

## Metal Shield

Advanced Nano-Based Clear Coating for Superior Metal Protection

FlameOFF® Metal Shield is a durable and long-lasting nano-based clear coating designed to protect all metal surfaces from various destructive forces. Our metal coating provides superior resistance to rust, moisture, corrosion, salt spray, acid rain, UV damage, oxidation, galvanic corrosion, and animal & bird waste damage. FlameOFF® Metal Shield is peel and flake resistant, ensuring a long-lasting barrier against the elements.

### APPLICATIONS / SURFACES

#### FERROUS METALS

Iron, steel, stainless steel, galvanized steel

#### NON-FERROUS METALS

Aluminum, copper, bronze (raw, powder coated, painted or primed)

### CHARACTERISTICS

Appearance	Light Yellow	Flash Point	16.7°C (62.1°F)	Coverage	600-800 sq.ft./gal
Finish	Clear (Gloss)	VOC	<100 g/L	Expected Wear	5+ years
Odor	Mild Fruity	Weight	8.34 lb/gal, 1 kg/L	Base Type	Solvent

### SURFACE PREPARATION

**Test Area:** Perform a small test on an inconspicuous area with FlameOFF® Metal Shield to ensure good adhesion and the desired result is achieved before full application.

#### ALUMINUM, COPPER, BRASS, BRONZE & STAINLESS STEEL

- Thoroughly clean entire surface to ensure a good bond
- Clean oil and grease using FlameOFF® Bio Clean Industrial
- Rinse with fresh water and dry completely
- Double-check with white rag/solvent test - rag must remain white
- Apply **one coat** per application instructions

#### GALVANIZED STEEL

- New galvanized steel off-gasses for several months after plating
- Allow **6 months** for complete off-gassing
- If age unknown, test small area for bubbles/blistering (~7 days)
- Clean with FlameOFF® Bio Clean Industrial, rinse and dry
- Verify with white rag/solvent test, apply **one coat**

#### POWDER COATED METALS

- Examine powder coating for cracks or damage
- Have damaged areas re-coated or primed with matching paint
- Clean surface with FlameOFF® Bio Clean Industrial
- **Do not use solvents** - they damage powder coating
- Rinse with fresh water, dry completely, apply **one coat**

#### OLD IRON & STEEL WITH EXISTING PAINT/PRIMER

- Inspect existing primer/paint for good adhesion
- If peeling/chipping, abrade to solid base or bare steel
- Sandblast (SSPC-SP-6) or sand with 600 grit or lower
- Re-paint as needed and allow to dry/cure completely
- Wipe with FlameOFF® Bio Clean Industrial, apply **single coat**

#### NEW IRON & STEEL

- Ensure surface is free of rust, scale, oil, and grease
- Wipe with white rag/solvent to check for remaining oil/grease
- For hot rolled steel: sandblast or grind off **100% of slag**
- Prime bare metal with quality rust/corrosion primer
- Once primer dried, apply **two coats** of Metal Shield
- Follow re-application time set by primer manufacturer
- If window passed: abrade with min 600 grit sandpaper
- **Unprimed:** Apply wet over tack, max 15 min between coats

## APPLICATION METHODS

**Environmental Requirements:** Temperature 45°F - 105°F (7-41°C) | Relative Humidity under 90% | Avoid rain for 48 hours after application

### GENERAL APPLICATION

For best finish, FlameOFF® Metal Shield is ideally **sprayed on**. When spraying, cover adjacent surfaces to avoid drips or accidental coating.

**Alternative methods** (when spraying not possible):

- Fine bristle brush
- High density ultra-smooth foam roller
- Dipping method

Note: Alternate methods may not yield same coverage and smooth finish as spraying.

### SPRAY APPLICATION

- Always test in an inconspicuous location first
- Shake contents thoroughly to re-suspend nanoparticles
- Re-shake every 15-20 minutes during application
- Use commercial grade HVLP sprayer (1.0-1.3 size tip) or airless sprayer (.111, .211, .311 tip)
- Set pressure at approximately 25-30 psi
- Ensure surface is dry and free of dust before starting

**Spread Rate:** Recommended spread rate per coat: Wet film thickness: 2.0-2.5 mils on horizontal surfaces. Vertical surfaces may need wet on tack to avoid runs. Dry film thickness: 0.7-1.75 mils.

**Wind Conditions:** High wind can affect finish quality by disrupting spray pattern and contributing to contamination with blowing dirt. Take necessary precautions against natural elements.

## PROCESSING PROPERTIES

Touch Dry	2-3 hours	Walk On Time	Min 8-12 hours	Full Cure	7 Days
Dry Through	3-5 hours	Moisture Exposure	48 hours	Recoat Interval	10-20 minutes

*Under standard lab conditions (77°F / 25°C)*

## TECHNICAL DATA (ALL VALUES @ 77°F / 25°C)

TEST / PROPERTY	US	METRIC
Volatile Organic Compounds (ASTM D2369)	<0.83 lb/gal	<100 g/L
Theoretical Coverage	640-800 ft <sup>2</sup> /gal @ 0.7-0.75 mils DFT	16-20 m <sup>2</sup> /L @ 18-44 microns
Specific Gravity	0.88 kg/L	
Flash Point - Pensky Martin Closed Cup	62.1°F	16.7°C
Application Temperature	45-105°F	7-41°C
Abrasion Resistance CS-17 1000 Cycles (ASTM 4060)	23 mg Loss	
Surface Flammability (ASTM E162)	Heat Index 0 (Best Result)	
Adhesion to Blasted Carbon Steel (ASTM D7234-14)	2600 PSI	
Accelerated UV Exposure 1000 hrs (ASTM G154)	dE: <0.5	
Thermal Cycling (ASTM 6944) - 50°C/4hrs, 25°C/4hrs, -29°C/16hrs	No Effect	
Solvent Resistance - MEK (ASTM D4752)	1000 Rubs - No Effect	
Acid Resistance: 87% Sulfuric Acid (ASTM D1308)	5,000+ hours	
Shore D Hardness (ASTM D2240)	72 ± 3	
Shelf Life	12 months unopened	
Operating Temperature	-200°F to 350°F	-128°C to 176°C

## CLEAN UP

- Clean tools and equipment with **acetone**
- Flush thoroughly immediately after application
- Clean before product dries

If coating dries on tools, they will not come clean with acetone or any other solvent.

## CARE & MAINTENANCE

- Use damp rag for routine cleaning
- Avoid abrasive cleansers or scouring pads
- If area is damaged: sand lightly with 600 grit and reapply
- If substrate damaged: make repairs first before reapplying

## SAFETY CAUTIONS

### Respiratory & Ventilation

- Use OSHA approved 1910.134 and ANSI Z88.2 respiratory protection
- Fresh air and exhaust required in work area to prevent inhaling
- If inhaled, move to fresh air immediately; call physician if any physical difficulties occur
- Always ensure excessive ventilation when working in enclosed areas

### Skin & Eye Protection

- Wear butyl-rubber gloves and skin protection to avoid contact
- If coating contacts skin, wash thoroughly with soap and water
- Use chemical safety goggles or splash shields
- Never wear contact lenses without eye protection
- If eye contact: flush with water for 15 minutes, seek medical attention
- If swallowed: rinse mouth thoroughly, obtain immediate medical attention

## STORAGE & SHELF LIFE

- Store in cool, dry environment away from direct sunlight and heat
- Keep container tightly closed when not in use
- **Shelf Life:** 12 months unopened at 77°F / 25°C
- **Do not freeze.** Protect from extreme temperatures

## REGULATORY INFORMATION

**DOT Classification:** Class 3 Flammable Liquid  
UN1263, Paint, 3, PG II

### HMIS Ratings:

Health: 1 | Flammability: 3 | Reactivity: 0

## LIMITED WARRANTY

FlameOFF® Coatings warrants that this product will be free from defects. Any material found to be defective will be replaced in alike quantity by the manufacturer within **5 years** from the date of purchase.

Proof of purchase and evidence of proper application required. This warranty is not transferable and does not cover wear and tear on the substrate, only the product itself.

### FlameOFF® Coatings

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Sold in 5-gallon containers. Contact technical sales for large volume inquiries.

**Disclaimer:** The information contained herein is believed to be accurate as of the date of preparation. FlameOFF® Coatings makes no warranty, express or implied, regarding the accuracy of this data or the results to be obtained from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. FlameOFF® Coatings assumes no liability for damages of any kind, and users assume all risk and liability for any use of this information.