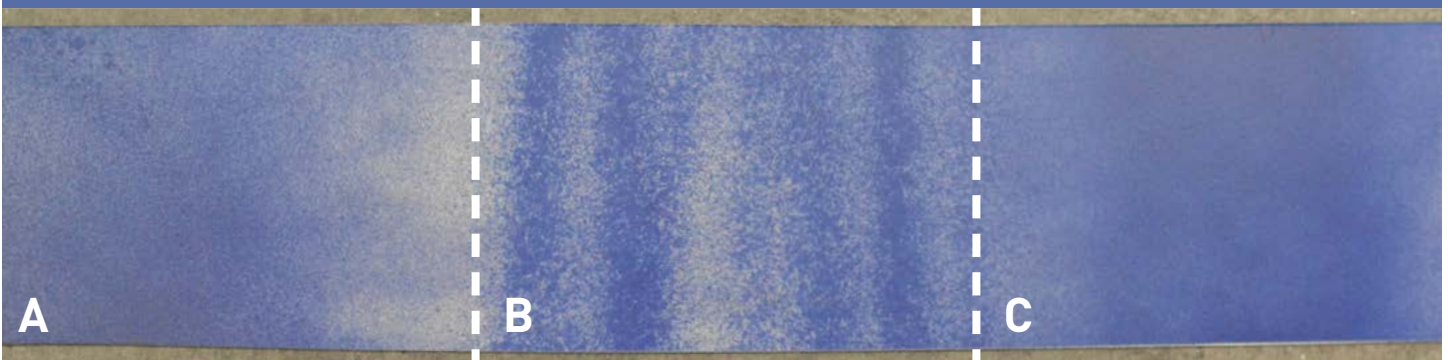
## WARM CANS ARE HAPPY CANS. BUT NOT TOO WARM.

There isn't a way to suggest the following technique without a warning: **be careful.**

Since warm paint sprays better, it's better to spray with warm paint. The best way to do that is to warm up your can of spray paint under a hot water tap for about 5 to 8 minutes. Setting the can into a larger container to pool the warm water will accelerate this process, and leaving the tap to run for the duration will also help. Please don't set this up then go make a sandwich and get distracted by cat videos for an hour. Set an alarm before warming your paint to make sure it isn't forgotten. A kitchen thermometer will also help monitor things to make sure you don't get the can too warm; 80°F is more than enough.



The test scrap below shows how temperature affects a sprayed finish. Krylon enamel was used for this example. Section A was sprayed while the can was at room temperature, around 72°F. Section B shows the same can chilled to 55°F and sprayed in the same indoor conditions. For section C, the can was heated to just below 90°F before spraying.



Technobabble: Spray cans in the US are regulated by the Department of Transportation and have ratings for burst temperature at specified psi. The can types most prop hobbyists interact with are DOT 2Q and DOT 2P. Respectively these operate at 140-160psig @130°F and 162-180psig @130°F. In order to be US DOT rated, burst cannot occur below 1.5 times maximum pressure at 130°F (240psig/270psig). Chances are your hot water tap won't be pushing the can over 130°F – average hot water heaters in the US run at about 110°F – but this gives you some math to keep an eye on when using this trick.

## 07 | BASE FINISHES AND TEXTURES



Sometimes a prop needs a base texture that's a bit more complicated than a solid color. The following techniques are best applied over a primer coat, before adding additional weathering seen later on. This is less “weathering” and more simulation of a particular material before the grit, grime and damage is added.

Consider that real-world materials like steel and polymer resin are rarely just one flat color, and you can see how this process of more complex base paint layering can lead to a more convincing overall replica.

# BRUSHED METAL



## SUPPLIES NEEDED:

- STEEL WOOL (00 OR 000 GAUGE)
- TESTOR'S BUFFABLE METALIZER LACQUER (TWO SHADES: DARK AND LIGHT)
- BLACK PRIMER
- TESTOR'S BUFFABLE METALIZER SEALER (CLEARCOAT)



This process works great for simulating machined metal parts that have been cleaned or treated with a rough scouring pad. It's useful not only for creating an overall brushed look, but it can also simulate wear lines on parts that slide across one another, such as a shell eject port on a pistol or pump slide on a shotgun.

To start with, your parts should be primed with a black lacquer-safe primer. This will prevent any over-zealous polishing in the later stages from revealing a bright red or green primer underneath what is supposed to be a metallic component.

Determine the type of metal you're looking to simulate and pick out

a pair of colors from the Testor's Buffable Metalizer line of lacquer paints to use. While there may be other brands out there that can achieve a similar look, Testor's should be available at your local hobby store and it's inexpensive enough to pick out a few shades to test. Since these are lacquers, be careful not to use an enamel primer.



Start by applying the lighter of your two shades in two light coats of paint. This particular metallic lacquer covers very well and very quickly, and two coats should be more than enough for full coverage. Because lacquer cures quickly, subsequent coats can be applied after one hour. Once the light basecoat has cured, apply your darker shade in one thin pass. Complete coverage isn't as essential as keeping this coat of paint very thin. If you have a few mottled spots, like the example above, it won't affect the end result negatively. Only apply one coat of paint.



Allow this to cure for a least one hour, then use a piece of 00 or 000 gauge steel wool to lightly scratch the surface. The direction of your movement will dictate the direction of the brushed steel texture. You won't need a lot of force or pressure to achieve this effect. By keeping the darker topcoat ultra-thin, the roughness of the steel wool should only scrape away the top most color if you use a light touch.

Once you're happy with the look, buff the finish with a clean soft cloth then seal this effect with an acrylic clearcoat or the specific Testor's Metalizer sealer.



## GRAPHITE & POLYMER COATING



### SUPPLIES NEEDED:

FLAT BLACK PAINT  
SOFT COTTON CLOTH  
GRAPHITE (STICK IS PREFERABLE, HB OR SOFTER LEAD)  
SATIN OR FLAT CLEARCOAT

This technique is most useful when trying to emulate the look of a precision machined weapon. It is useful as either a preliminary step to a heavier weathering pass, or left as is to indicate a well cared for, but still used, piece of hardware.

Start with a coat of flat black over your part. In the photos shown, Testor's flat black enamel has been applied in three light coats over black /gray primer. When flat paint dries fully the cured surface will have a slight tooth to it, similar to high grit (1000+) sandpaper. It is this slight surface texture that diffuses reflection, gives the paint its matte look, and makes this technique possible.



Grab a scrap of soft cotton cloth - my preferred material of choice is scrap fabric from old khaki pants but any soft cloth will work fine - and rub a graphite stick over the surface until it's saturated with carbon. Starting off small is advised here; it's easier to add more layers than to remove a heavy handed pass.



Yes, the graphite stick shown above was manufactured in *West* Germany. A little bit of this stuff will last you quite a long time, provided you never actually draw with it!

Your graphite-infused rag will now be used to lightly buff the surface of your weapon. Similar to sketching with a pencil, heavier pressure will yield more drastic results. Consider the wear patterns as this is applied: protruding areas or areas with more interaction should have heavier passes of graphite to simulate the cumulative effects of gradually wearing surface paint away. A light pass over the entire part will yield a soft sheen, while heavier pressure over corners and seams simulate higher use and provide the part with edge-defining highlights.

As you work, you'll notice the graphite embedded on the cloth is finite, like a paintbrush loaded with ink. Re-apply more material from your graphite stick as needed, and remember the first pass after re-application will be more vibrant.





The graphite layer on your piece is quite fragile at this point and can easily be disturbed. Nitrile gloves are highly recommended as the oils from hands and fingers will be very evident, acting as a grease mask and keeping the graphite from evenly coating your parts.

Even if you intend to add more weathering later it's a good idea to seal this treatment before doing so. Luckily, there's no dry time needed between this pass of weathering and applying a clearcoat. Clear can dull the metallic sheen of the graphite slightly, but it will regain

its luster after the clearcoat is fully cured. Matte, flat or satin clears will enhance this effect best, while a gloss tends to render it less believable. For added depth, be sure to add dirt and grime to the seam lines later on!



In these two shots you can see the difference between a freshly applied finish (top) and one that has been clearcoated (bottom). Reference the clearcoat section at the end of this book for more information on exactly which clearcoats work best for this process.

# DECALS



## SUPPLIES NEEDED WILL VARY. SEE BELOW.

Applying decals isn't strictly in line with the rest of the techniques in the "Base Finishes" chapter, but this is an important step to complete if your replica needs more precise imagery than can be achieved with paint alone. Much the same as masking, these processes should be applied before any additional weathering is completed so they age in the same way as the rest of your prop. The availability of home-printed decals has opened up a lot of possibilities in the replica propmaking world. Many more technical looking pieces of armor and weaponry will have barcodes and manufacturer logos emblazoned on their surfaces that give them a more manufactured, official look.

## WATER SLIDE DECALS

Water slide decals are something most model makers will be familiar with. They're thin mylar sheets, typically clear but also sold in white, provided on a waxy paper backing. Soaking this paper in water will dissolve the glue on the back of the mylar and separate it from the paper, allowing you to slide the decal off and onto the surface of your part. Clear water slide decals have the advantage of being able to blend over their backgrounds, but will only work if the base color of the part is a lighter hue than the decal itself. This means a red water slide decal would look great over yellow or white, but blend into the background if placed over black or dark green. Water slide decals are also very fragile and must be clearcoated to prevent being damaged from handling.



## WATER SLIDE DECALS

For custom decals, water slides are available blank and can be printed on by both inkjet and laser printers. Inkjet versions will need to be clearcoated before soaking them in water, as inkjet inks are water based and will bleed if not sealed. Laser printed labels are more durable, and the inks tend to be more opaque as well, resulting in more vibrant colors.



To apply water slide decals, start by trimming the paper backing around the decal as closely as possible to the artwork. This will keep the clear part to a minimum and eliminate a noticeable perimeter edge from the final result. Soak the decal in warm water to activate the adhesive and separate the decal from the paper backing. A small piece of wire mesh is helpful here to keep the decal from sinking to the bottom of the cup. After a few minutes, remove the decal and slide the film off the paper backing onto your prop.

You'll be able to move the decal around quite a bit so long as there's still water behind the plastic sheet. Once you're happy with the placement, use a paper towel to blot the decal and remove any moisture. This will set the decal in its permanent position. Leave overnight to make sure there's no residual moisture, then clearcoat!



M96 Mattock Kit from Mass Effect by ZProps

## DIE CUT VINYL AND VINYL DECALS

Vinyl decals can be simple blocks of color or an actual printed image directly on top of the plastic. Usually these are designed in a program like Illustrator or Photoshop then sent to a sign shop or print house for cutting. The advantage of this is having machine-cut precise edges and high-resolution printing on intricate shapes. While a water slide decal might come with a white

background, those typically aren't opaque enough to block out darker base colors, and you'll also need to trim the perimeter edge by hand. A vinyl decal is completely opaque and many print shops will be able to trim the perimeter to your specifications! Vinyl decals are easily the most robust option, needing no clearcoat or sealer to be durable.



Top right: The decal on the fin of this Planet Express ship model was originally water slide, but switched to die cut vinyl for better color and durability. Middle: The records on the High Fidelity needed to be brightly colored and simulate real LPs; the entire graphic was printed to vinyl then transferred to a styrene disc to save weight. Bottom: The dirt on this pressure gauge was first created as part of the original artwork, then added onto later with grime weathering for more depth and realism.



The graphic fidelity offered by vinyl cutters is good, but you won't be able to replicate very intricate details with cut vinyl. Other disadvantages are price – a sheet of decals may cost \$30 or more – and the strength of the adhesive on the vinyl. While a water slide decal is malleable with placement, a vinyl decal is pretty much a one-time application without much margin for error. Pulling these away from a painted surface can sometimes take the paint with it.

## INKJET PRINTED PAPER DECALS

Inkjet prints are a bit of a step-down alternative to vinyl. They're cheaper and can be done at home with little more than a sheet of mailing labels. Similar to vinyl they're opaque and have a white backing, but they can only be applied to flat or simple curved surfaces like cylinders.

For the print below, the painted replica was photographed then used as a background texture when laying out the typography and imagery. A few test prints were done to check for proper color match before trimming the decal out and applying it to the side of the gun.

Like inkjet water slide decals, paper inkjet decals will need to be clearcoated to prevent moisture damage. Some inkjet inks can also yellow over time if exposed to continuous sunlight and will no longer match their original colors. Additionally, paper decals will have a raised edge along their perimeter. This isn't very apparent until you examine closely, but can be seen close up, shown in the below shot of the AER9 Laser Rifle from Fallout 3.

Keep these caveats in mind before going with inkjet decals to save money over vinyl.

Since these decals were designed to match the paint on the rifle, they have been added before the final weathering and grime coats. Using acrylic paints over paper decals that haven't been sealed with a clearcoat can cause the inks in the paper to run or bleed. Also, care should be taken during weathering not to highlight the raised seam around the decal, or it will end up calling attention to these areas.



# MASKING AND STENCILS



## SUPPLIES NEEDED:

- MASKING TAPE
- ADHESIVE-BACKED CONTACT PAPER
- PRINTER, WAX, NEWSPRINT, OR OTHER PAPER
- CLEARCOAT
- ACCENT COLOR

Stencils and masking are really the same process; the only difference is in the complexity of the shape being masked off. Masking is usually done by hand with a roll of tape to section off a large portion of a replica, while stencils are used more for intricate details like lettering or graphics.

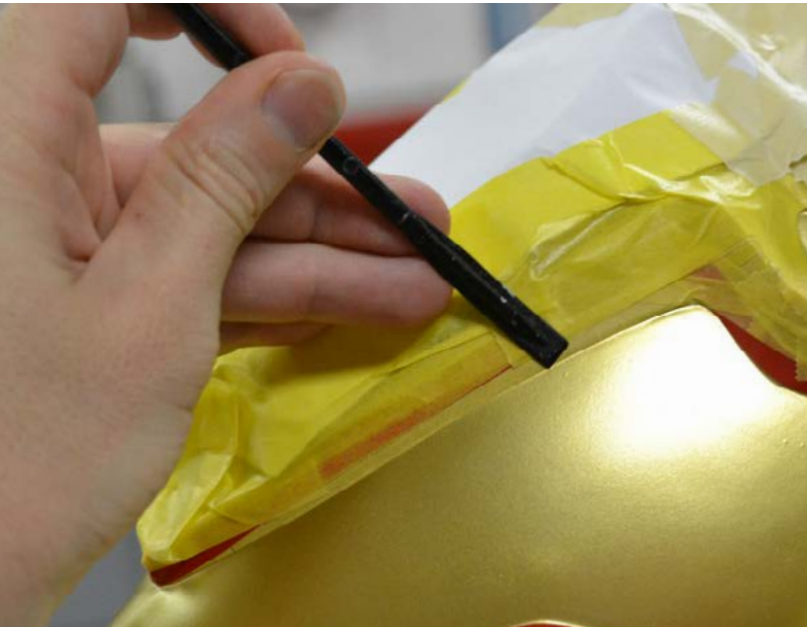


In both instances, quality materials will mean a drastic improvement in results, specifically when it comes to masking tape. Tamiya yellow masking tape is expensive at nearly \$6 a roll for 1/4" wide material, but the finish is well worth the price. Most blue painter's tape sold in hardware stores is intended for home use and doesn't provide the fidelity that replica-quality prop work requires.



The N7 Valkyrie above started off with a silver basecoat. The black sections were masked off, then the lettering and stripe details were added with paint stencils before weathering and clearcoat.

Start off by making sure the intended surface is free of any dust or contaminants, and that the paints you're going to be using will not adversely react with one another. Your basecoat should be entirely cured; don't try to mask off paint that's only been drying for an hour or two. Mask off the area with the thinnest width tape possible to make following surface variations and curves easier, then press along the edge of the tape seam with a plastic engraving tool. A hotel room card or credit card will work quite well also.



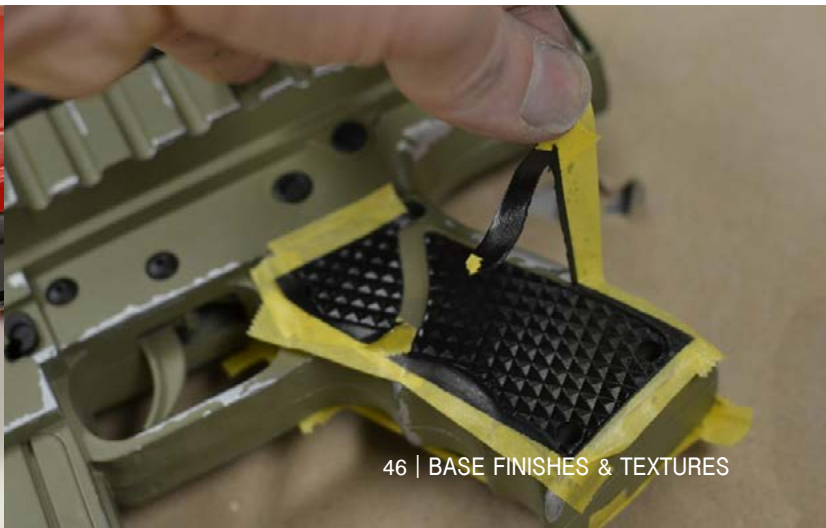
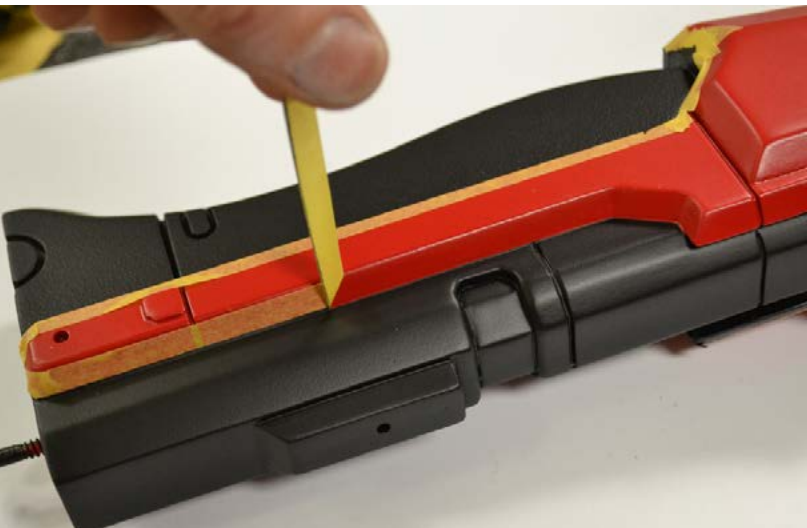
Follow this up by wrapping the entirety of your part with wider, cheaper tape and paper. You may think you can be a careful painter and avoid overspray, but accidents happen to even the most cautious of us, and you're more likely going to be able to get an even paint job without worrying about painting too far outside the lines.

Before painting your accent color, spray the seam line of the paint with

clearcoat. You've likely seen paint creep under masking tape creating a ragged edge. A quick clearcoat before applying color will mean only the clear has an opportunity to bleed below the tape, sealing imperfections in the masking job.

Applying paint to your masked areas should follow the steps outlined in the basecoating section in chapter 5. De-masking the taped off areas should be done once the paint is

dry, but not fully cured - typically after 3-5 hours of cure time. Cured enamel may crack along the seam line, and fully cured acrylic will act as a sheet of solid flexible plastic, tearing instead of leaving behind a clean edge. When removing the masking tape from the seam line, try to pull outward at a 90° angle to the surface of your part. This will act as a sort of knife-edge to the paint and prevent tearing or chipping.



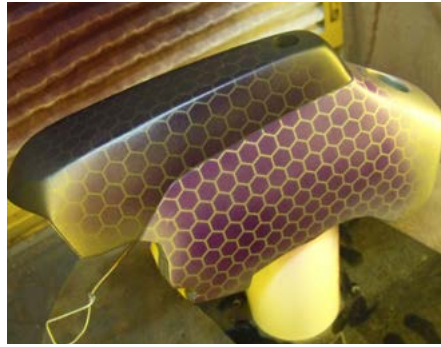
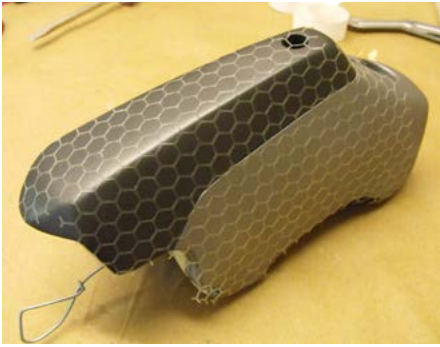
Masking for stencils can be done with a variety of materials, but a personal favorite is contact paper. This can be found in many hardware and home improvement stores, and some kinds have the added benefit of being clear so you can better align your stencils for painting. Contact paper is plastic with a very low-tack inert adhesive backing designed to hold but not leave residue or damage surfaces. For the purposes of propmaking this is ideal, as it allows for a very temporary application with a tightly sealed edge perfect for painting.



Contact paper can be cut as easily as masking tape, and the included backing means more complex shapes can be trimmed with an exacto knife and a cutting mat. Start with a pattern and print it, mirrored, to plain paper. Spray mount this pattern to the backing of your contact paper and follow the trim lines to create your stencil.

In this example, the accent stripes on this rifle have been painted using the chipped paint method to give them a bit more depth before final weathering. Consider things like this as you plan your project to make details more interesting and create additional depth on your piece.





Contact paper can also be run through home vinyl plotters or laser cutting machines. This can be very useful for simulating hue-shifting patterns like on this replica of the Needler from Halo. In this instance the masked pattern was applied before the remainder of the paint. By using a semi transparent purple, the masked areas show through as a ghosted pattern and give the finished piece a lot more visual depth.





Don't discount simple paper stencils either! Not everything needs to be adhesive backed, and using a simple pattern stencil as an outline for hand painting can be a lot easier than trying to follow a faint pencil line. For the Shield of Whiterun, four paper stencils were printed overlapping one another to create the entire pattern of the horse head. These were trimmed out leaving connecting bridges to make sure the interior parts didn't fall loose. Paint was applied lightly with a sponge to show the location of the final pattern, then the remainder of the shape was filled in by hand.



# GRIP TEXTURE



## SUPPLIES NEEDED:

FLAT PAINT (BLACK USED HERE BUT ANY COLOR CAN WORK)  
RUST-OLEUM MULTICOLORED TEXTURED SPRAY PAINT OR...  
...KRYLON FUSION TEXTURED SHIMMER  
FLAT OR MATTE CLEARCOAT  
MASKING TAPE

A non-skid weapon grip seems to be a timeless standard, whether it's a present day knife or a futuristic directed-energy rifle. The following process yields both a convincing aesthetic effect as well as a durable coating that will withstand heavy handling and repeated convention use.

The component to be textured needs to be masked off first. Don't skip here; textured paint comes out of the can with all the finesse of a fire hose, and only masking a portion of your part is likely to result in overspray. It's strongly advised that you practice on a piece of scrap with the textured paint before applying it to your meticulously sculpted prop! This material is tricky to apply and a heavy hand can easily bury all your finely rendered detail in a torrent of multicolored blobs.



Much the same as primer, consider your basecoat color in relation to your color topcoat. Multicolored textured paint is available in several shades, and it will be difficult to cover a gray/black texture coat with white or yellow.

Rust-Oleum sells two versions of textured paint: Multicolored and Single color. Single color has less depth to the texture and won't work well for this technique. If you're after a lighter texture, go with the Krylon listed in the materials above. For deeper texture, use Rust-Oleum.

Time to apply texture! A light touch is best here. Holding the spray can a bit further away from your part will result in a finer texture with less detail lost under the grit of the paint. At least 12" or more is recommended. You'll want to move side to side in quick passes, lightly pressing the nozzle as you go. This is akin to applying perfume, not bug spray. A little goes a long way and you can always add more later.



Depending on how thick you apply your texture coat, you may need to wait some time before moving on to topcoat color. If you painted some scrap parts as tests, keep them around to check that the textured base is fully dry before proceeding. You want the surface to feel rough and gritty, almost like used sandpaper. If you can push around the surface or it still feels slightly mushy, wait a bit longer before applying color.



Zoom and enhance! This macro shows the kind of texture you're going for. Applying the paint too thick will cause it to pool and create blob-like areas where the texture seems to disappear. It will eventually become more textured as the paint dries, so resist the urge to blast it with more material. Patience and a light touch is needed to make this technique work.



Your color coat can be applied in the same manner as a regular base color. Flat paints will work better as they don't self-level in the same way that gloss paints do; self-leveling will pool in small divots and fill in the fine texture of the basecoat. A few light passes are all that's needed to seal the texture coat and change the color before clear.

Masked areas should be de-masked within 6 hours of applying texture. This paint cures to a very dense, hard coating; de-masking will be difficult if the paint is allowed to cure fully.

Flat or satin clears will complete this look best, though you should complete subsequent weathering passes like grime, gouges and dry brushing before sealing with clearcoat. The more paint you put on top of the texture - clear included - the less pronounced the surface will be.

For an added layer of wear and tear on more weathered props, consider cutting small nicks out of areas that would be dropped or scuffed, and fill the resulting cuts with silver before grime and dirt.



Most grip texture tends to be flat black, but a metallic blue was used on this part for the Halo 4 Needler. The top photo shows the raw Rust-Oleum paint, and the bottom is after color and flat clearcoat.

## GLOSS FINISHES



### SUPPLIES NEEDED:

SANDPAPER (400, 600, 1000 GRIT)

PRIMER

GLOSS BASECOAT

GLOSS CLEARCOAT (PREFERRED BRAND, RUST-OLEUM "CRYSTAL CLEAR" ENAMEL)

AUTOMOTIVE PASTE WAX

The first thing to understand about gloss paint is that it cannot correct errors in sculpting or preparation. Large voids in bondo or deep sanding gouges won't be magically filled in by glossy clearcoat; if anything it will accentuate them even more. A smooth surface begins with the sanding and sculpting done before primer. Once that's smooth you can move onto the following steps.

A shiny glossy replica will need to be prepped differently than some helmet from a post apocalyptic war. To begin with, a thicker coat of primer than usual should be applied then allowed to cure for a full day before sanding. This primer coat should be wetsanded to at least 400 grit before moving on. As you're sanding, periodically wipe away the wet surface of the primer and inspect the finish. You should see an even matte layer of paint without any pits or sanding lines. At around 1,000 grit paper, the primer will develop a slight sheen as well.

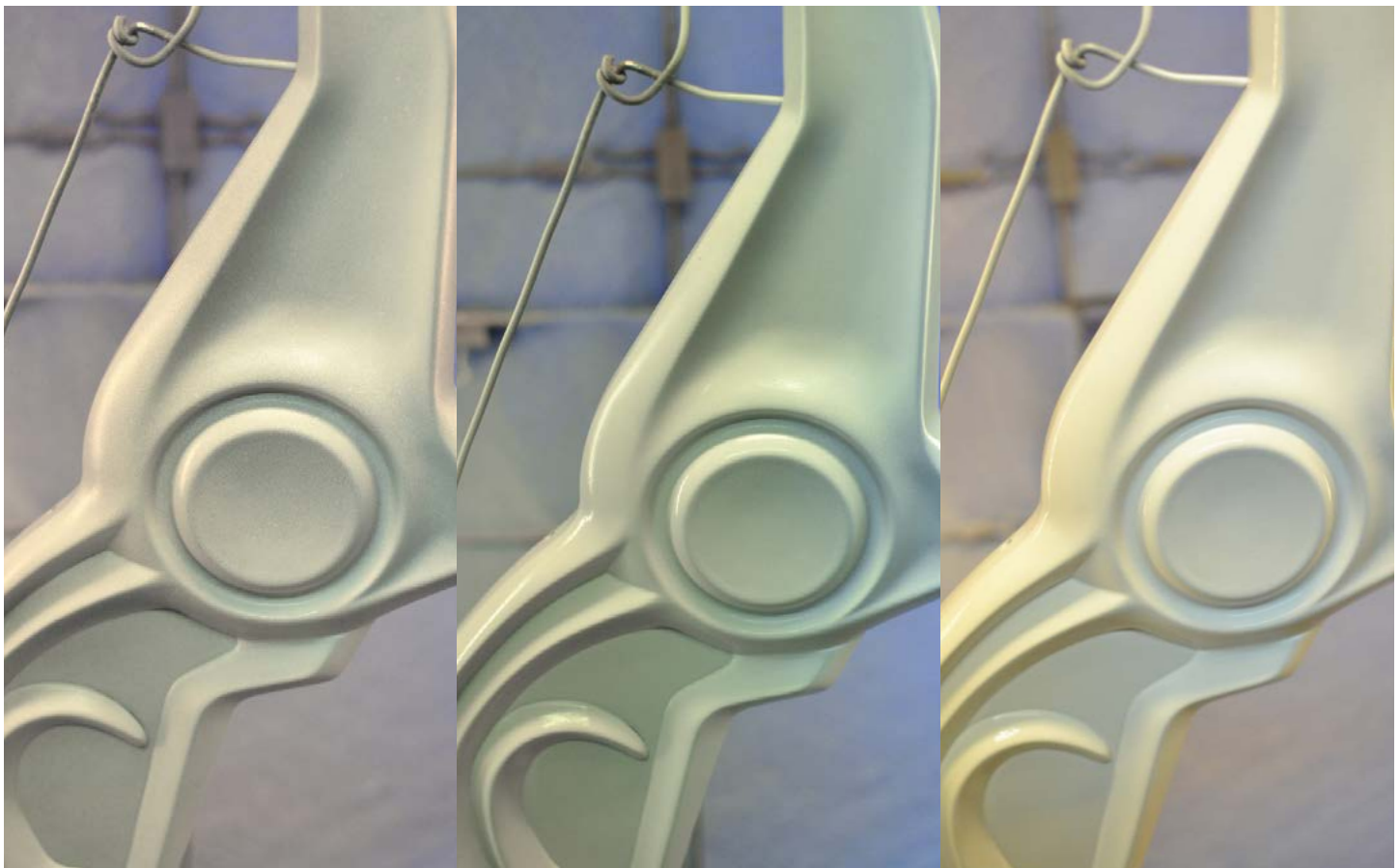


A display base in black primer being wetsanded in prep for gloss. On the right you can see a few small areas toward the upper lip that still have a bit of rough texture and will need to be wetsanded further before basecoating. Make certain your chosen primer is wetsandable before attempting this step or the following layers of paint won't cure properly!

Before moving on to basecoating, wipe your part down with wax and grease remover. This is a product used primarily in the automotive painting industry but it will remove any oils you may have left behind from your hands or workspace. Lastly, rub the part down with a tack cloth to remove any dust or debris. Now you're ready for paint!

Your guide coat should just barely be a dusting on the primer. This will allow subsequent coats of paint to adhere better and lay more smoothly without fisheyes or blemishes. Note that you don't have to use a gloss basecoat for a gloss finish; that can be done later by using the appropriate clearcoat after your color base has been applied.

The second and third coats can be applied more heavily, but be cautious to avoid runs or sags. Applying more paint is much easier than removing it. Give each coat between 5 and 10 minutes to flash before moving to the next. As paint works best when warm, keep the can in a sink with hot tap water to make sure it stays warm while you wait for things to dry.



One, two and three coats of base semigloss white. After one pass there's still gray primer visible. Two coats makes the white more consistent, but it's still tinted gray by the primer beneath. After three, the white paint is smooth and opaque.

Clearcoat is applied in a similar pattern to the basecoat color; thin passes are added until a uniform finish is achieved. Your print coat of clear may look somewhat rough and matte instead of gloss. Don't panic! The kneejerk reaction here is to hose your part down with the can until you get that high gloss shine, but patience will pay off in the end. Let the first print coat cure for 3-5 minutes before applying subsequent passes of paint. Enamel crystal clear has a much stronger tendency to run and produce drips than the color coats, so make sure to allow a little more cure time between passes to keep this from happening. Generally 3-4 coats are sufficient for a deep glossy shine.



There's a lot of paint on your model right now and it's probably very pretty, but resist the urge to touch it for a few days. 48 hours is usually sufficient but perhaps add in another day if you're paranoid. One extra day of waiting is far preferable to repeating every step of your progress so far.



After the clear is completely cured, use a sponge and automotive paste wax to buff the clearcoat. Make sure to test this first on scrap to ensure your wax is compatible with your paint! Work in small areas with circular strokes of the sponge, and allow the wax to dry fully before buffing with a clean cloth. After two to three coats, your finished part should almost be glowing.



## 08 | WEATHERING TECHNIQUES



“Weathering is a process wherein a beautiful paint job is gradually ruined until it’s perfect.”

- *Some Guy Who Wrote This Book*

## WEATHERING THEORY

Without going into a third-year-painting-major artist's statement level of loftiness, there's an end goal to the weathering process which is important to keep in mind when applying the following techniques: you're telling a story. Your prop may be newly created, but the layering of material from here on out should convey the life such a piece would have lived if it were real. Consider the timeline of your creation before slinging a bunch of black and silver paint onto a gun. A post-apocalyptic relic would see decades of service and wear; weapons from a future interplanetary war would be nearly pristine as a result of their mass manufacture and maintenance.

Source material will help in many cases, but chances are you'll still have to intuit a few things on your own. Even the most detailed game render may leave a few things open to interpretation.



Was your piece meticulously cared for or abandoned in a crypt? If it were dropped, what would scratch and how? Would armored gloves have marred the finish and if so, where most frequently?

Just as line art and 3D files serve as the blueprint for the construction of a prop, the backstory will be the blueprint for the paint and weathering. Figure out the type of wear you want to simulate before jumping in; know the story you're trying to tell.

On a more practical note, many of the following processes can be tricky to master. More than a couple even produce fairly random results with only a small amount of control offered to the builder. Depending on your proficiency and confidence—or perhaps a looming deadline—you might be tempted to throw caution to the wind and use your in-progress replica as testing ground for new techniques. If you're brave, confident or just pressed for time you can try your luck. For the cautious, curious and deadline-free, test on scrap parts first!

# CHIPPED PAINT

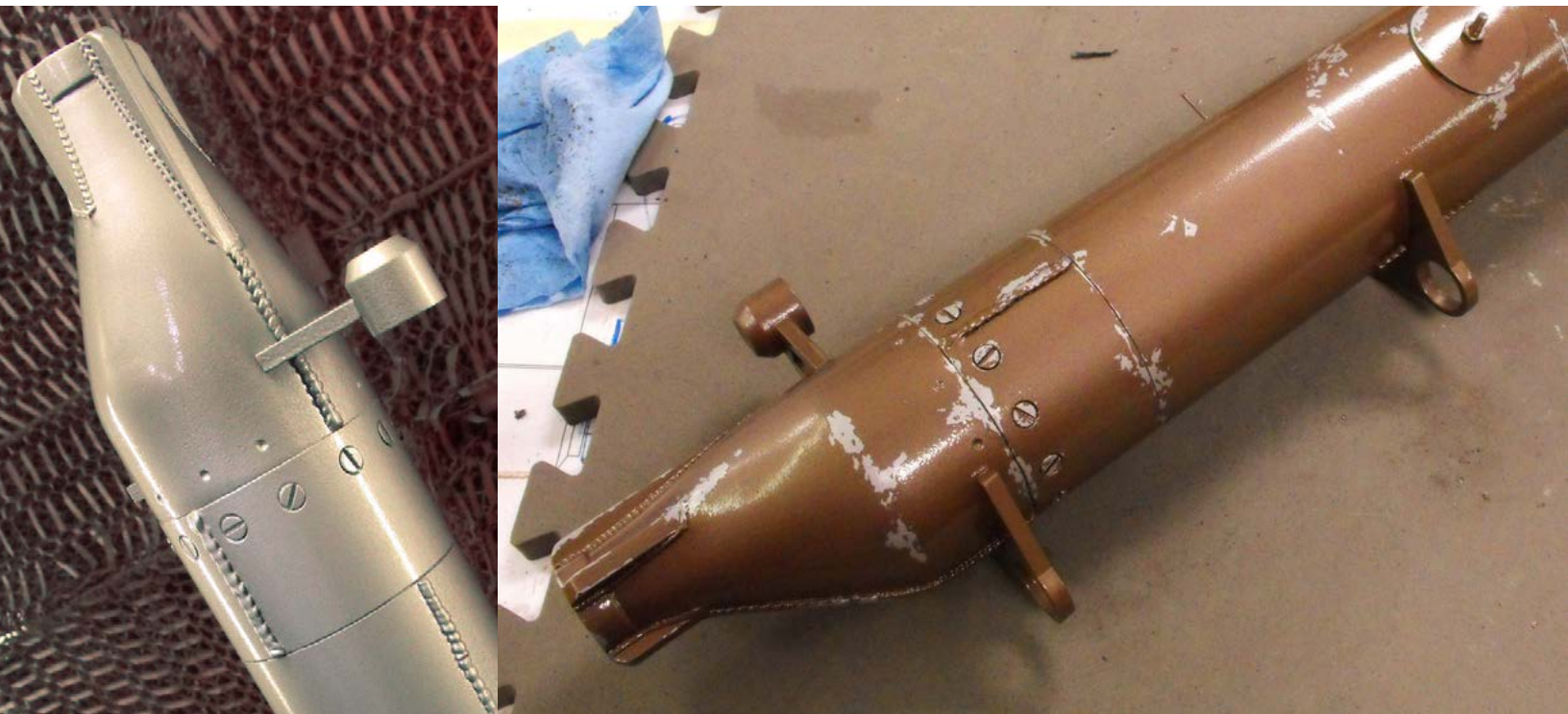


## SUPPLIES NEEDED:

- SPRAY OR AIRBRUSH PAINT: AT LEAST TWO COLORS
- MASKING LIQUID (LATEX, WAX, SEE BELOW)
- MASKING TAPE (OPTIONAL)
- CLEANING AGENT: DISH SOAP, WINDOW CLEANER, ETC.
- COARSE BRISTLE PAINTBRUSH
- SMALL SCRAPER, SCULPTING TOOL, TOOTHPICK, ETC.

An analysis of most heavily used industrial machinery will show the type of weathering this technique aims to mimic. Over time, thick paint in high wear areas will shred off in large chunks, exposing the base material. Most often this is used to show a silver underlayer of exposed metal, but combining this trick with faux rust can simulate decades of neglect. Alternatively, applying this effect to painted decals or accent stripes shows a piece that has been customized by its owner but perhaps not with the most resilient materials.

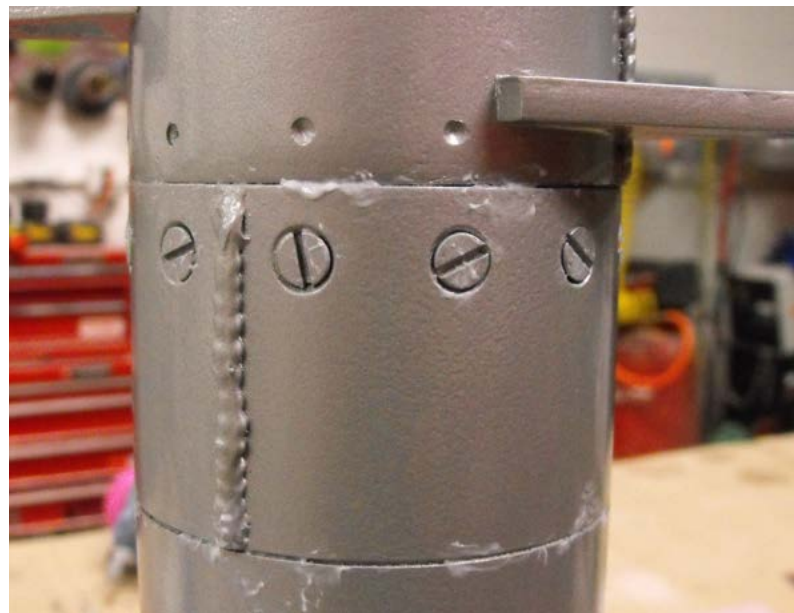
More so than others described in this book, the chipped paint technique requires a large amount of planning and forethought. If you want your red painted gun to look as though silver lies underneath, the silver needs to be applied well before the final topcoat of red is applied.



Your base colors or texture will need to be applied first and allowed to cure fully before proceeding. Full cure is essential here, as you'll be applying cure-inhibiting materials later on and you don't want these to interact with your base color layer. Whatever shade you pick at this time is what will show through the chipped paint. To simulate the look of chipped brown paint on the Captain Ahab replica, the main pressure chamber was first painted with hammered silver paint and left to cure overnight

Select what areas should get the chipped treatment. It's very tempting to throw the effect everywhere, but consider which areas of your prop would be the most heavily worn and how they'd become scuffed. If overdone this effect can look very cheesy and fake.

The chip areas need to be masked off with a non-curing inert gel. Some of the highlights in this category include toothpaste, hand lotion, conditioner, and mustard. Masking latex will work well, as will automotive wax, rubber cement and wax mold release. The benefits of the toiletries and condiments is that they can be cleaned off with water. Latex and waxes may leave a residue behind that has to be cleaned with a solvent to allow future paint coats to cure. Rubber cement is another option, but applying it can be tricky since the material is so thick.



Any one of the above list can be applied across the surface of your basecoat with a coarse paint brush or Q-tip. Protruding edges and hardware like screws and knobs make the most convincing areas. Apply a generous coating and don't worry about making it even or level. Large blobs are okay here.

Enamels and lacquers work best for the next layer of paint, as their fully cured state is a bit more brittle than acrylic paints. You'll paint the top color coat as you would any other, and spray right on top of your gel masks. Those areas will look ugly and the paint may not lay evenly across them, but it won't matter once you get to the next step.



After allowing your surface coat to cure fully, you can pick away the paint blisters over the gel and expose your base color underneath. Scraping with a nylon bristle brush or old toothbrush is usually sufficient, though you may need to use a harder edged tool like a metal sculpting blade to scrape away more stubborn areas.

Depending on your gel mask of choice, you'll need to clean these newly chipped areas with soap or solvent to remove any residue before further weathering and clearcoat. Just as the gel repelled the topcoat, it will also inhibit a sealer from curing properly.

Wally here was basecoated with Testor's metallic silver enamel, chipped areas masked with Turtle Wax, then topcoated with Testor's flat olive drab green

## STEEL COLOR AND TEXTURE



### SUPPLIES NEEDED:

- BLACK (OR SIMILAR, SEE BELOW) BASECOAT PAINT
- SILVER ACRYLIC PAINT
- MATTE ACRYLIC MEDIUM
- SMALL SPONGE ROLLER BRUSH
- ORGANIC SPONGE
- WAX PAPER
- FLAT OR SATIN ACRYLIC CLEARCOAT

Typically when painting a faux metal finish, the first color that comes to mind would be silver or gray. Steel can be a reflective shiny surface if treated a certain way but this isn't always the case. Most of the time steel is a mix of tones resulting from how it was formed and how it has aged. The result is a mottled mix of dark splotches and patchy highlights.

The best way to properly simulate this is with a layered approach to the silver-tinted finish. To begin, your part should be basecoated in a dark shade; flat black tends to work well, but some specialty shades (Krylon's "Oil Rubbed Bronze" for instance) can shift the final temperature warmer or cooler to your personal preference. As the rest of this process will be done with acrylics, an enamel or lacquer base is optimal.



Skyrim Nordic Dagger kit by 2 Story Props

The basecoat of this Skyrim Nordic Dagger was painted Krylon "Oil Rubbed Bronze" satin enamel in prep for the faux metal process.

Once your base color has cured, you'll begin to add highlights. Silver acrylic comes in various tones, and the more you can employ the better this effect will look. Begin by applying a blob of paint to some wax paper, then roll your paint roller across it until the roller pad is evenly coated. Rolling the sponge across the surface of your prop should leave behind a thin silver veneer. You're not looking for coverage at this point; it isn't a living room wall. If this looks patchy, all the better! Patchy steel is more convincing. Continue to apply silver paint with the roller until you've got a mottled but shiny finish.



To simulate impurities in the metal, pick a few random spots on your prop to darken things up a bit. Mixing browns (covered in more detail in the chapter on grime and dirt) will make for convincing deposits of oxidization and carbon. This time, you'll use the organic sponge to apply the pigment.



Put the paint down onto wax paper first. Dabbing the sponge onto your piece will create areas of sharp contrast. This can be softened by going over the fresh paint with a new roller or synthetic flat sponge.

This might seem a bit crunchy and gross right now. Real steel has layers upon layers of colors, so it's best to cover your new grungy blots with another pass of silver. Mixing this pass slightly darker or lighter than your first pass will add even more depth and more interest to your piece. Like before, use the roller to sparingly apply thin coats of silver until the surface has been blended to your liking.



Above: Right after blotting with a couple different tints of brown

Below: One final pass of a lighter titanium silver blends these darker shades into the overall tone of the blade





If the look you're after is one of aged metal, consider adding a bit of orange/brown to the darker patches to simulate a bit of oxidation. Areas mixed with a small amount of black will look like impurities in the metal, and very dark black-silver mixes suggest pitting that has been polished back out. When applying these effects, mixing a bit of matte acrylic medium will make blending easier. The acrylic paint will also have less of a plasticity shine to its cured finish.

This layering of acrylic paint isn't very durable - at least not if you're ever planning to bring your prop to a convention - so make sure to seal all of your hard work under a matte or satin acrylic clearcoat once you're finished.



Different hues of silver applied lighter or heavier will result in a different appearance. The Bolt Pistol was painted sparingly to emulate the look of carbon steel, while the Nordic Helmet above received many layers of varying shades to look like hammered sheet steel

# RUST



## SUPPLIES NEEDED:

FERROUS IRON POWDER  
VINEGAR  
LEMON JUICE  
NYLON BRUSH

HYDROGEN PEROXIDE  
SALT  
GREEN SCOTCHBRITE PAD  
FLAT ACRYLIC CLEARCOAT



To make real rust on your armor, you'll need ferrous powder. The specific brand used here is Matisse, though the only thing to look out for is the color. Red ferrous powder is a pigment that has already been oxidized; it cannot be rusted any further. Whatever iron powder you choose to go with, it must be silver-gray in color.

The chemical slurry needed to force the powder to oxidize is a mix of potent oxidizers (hydrogen peroxide and salt) and mild acids (vinegar and lemon juice). Varying these ingredients in quantity can result in different colors of rust, though a good intro formula is 6:2:1:1 ratio of peroxide, vinegar, salt and lemon juice. This is affectionately referred to as "hamster pee." You'll understand why once you stir up a batch.



This technique is messy, and it can get away from you if you add too much powder or blast all of the rust to an area on your piece where you don't want it.

Start small; you can always add more later.

A light pass of dark purple-red acrylic over the spaces you intend to rust will help bring out more color differentiation later on. Sponge color into these areas but don't allow it to dry fully.

To get the rust powder to stay in place, brush soapy water over the dark areas. The soap content will break the surface tension of the water allowing you to wet the surface evenly. A small flat brush can be used to tap small amounts of powder onto the surface of your prop. A little powder goes a really long way.



Spraying is the best method for applying the oxidizing agent, but the mixture will clog up most spray nozzles after a few days. Either clean yours out or find one you don't care about throwing away later. Make sure you get a spray bottle that has a "mist" setting; otherwise, you'll just blast away all the metal powder. Also, put some scrap cardboard or a drop cloth under your parts to avoid destroying your work surface with this concoction. Spray a light coat of oxidizer on the powder and watch the reaction go!



Initially the rust powder will make a sort of nasty yellow foam. This can be instantaneous but sometimes it can take as long as 30 minutes to start activating. This will fizzle down and settle into a nice rust texture pretty quickly (about an hour or so) but don't try to blast away this bubbling with your spray bottle. That's the chemical reaction taking place, and more accelerant will only remove the metal powder.

Let the rust cure for 24 hours before you do anything else to it. Initially it will look pretty grisly. Once the peroxide and vinegar evaporate, a lot of salt is left behind and it's not very pretty. You'll also have some runoff which will be tinted with the color of the rust. A quick buff with a green scotchbrite pad or toothbrush will get rid of this crusted layer. If you want a cleaner look, follow this up by wiping your prop down with a damp cloth too.

After buffing, you'll want to clearcoat your rust layer. This will seal the rust, stopping the chemical reaction and preventing pieces from flaking off. It will also darken the color somewhat. Don't worry if initially your rust turns darker when clearcoated. As the clear cures, your color will go back to its more orange hue.



Skyrim Nordic Carved Helmet kit by FEV Studios



These photos show the progression from fresh rust (top) to cleaned with a brush, wiped with a damp cloth, then after final clearcoat. Skipping the brush and wiping stages will give you more texture and color. You may want to follow up the clearcoat with a little bit of purple or red paint on the rust spots to deepen the color a bit and keep it from being too cartoonishly orange.

# GRIME AND DIRT



## SUPPLIES NEEDED:

- ACRYLIC\* TUBE PAINT (RED, BLUE, YELLOW, BLACK)
- MATTE ACRYLIC MEDIUM
- WATER
- PAPER TOWELS
- PAINTBRUSHES

*\*while acrylic isn't an absolute, the specific technique described below will only work if your weathering paint of choice is water based. Additionally, the basecoat should be of a different base than your grime coat. For example: enamel base, acrylic grime.*

Seam weathering with grit and grime adds realism and gives recessed areas more visual definition. A recessed seam line is more distinct if it isn't the same shade as the rest of the surrounding material. Real world items accumulate grit and crud as they're used. Dirt, oils, even dead skin collect in the seams of everything from firearms to television remotes. Showing that accumulation will lend your prop more authenticity as a real-world item.

Color theory plays a strong role here. The first inclination will be to fill the seams of your prop with a wash of black paint and call it a day, but unless the prop in question existed in a coal mine it's unlikely the accumulated dirt would be solid black. Similarly, straight brown paint isn't the answer either. Brown paint straight from a tube is often a desaturated hue and doesn't correctly emulate the look of real grime.

The richest colors will come from mixing your own shades. Red, blue and yellow combined will give you brown, though the exact recipe isn't equal amounts of paint. Blue is a far more intense hue and will easily overpower an equal amount of yellow or red. Yellow is fairly weak and will need to be added in greater quantities in order to change the overall color of a mixture. A neutral brown comprised of primary colors will need a ratio around 1:10:30 blue to red to yellow.



What's the point of all this? Enough practice with color mixing will allow you to shift the temperature of the weathering to suit the prop and the mood it conveys. That sounds pretty artsy fartsy, but guns and futuristic armor tend to look better with a cooler wash of grime - more blue - while more organic weaponry and fantasy-type armor benefit from warmer - more red and yellow - hues.



The palette on the left shows the mixture of browns used on the grime for the Needler replica. This was added to the seams and recessed areas, and the darker blue-shifted shade contributes to the colder mechanical aesthetic of the finished piece.

Once you've got the color you're after, mixing in matte acrylic medium will keep the finished paint from appearing glossy and plastic. Using a brush, trace down the panel lines and seams of your part with a generous amount of paint. This will look fairly messy at first. Only work on a small area of your

prop at a time to prevent the paint from curing in an undesired area; once acrylic cures it becomes fairly water resistant and difficult to remove.

Follow your messy painted seams with a damp paper towel. The goal here is to wipe away the grime

coat on the upper protruding surfaces while leaving it in the recessed areas. If you consider a gun dropped in mud then hastily wiped off, where would the grime accumulate? Deeper corners and ruts will have a greater collection of crud while higher wear surfaces will eventually wipe clean.





These thin passes of acrylic tend to be fragile, so make sure to seal this weathering with clearcoat before proceeding to other techniques or handling your prop.

This process can be repeated with different shades of brown for depth, or modified to give added texture. Instead of wiping paint away with a paper towel, using an organic sponge will diffuse the darker browns across raised areas for a heavier level of distressing. Using the paint-soaked towel as a blotting tool can add texture to a flat area of color, while intentionally leaving large streaks across the surface of a part implies it was cleaned in a hurry.



# DRY BRUSHING



## SUPPLIES NEEDED:

COARSE BRISTLE BRUSH

METALLIC PAINT (SILVER IS MOST TYPICAL, ENAMEL OR ACRYLIC)

PAPER TOWEL

Dry brushing simulates the subtle effect of paint on a metal surface scuffed away to reveal a shiny silver base material. While it is one of the most prolific weathering techniques in the prop making world, dry brushing requires a lot of thought to look correct.

It's very easy to overdo this particular accent. Dry brushing is one of those techniques that instantly gives a new depth to a part, but going nuts with the silver paint in every corner will result in a less believable paint job overall. Before you start applying any paint, consider where the most likely wear areas on your prop would be. If you're painting a firearm the trigger will have more wear on the front than the rear. A charging lever of a rifle would have similar mileage on its painted surface.



On this N7 rifle, dry brushing has been used over black areas to simulate metallic highlights beneath paint. On the silver areas, drybrushed paint has been applied to raised edges to show areas where the grime and dirt have been scuffed away after repeated use.

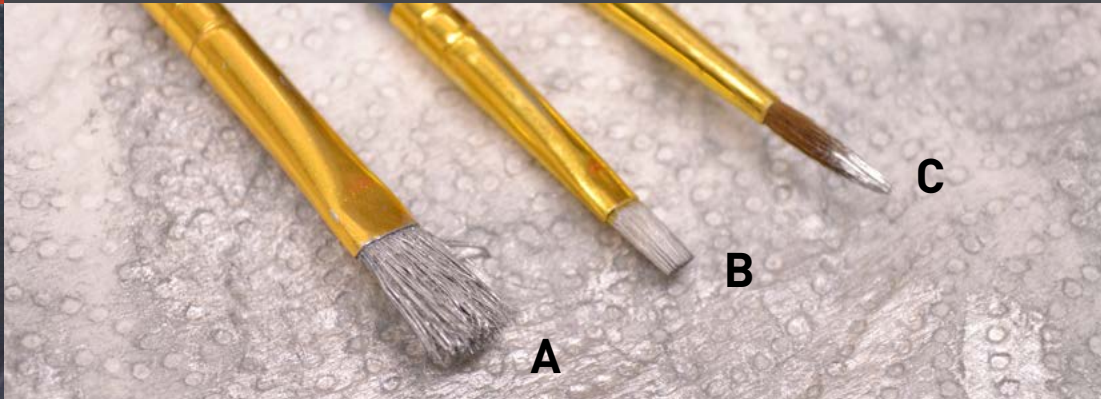
If you're thinking about a prop that's led a very hard life - dropped, skidded across the floor - take the time to consider the geometry of the item before dry brushing. Protruding elements would bear the brunt of this damage and their wear should be heavier. Valleys and troughs in the topology of the part would be less worn or not at all. A good rule of thumb: if it's hard to get the brush into a crevice or recessed area, that location wouldn't likely have a lot of wear on the paint.



A very small amount of paint is used to achieve this effect. Start out by applying paint to your coarse bristle brush, either by dipping it into an enamel bottle or dispensing acrylic onto a palette. The aim is to only have enough paint to leave a dusting of silver across a raised edge. It's best to blot your brush against a paper towel to remove excess paint prior to painting your replica. As the name of the process implies, you want the brush to look dry, not dripping with pigment.

Applying a tiny amount of silver paint against a dark background will tend to stand out vibrantly. If you're dry brushing a black or similar dark prop, you'll want to remove even more paint from your brush. For colors closer to silver, like gray or even gold, more paint should be used to make the effect apparent.

A coarse bristle paint brush is recommended for general application; the irregular bristle pattern will give the paint a more random effect. Synthetic flat brushes work well for making heavy accented lines along an edge, and natural fine brushes work well for streak-like scratches and scuffs.



Start out small and gradually build up this effect in areas that would consistently get more wear. Things like triggers, charging handles, guards and hilts will get more scuffed than other areas. Keep in mind that a lighter touch is often much more convincing; you can always add more with this technique to exaggerate the effect if the first pass isn't sufficient but due to the very thin passes of paint, this finish dries quickly and is difficult to undo.



Light passes with the brush over protruding angles will give the impression of a thin line of finish being gradually worn away. Brushing at a 90 degree angle to your edges suggests more generic wear, while brushing many streaks in one direction implies a part that was scraped continually. Longer streaks across broad faces will simulate one-time scuffs from contact with rough surfaces.



# CRACKED PAINT



## SUPPLIES NEEDED:

- WHITE SCHOOL GLUE (ELMERS)
- PAINTBRUSHES
- ENAMEL OR LACQUER BASECOAT PAINT
- ACRYLIC TOPCOAT PAINT
- HAIR DRYER OR HEAT GUN (OPTIONAL)

Somehow this effect migrated from the neglected walls of a Chernobyl bathroom to a kitchy faux finish used on Martha Stewart's family picture frames. If you're looking to showcase age and neglect, cracked paint is the way to go. This is a bit of a tricky technique to get a feel for, so it's best to practice on some scrap before moving onto a finished prop.

Select a base color first and keep in mind that whatever color you pick will be the color shown through by the cracks once you finish the process. Ideally a spray painted or airbrushed lacquer or enamel works best here, but you can also use an acrylic if you make sure to clearcoat it before going forward. Allow your basecoat to cure fully overnight.



For the Bioshock Bird Splicer mask, the desired effect was one of chipped and cracking plaster. The final mask would be a white color, but the cracks had to be slightly darker to be visible. A light beige was chosen as the basecoat color for this reason.



Determine where you'd like your cracked surface and brush on a layer of white school glue to these areas. You can vary the intensity of the cracking effect by using thicker coats of glue or thinning the glue out with water. Thinner coats will produce more subtle cracking while glue applied very heavily will make large crags.

Your topcoat color should contrast in some way to the basecoat in order for the cracks to show up well. This should be applied with an airbrush so

that the top layer of paint is as thin as possible to facilitate the cracked texture. The color topcoat needs to be applied when the glue areas are still glossy and haven't begun to cure. White school glue shrinks slightly through its evaporative curing process, and it's this shrinkage that tugs the surface coat apart, creating cracks.

For this reason the school glue needs to continue to cure beneath the topcoat of paint. Lacquer and enamel topcoats can make a shell

over the glue layer and prevent curing, so acrylics are the paint of choice. As with the glue layer, varying the thickness of the paint on top of the glue will affect the resulting size and intensity of the cracking effect.

A hair dryer or heat gun can expedite the process significantly by driving moisture out of the glue coat. Exercise caution if you're speed-drying a part; overheating areas will cause the glue to bubble and can disrupt the base paint layers as well.



Left: Cracks caused by undiluted glue. Right: Glue thinned with water creates smaller, finer cracks  
Bottom: Thicker cracks formed underneath heavy brushed-on layers of acrylic



It is also possible to make this effect work with heavier coats of brushed-on paint, though this typically needs a thicker coat of glue and the use of a heat gun in order to get the surface to fracture. Always go back to rule #1 - test first!

Before proceeding with grime or other techniques be sure to seal this effect with a clearcoat. A thin layer of acrylic paint over a shrunken glue base is somewhat fragile and can be scraped away accidentally with relative ease.



# BLOOD SPLATTERS



## SUPPLIES NEEDED:

- ACRYLIC GLOSS GEL MEDIUM
- ACRYLIC STRING GEL MEDIUM (OPTIONAL)
- LARGE CARDBOARD BOX (OPTIONAL)
- RED, YELLOW, BLUE ACRYLIC PAINT
- LONG HANDLED PAINTBRUSH
- RULER OR OTHER FLAT, STRAIGHT EDGED OBJECT.



Easily one of the most fun processes when weathering. Blood splatters provide something that few other techniques can: instant gratification!

To begin, mix up a convincing blood color. Keep in mind that blood isn't just red. The thick stuff – like the kind that would be thick enough to leave a splatter like what you're after here – tends to run pretty dark with blue hues. Consider also the kind of splatter you're trying to show. Something weeks old will be dry and brown, blood aged only a few moments is still going to be bright and glossy.



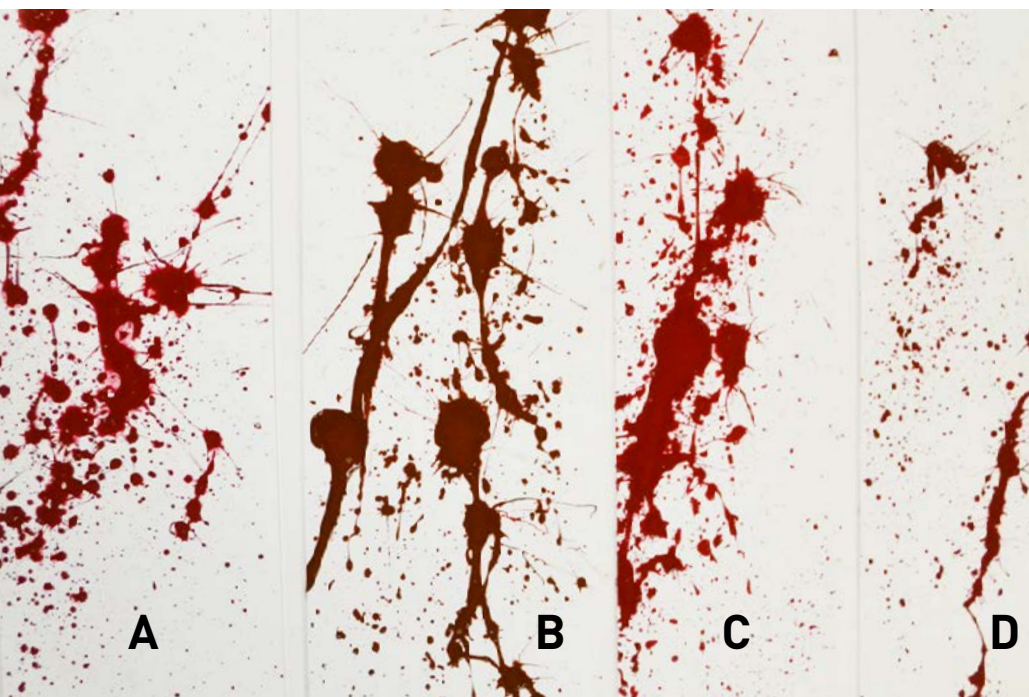
The thickness you're after with your mix is something akin to liquid cold medicine—syrup-like in consistency but not a gel.



Acrylic mediums will help out a lot here. Gloss medium works great for the fresh splats (A), while matte medium will keep the browner blood looking more flat and crusty (D). Both will change the viscosity of the paint, and therefore how it impacts the surface of your prop. These will also temporarily lighten the pigment you're mixing up, but the final cured paint will settle back to its initial shade. Make sure to test out whatever mix you concoct. Cheap acrylic paints have a tendency to cure to an entirely different tint than their liquid state. Reds in particular may shift more to purple or even pink.



Another thing to try out is acrylic string gel. As the name implies, this increases the viscosity of the paint, making it more gel like in its application and creating “strings” of paint when flung or splattered (B & C). While not absolutely necessary, this can add a bit of depth to your splats. It's easy to overdo the look and end up with a bad Halloween prop, so do plenty of tests with different mixtures before tackling a splat job on your finished replica.





You'll need a paintbrush with a fairly long handle and a large set of bristles to hold in all your liquid paint. Grab a ruler or some other straight edge – just about anything that's sturdy and flat will work – and hold it a few inches above the surface of your prop perpendicular to the direction you want the splatter to go.

Load the paintbrush up with paint so it's damp but not dripping. Carefully bring it over to your prop and line up the brush and handle with the direction you want your blood splat to go. In one quick motion, strike the handle of the paintbrush about 2" from the bristles against your straight edge. BAM! Blood splatter.

The abrupt strike causes the paint to fly off the brush tip and impact the surface of your prop. Shape will vary depending on the viscosity of your mixture and the amount of paint on your brush. More paint will give streaks while less paint results in a series of dots. Thicker means heavier splats, thinner gives more pattern spread.



# METAL DISCOLORATION



## SUPPLIES NEEDED:

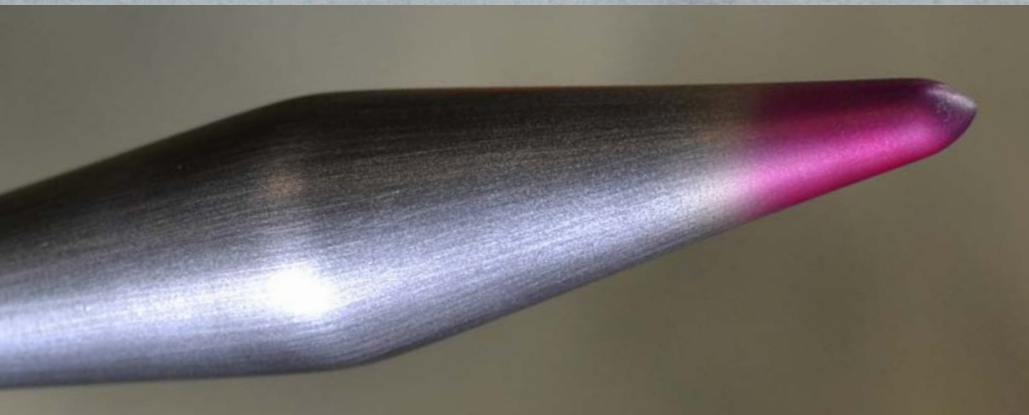
AIRBRUSH AND COMPRESSOR  
PEARL GOLD ENAMEL  
METALLIC SILVER ACRYLIC  
MAGENTA ACRYLIC  
BLUE ACRYLIC  
DISPOSABLE PIPETTE FOR MIXING

Some metals, particularly stainless steel, will discolor when exposed to heat. Mild heat will tint the finish of the surface gold, and further exposure to high temperatures will shift this from gold to violet and eventually a bright blue. This technique is a nice accent to use on gun barrels and heat exchangers to simulate a lot of repeated intense use. You will absolutely need an airbrush for this to work; spray cans aren't capable of the fine detail needed to make this really work.

To begin, your part should be painted in some metallic shade to really sell the metal look.

The first pass of paint should be done with pearl gold. You want a pretty narrow gradient from the edge of the gold to the rest of the metal color to simulate the heated portion of the metal.





After allowing the gold enamel to cure for 20-30 minutes, you'll apply the purple layer. The paint used here is a flat purple, which was mixed with a metallic silver containing some large flakes. This mix gives the purple a more metallic property. Thinning the paint with reducer will aid in dry time and also make the paint slightly more translucent. This is helpful when spraying multiple coats over the gold to produce an even gradient.

Large metallic flakes in paint will sink quickly to the bottom of your airbrush paint cup, so be sure to continually mix the paint with a small plastic pipette to keep it properly integrated when spraying.

The purple acrylic doesn't need to cure for much more than 5 minutes before moving on to the blue layer.

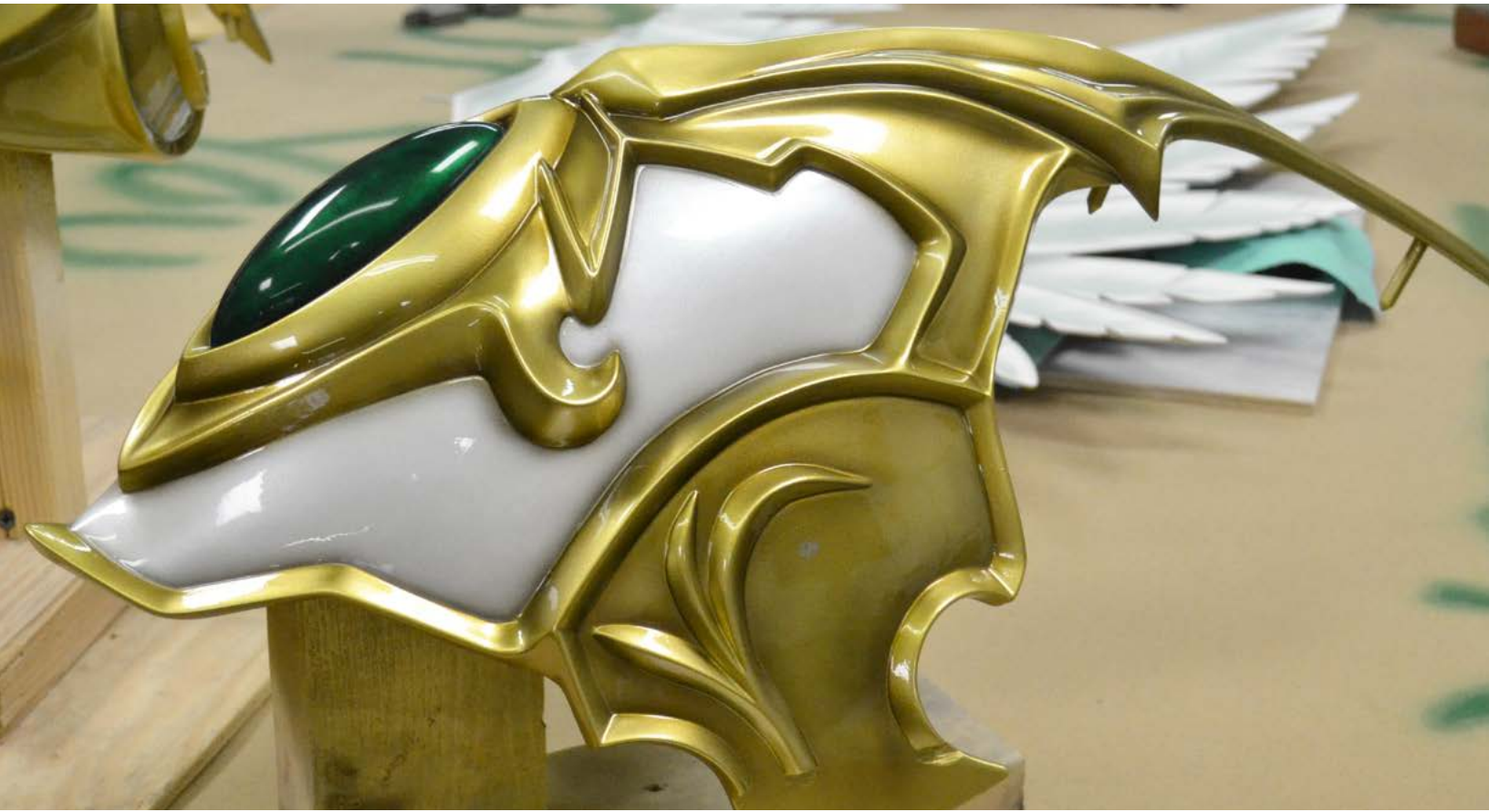
While the gold to purple gradient is pretty abrupt, the purple to blue should be more gradual. Once heat transforms the color of stainless steel, the overall color transition isn't fully blue or purple in any one place. A longer softer gradient will really sell this effect.



As a final accent, a thinned light coat of metallic silver and reducer will give the overall gradient an even metallic sheen. This should only be a light dusting added as an accent - try not to bury all your bright colors under a coat of silver! Lastly, clearcoat to seal the weathering and protect the fragile acrylic paint is necessary. A matte or satin finish will work best with this effect.



## 09 | CLEARCOAT AND SEALING



Many of the techniques shown in the last two chapters are not durable enough to withstand repeated handling, and a few of them will even flake off on your hands if not sealed correctly once completed!

This is where clearcoating comes into play. Clearcoat finishes provide a UV-resistant outer shell that protects basecoat and weathering layers from stains, abrasions and even some mild chemicals.

In most cases, the rules for basecoating will transfer over to clearcoat. The grid of paint interactions applies here, as does the general concept of applying a finish in small atomized dots blending together to create a finished coating. Clearcoats themselves have a few quirks to look out for though, and approaching this step without careful preparation can ruin all of your hard work.

## HUMIDITY:

Rattle can clearcoats will tend to be more sensitive to humid environments than pigmented colors. Spraying clear above 60% humidity (this is a ballpark, as each manufacturer will have their own range for application) will result in the clear becoming hazy, like a thin coat of milk on your freshly completed replica. This isn't a total loss! Often placing a piece with hazy clear indoors near a heat source such as a set of lamps or space heater will bake the humidity out of the finish and restore your shine.



## RUNS, DRIPS AND SAGS:

This is especially precipitous with gloss clear, but easily done with matte and satin as well. Unlike spraying a color coat, it's difficult to see exactly where your clearcoat is going. It is, after all, clear. Over-application means extended curing time as well as nasty runs and drips in your finish. Like basecoats, clear should be applied in thin passes until enough thickness is eventually created by layering.

To achieve this without runs, make sure you're painting in a well lit area and pay attention to the reflections created in the surface of your piece as you apply your clear. Only apply enough to give your prop a shiny reflection. Watch for where your surface changes from matte to gloss, then stop spraying that area until your coat sets fully. For coats with matte or flat clears, wait until the last applied pass has lost its shine before applying more paint.

## APPLYING MULTIPLE COATS

For gloss clear, the “string test” works great: touch your finger to to an extraneous part with clearcoat, like your clamp stand or a masked-off area.

If your finger pulls away a thin string of clear, you’re ready for another pass. Wait a little longer and you should be able to leave an impression of your fingerprint in the paint without pulling any clearcoat away on the tip of your finger. This is also a good time for a second pass

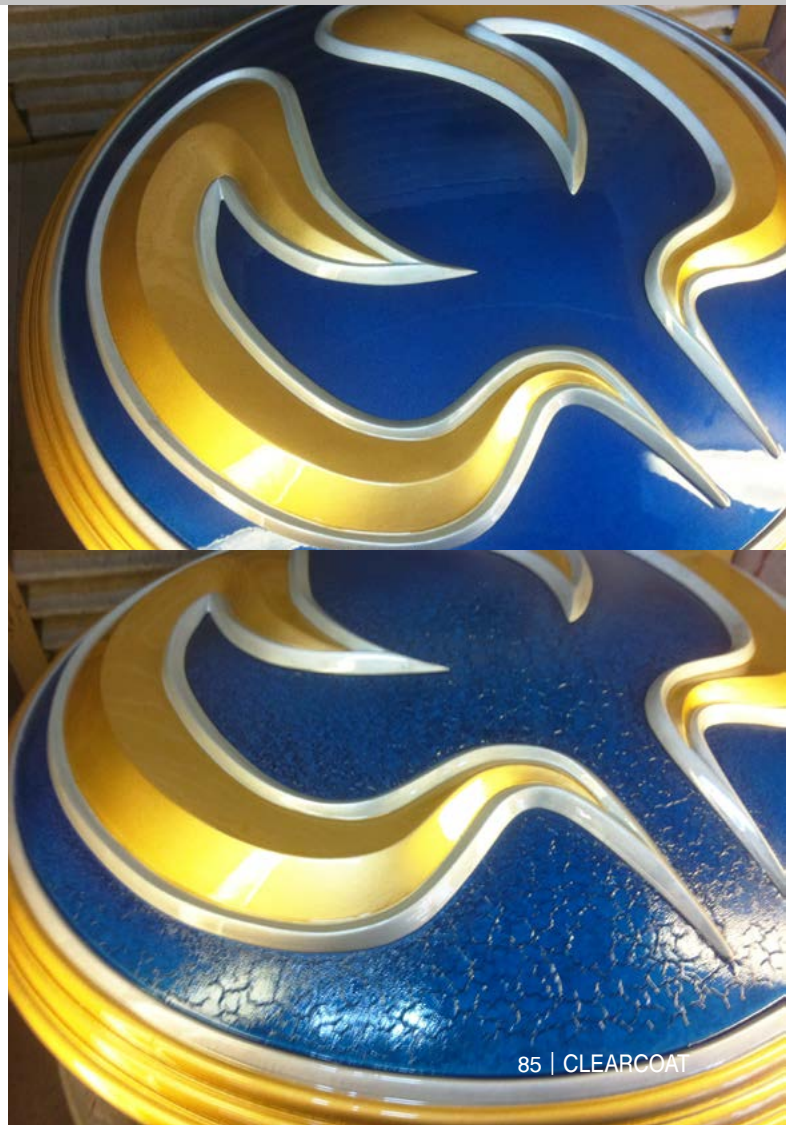
If you just leave a wet mushy fingerprint in the surface of the clear and simultaneously remove a bunch of paint with your finger, you need to give this coating a bit longer before applying more paint.



## REACTION

When it comes to propmaking failure, not much sinks lower than the feeling of watching a chemical reaction eating away hours of prep and paint work. Sometimes following manufacturers suggestions is enough to avoid this, but occasionally there’s little to be done in preparation for disaster. Rule #1 reigns supreme: Test first. Especially with new materials.

This piece was painted with Testor’s enamels exclusively. The topcoat was a 2K urethane clear from a spray can, which had been used over Testor’s paints in the past with no ill effects. This time, a small area around the golden horn shapes was shaded using bottled enamel and enamel airbrush thinner. Urethane clear reacted only in the areas where this specific thinner was used, and nowhere else. The prop was eventually salvaged, though only after many hours of sanding and re-painting. There’s only one surviving out-of-focus photograph of the aftermath, but it serves as a strong reminder to always, always test new materials.



## 10 | TROUBLESHOOTING



Some of these issues have solutions. Others... well, you might have to start from the beginning.

This isn't every cause of every issue you might encounter, but a quick read-through of this should provide you with scenarios to avoid. Stay away from the issues outlined below and your painting experiences will go much more smoothly.

## SPLATTERS OR CLUMPS IN PAINT

- Cold paint. Solve this by warming your cans before spraying.
- Clogged spray nozzle. Replace with a nozzle from another can.
- Old paint. After a time, paint will begin to cure while in the can. No fix here, buy some more!

## RUNS IN PAINT

- Over-application of base or clearcoat. Wait until paint has cured fully (48+ hours, depending on manufacturer's standards) then sand affected area with 320 grit sandpaper until runs blend into surrounding color.

## UNCURED PAINT

- Paint applied too thick, trapping uncured paint underneath a shell. Baking in front of lamps or a heat source can force cure this, but generally your dry times will be extended by a few days.
- Problem with substrate being painted. In some cases, urethane resins are mixed improperly or certain plastic paints are incompatible with the base material.

## CRACKING

- Incompatible base and topcoats reacting with one another (i.e. lacquer clearcoat over uncured enamel base). There isn't a solution here, bad reactions need to be sanded away and re-painted.
- Basecoat not finished curing before application of top or accent coats. Always make sure that additional coats of paint are applied while the base layer is still capable of accepting new layers of paint, or after the basecoat has cured fully. If your paints react due to improper cure times, let the finish cure fully before wet sanding out cracks and re-applying base coat color.

## HAZING/MILKY CLEARCOAT

- Over-application of gloss coat - allow to cure fully before applying any more paint. Moving to a warmer and drier environment will help
- Excessive heat and humidity levels - avoid spraying when humidity is above 60-70%
- Condensation on part being painted, causing moisture to be trapped underneath paint - apply light heat with lamps to resolve this issue. A second application of clear after full cure can sometimes fix hazing problems.

## FISHEYES

- Dust or oil contaminants on surface of piece being painted - use wax and grease remover before applying basecoat to ensure surface is free of contaminants
- Dust or oil in mixing containers/airbrush - a thorough cleaning of mixing cups and air brushes should be done with solvent cleaner before spraying any paint.
- Incompatible topcoat over basecoat applied while basecoat is still wet - such as applying a water based acrylic over an enamel basecoat before the enamel has dried.

## CLUMPY PRIMER

- Humidity or moisture, move indoors or to a more arid space
- Primer not fully cured due to low temperature - allow longer cure times for lower temperature or bring indoors and apply light heat with lamps
- Non-wet-sandable primer curing in humid environment, trapping moisture in surface of paint. Apply light heat with lamps or space heater

# THANK YOU

FOR READING, BUILDING, SHARING, AND SUPPORTING

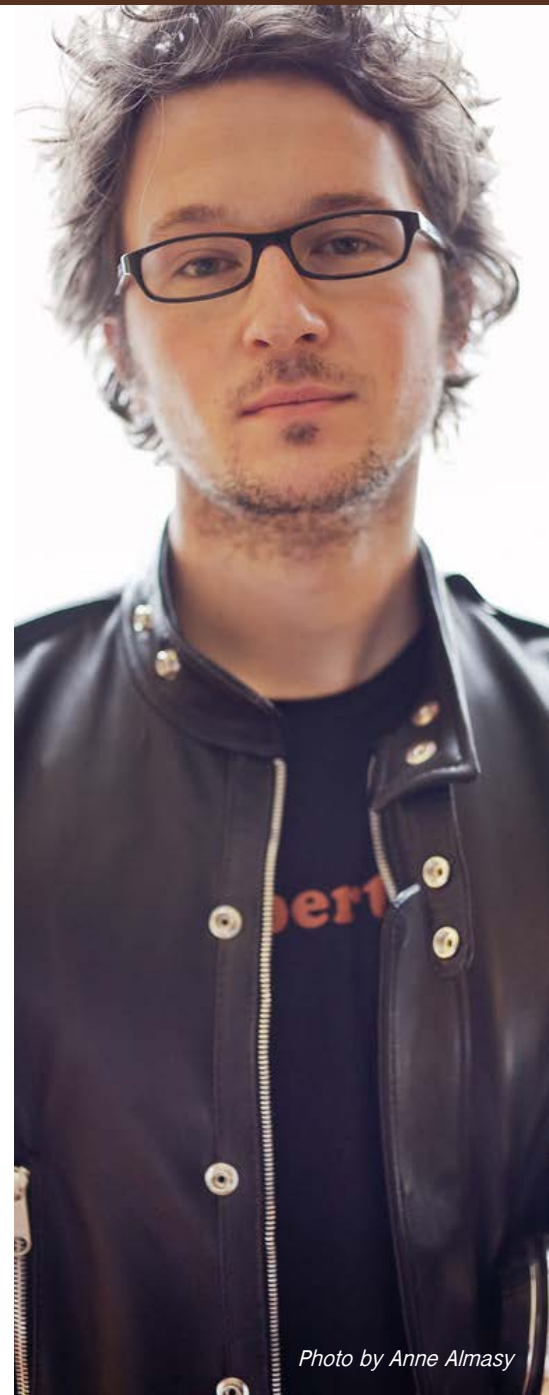
I couldn't do the things I do without the support of many friends and family. Thanks, specifically, to the builders and artists I know who constantly push to find new techniques and share those processes with the community.

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AND TO EVERYONE WHO MADE IT ALL THE WAY THROUGH, THANK YOU FOR READING MY FIRST EVER INSTRUCTIONAL BOOK.

I SINCERELY HOPE YOU'VE LEARNED SOME NEW TRICKS AND TECHNIQUES THAT WILL MAKE YOUR NEXT PROJECT SPECTACULAR!



*Photo by Anne Almasy*