

REFINISHING SERIES / NO. 03

# The Russian Black

*Applying Intlmilco RussianPaint to Combloc steel — oil purge, blast, mask, spray, and cure.*

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RussianPaint is the lacquer-based black finish Soviet and Eastern Bloc arsenals have sprayed over phosphated steel since 1960, manufactured in the U.S. to the original formula. It is **unforgiving of bad prep and effortless over good prep**. The film is thin; everything that makes it last happens in the steel beneath it. This reference covers the full bench process, start to cure.

DOCUMENT

SERIES

ISSUED

REVISION

**Embach Armory**

BR-03

Refinishing

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COMBLOC PATTERN · BUILT &amp; FINISHED

# 01

UNDERSTAND THE COATING

## What This Finish Is

RussianPaint is a **lacquer** — not an epoxy, not an air-dry enamel. It dries by solvent flash, not chemical cure. That single fact drives everything else in this document.

Because it is a lacquer: it thins and cleans up with lacquer thinner; it re-flows if it later meets a strong solvent; and it lays down in thin films that telegraph whatever is underneath. A polished high spot, a sanding scratch, a trace of oil — the black will not hide any of it. It reports the surface honestly.

It is the original Combloc arsenal black, formulated to match the Izhmash, Tula, and Molot factory finish and manufactured in the U.S. to that formula since 2016. Over a correctly prepared surface it reads as factory. Over a bad one it peels, and no amount of color buys that back.

### Where it belongs

Receivers, trunnion-area sheet metal, barrels, gas systems, and small parts — the steel that originally wore arsenal black. It is not a wood finish, and it is not a reason to strip the original bluing off a collectible you intend to keep correct. Use it where it replaces a finish that was paint to begin with.

#### NOTE — DURABILITY

This is a refinish, not armor. Cured RussianPaint tolerates CLP and normal handling, but it is a thin lacquer film. Durability comes from the **surface beneath it**, not from film thickness. Build it thick and it only runs and chips sooner.

# 02

THE MOST IMPORTANT PAGE

## The Substrate Decision

RussianPaint is a **mechanical-bond** coating. It has nothing to hold to but the profile you give the steel. Get the substrate right and the rest of this guide is easy. Get it wrong and nothing downstream saves you.

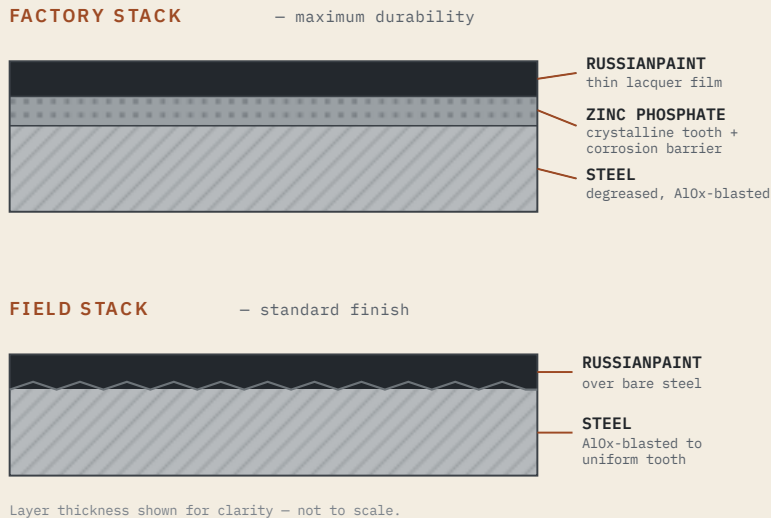
There are two correct substrates, and one that ruins the job:

### 1 — Blasted bare steel

Aluminum-oxide blast to a uniform matte tooth. Fast, correct, and what most builds run. The blast is what the paint grips; there is no chemical primer doing the work for you.

## 2 – Zinc phosphate, then paint (factory stack)

The most durable option and the true arsenal method. **Zinc** phosphate lays a fine, tight, oil-free crystalline tooth that locks the lacquer mechanically and adds a corrosion-barrier layer under the film. Manganese phosphate is the wrong park here: its heavier crystal and oil affinity are built to *hold* oil, and that same oil is what makes paint let go. If you run a phosphate line — see Bench Reference No. 02 — zinc-phosphate-then-RussianPaint is the answer.



Two correct substrates. The zinc-phosphate stack adds a bonded barrier layer the bare-steel stack does not.

### CRITICAL

Never paint over manganese phosphate meant for a bare-park-and-oil finish, and never paint over **any** oiled park. The oil that makes a mang-park finish work is the exact oil that makes paint fail. Whatever the substrate: no oil, uniform tooth, no bright or polished areas. A polished spot will not hold paint.

## 03

SET THE BENCH

### Tooling & Consumables

#### REQUIRED

<b>Spray gun</b>	HVLP, 0.8 mm needle, with a regulator at the gun
<b>Air supply</b>	Clean, dry, filtered. 20–30 PSI at the gun
<b>Reducer</b>	Lacquer thinner — not acetone, not enamel reducer
<b>Paint filter</b>	190–250 micron strainer (every cup)

<b>Blast media</b>	Aluminum oxide, 100–180 grit — required, no substitute
<b>Cleaning solvent</b>	Acetone (haze wipe) and brake cleaner (oil chase)
<b>Masking</b>	Painter's tape, razor blade, chamber and gas plugs
<b>Heat</b>	Oven holding a stable 200–300°F, or a heat gun
<b>PPE</b>	Organic-vapor respirator, eye protection, gloves, ventilation

OPTIONAL BUT WORTH HAVING

<b>Hygrometer</b>	Confirms you are under the humidity ceiling before you spray
<b>TSP powder</b>	Degreasing aid only — not a substitute for blasting
<b>Detail brush</b>	Touch-in on recesses the gun can't reach cleanly

NOTE — TIP SIZE

The **0.8 mm** tip is not a suggestion. This is a thin lacquer; a larger tip floods it into runs and a flat, grainy wall. If your only gun is a 1.4 mm, thin further and drop pressure — but a 0.8 mm detail gun is the correct tool and it pays for itself on the first receiver.

## 04 DRIVE THE OIL OUT Degreasing — The Oil Purge

Surplus Combloc steel is saturated — cosmoline, packing grease, decades of oil in the pores and under the rivet heads. Surface solvent does not reach it. You drive it out with heat, more than once.

- 01 If the parts carry any lubricant going in, make sure it is **water-soluble**. Petroleum oil and grease turn this into a long, miserable job — when in doubt, strip first.
- 02 Boil the parts in water 20–30 minutes, until oil rises and films the surface.
- 03 Preheat the oven to 300°F. Skim or pour the surface oil off the water first, then lift the parts out from *below* the oil film — not up through it, or you re-coat them on the way out.
- 04 Blow dry with compressed air and place the parts in the 300°F oven.
- 05 After about 20 minutes, inspect the oil-trap geometry: pin holes, journals, rail folds, rivet bases, weld seams. Oil weeping out means it is not done. Scrub each weep with acetone or brake cleaner.

- 06 Return to the oven and repeat the bake–inspect–clean cycle until a full cycle produces **no seep**. If it keeps coming back, re-boil and start the cycle over.

You are not done when the part looks clean. You are done when a *hot* part stays dry.

**CRITICAL – #1 CAUSE OF FAILURE**

Skipping or shortcutting the purge is the number-one reason RussianPaint fails. Oil that seeps after you have painted lifts the film from underneath, days or weeks later. There is no repair for it but stripping and starting over. Spend the time here.

## 05

BUILD THE TOOTH

### Surface Prep & Masking

- 01 Mask and plug everything that must not take paint or media: **chamber, bore, gas block and port, threads, crown**, and any bearing or headspacing surface. Media in a gas port or chamber is its own kind of bad day.
- 02 Blast with aluminum oxide, 100–180 grit. This step is non-negotiable – no other media develops the tooth this lacquer needs. Tie grit to your target sheen (Section 07): coarser within range for a flatter, factory look; nearer 180 for a smoother base under gloss.
- 03 Blow all media off with clean, dry air. Get it out of every recess and blind hole.
- 04 With a clean gun or a lint-free wipe, lay a light coat of **acetone** over the blasted steel to pull the fine dusty haze the blast leaves behind. Let it flash off.
- 05 Re-mask anything the blasting or handling disturbed. From here, the steel is prepped – handle it with clean nitrile gloves only. A bare fingerprint is an oil spot, and it will show.

**NOTE – DON'T LET IT SIT**

Blasted, degreased steel flash-rusts fast in humidity. Don't blast on Monday and paint on Friday. **Blast, haze-wipe, and paint in one session** so the fresh tooth never gets a chance to oxidize.

## 06

REDUCE & DIAL IN

### Mixing & Spray Setup

- **Shake it out.** Agitate the paint thoroughly. If it has gone lumpy in storage, shake it down and rehydrate with fresh lacquer thinner. Keep agitating before and during use.
- **Reduce 1:1** with lacquer thinner. Lacquer thinner only – acetone or enamel reducer will not behave the same way.

- **Strain** the reduced paint through a 190–250 micron filter into the cup, every time. Specks become craters.
- **Check humidity.** Do not spray above 65% RH. Lacquer blushes — clouds milky white — when it pulls moisture out of humid air as the solvent flashes. A cheap hygrometer settles the question.
- **Set the gun:** minimal fan, 20–30 PSI at the gun, needle backed off to a light mist. You are dusting on thin wet coats, not flooding a wall.

**NOTE – COBWEBBING**

If the gun throws fine strands or webs instead of a mist, the paint is **too thick**. Stop, add 10–20% more lacquer thinner, mix, and resume. It is a thinning problem, not a defect in the paint.

# 07

LAY THE BLACK

## Laying the Paint

Spray sequence, every time: **inside the receiver first, then the outside of the receiver, then the barrel** and the rest. Working inside-out keeps overspray from dusting surfaces you have already laid down clean.

Technique is wet-over-wet in thin coats, keeping a wet edge. Light passes that flash between coats build a deep, even black. Heavy passes run, and run dries grainy.

**FINISH OPTIONS – A TECHNIQUE CHOICE, NOT A DIFFERENT PRODUCT**

SHEEN	HOW YOU GET THERE
Flat	Faster, drier passes. Optional: preheat the part to ~200°F so coats flash fast for a dead-flat arsenal look.
Semi-gloss	Slower, wetter passes. The default service sheen on most Russian steel.
Gloss	180-grit base, lower pressure, wetter coats, paint filtered well; let a drip flash rather than chasing it. Over-thinning plus more coats builds a smoother, glossier wall.

**NOTE – MATCH THE RIFLE**

Most Izhmash and Tula service finishes read **semi-gloss to satin**, not mirror gloss. Gloss looks wrong on a field rifle. Pick the sheen the original wore, not the shiniest one you can spray.

## Curing

Flash first, heat second — in that order. Heat applied to wet paint flattens and ruins the finish.

- 01 Hang the parts and let them **air-flash at least 1 hour** before any heat goes near them.
- 02 Then choose a cure path from the table below.
- 03 Let the parts return to room temperature before handling or reassembly. The cured film tolerates CLP and normal use; for the first day, treat it as a thin lacquer, not a tank coating.

### CURE PATHS

METHOD	SCHEDULE
Air (factory)	24-hour air dry. No oven needed.
Oven	200°F for 1 hour, after the 1-hour flash.
Heat gun	Works fine — but the paint must have flashed first, or the heat flattens it.
Max gloss	Air-dry 24–48 hours before baking.

### CRITICAL

Do not put wet, un-flashed paint into the oven or under a heat gun. Trapped solvent blisters, and the finish goes flat and rough. The **one-hour flash is the cheapest insurance** in the whole process — don't skip it to save an hour.



### READ THE SYMPTOM

## When It Goes Wrong

SYMPTOM	CAUSE	CORRECTION
Fine strands / webs off the gun	Paint too thick	Add 10–20% lacquer thinner, remix, resume
Milky / cloudy haze in the film (blush)	Sprayed above 65% RH; moisture trapped	Wait for lower humidity; mist a thin coat to re-flow, or strip and respray dry
Runs and sags	Coats too heavy, tip too large, or gun too close	Thinner coats, 0.8 mm tip, more distance, lower PSI

SYMPTOM	CAUSE	CORRECTION
<b>Flat and grainy when you wanted depth</b>	Dry passes, too much pressure, gun too far	Wetter passes, drop PSI, move closer
<b>Film lifts or peels after cure</b>	Oil seep, or polished / under-prepped steel	Strip, re-purge oil, re-blast to uniform tooth
<b>Orange-peel texture</b>	Pressure too high, or under-thinned	Lower PSI, thin slightly, smooth wet passes
<b>Finish flattened after baking</b>	Heat hit un-flashed paint	Respect the 1-hour flash before any heat



BEFORE YOU PULL THE TRIGGER

## Pre-Spray Checklist

- Parts fully **oil-purged** – a hot part stays dry, no seep at pins, rivets, or seams
- Substrate correct** – blasted bare steel or zinc phosphate (never oiled mang-park)
- Aluminum-oxide **blast complete** – uniform matte tooth, no bright or polished spots
- Media blown out of all recesses; **acetone haze-wipe** done and flashed
- Chamber, bore, gas port, threads, crown, and bearing surfaces **masked / plugged**
- Handling with **clean nitrile gloves only** – no bare-hand contact since prep
- Paint shaken; **reduced 1:1** with lacquer thinner; strained 190–250 micron
- Humidity  $\leq$  **65% RH** confirmed on a hygrometer
- Gun set – **0.8 mm, minimal fan, 20–30 PSI**, light mist verified on a test card
- Cure plan and **hang space ready** – one-hour flash before any heat

**Embach Armory**

*Prep is the finish. The black is only the proof.*

BENCH REFERENCE · NO. 03