# VeroMetal® Technical Data Sheet

## Introduction to VeroMetal®

VeroMetal is cold-spray metal and not paint. VeroMetal behaves differently than an ordinary coating during processing, challenging even experienced, professional applicators. To achieve a good result, steps in the process must be carefully followed. This TDS provides basic information on how to apply Verometal. VeroMetal is intended for use by professional applicators who have completed training. While training is not required, it is strongly recommended to learn mixing, application, and finishing techniques necessary to properly apply Verometal and achieve desired outcomes.

Certifications

VeroMetal organization: ISO 9001 VeroMetal product: SBI fire class B, IMO

## Binder & Application Options

### Binder Options - Solvent or Waterborne

- **Solvent-borne**: VeroMetal Binder or VeroMetal Filler, a proprietary pre-accelerated polyester resin. This product comes with both a catalyst (VeroMetal MEK-P) and (VeroMetal Abrasive Support).
- **Waterborne**: VeroMetal Aqua or VeroMetal AquaFill, a proprietary bi-component urethane base. Additives are available for the waterborne options to enhance performance:
    - VeroMetal Aqua Activator: This is an optional additive (available for purchase) for either the Aqua or AquaFill binders that provides a harder surface faster to achieve the high polish outcome quicker. Without the activator, there is no pot life. Any additional mixed material left in a sealed container is usable up to 7 days later.
    - VeroMetal AF Reformer: For use with the VeroMetal AquaFill binder only. Mix 1-2 % by weight and increase viscosity by up to 50% which also allows more open time when applying VeroMetal.

### Application Options - Spray or Fill

- **Spray**: The VeroMetal Binder and VeroMetal Aqua products require just one coat when sprayed. Solvent-borne resin binders can achieve up to a mirror finish on most metals, while the waterborne version provides a high, but not quite a mirror finish.
- **Fill**: The VeroMetal Filler VeroMetal AquaFill products can be processed with a trowel, roller or poured (Solvent Filler only)

## Application Process

There are many variables that will affect your outcome, for example, the surface to be covered, your equipment, and the ambient temperature and humidity.

## Surface preparation

VeroMetal® will adhere to almost any rough surface. Like all surfaces to be coated, the surface must be prepared to be able to apply a coating and to obtain proper adhesion. The preparation can be sand blasted to get a rough surface, or sandpaper can be used (grain P120 / P180). The loose debris must be removed. This is best achieved with an air hose followed by microfiber cloth. The more thoroughly the surface is pre-treated and cleaned, the better the result of the finished coating.

**Note**: VeroMetal Iron Exterior Application - First apply a covering layer of the VeroMetal binder, either the solvent system or the waterborne system, and let it dry for 30 minutes at 20°C / 68°F. Then the mixed layer of VeroMetal iron can be applied. The reason for this is to avoid the risk of moisture penetrating under the layer via the rusting iron particles and thus imprinting the VeroMetal layer

This operation is separate from other possible pre-treatments such as, for example, applying a primer or sealing, in the case of an open concrete structure.

## Primer

Primer is used to:

1. close the surface of a porous substrate,
2. provide corrosion protection for the substrate if it is made of metal; and
3. promote adhesion for substrates that do not provide direct adhesion after sanding.

Primers for use with solvent-borne binders

You must use a chemically compatible primer product that will give adhesion to the substrate to be covered and is capable of being finished with a polyester. Preferably a 2-component product or a urethane. For example, a 2k urethane primer or a polyester primer. Lacquer, pre-cat and CV primers will not work with VeroMetal Binder. When using a 2k epoxy primer first, a subsequent layer/s of 2k urethane primer must be applied on top to ensure a proper chemical compatibility.

Primers for use with waterborne binders

You can use a 1K/2k high build waterborne urethane primer.

## Equipment and supplies

Regardless of the application method, good ventilation and proper lighting are always required for the best results.

Spray equipment & materials

1. Spray guns. Use standard HVLP equipment, nozzles 1.4 to 1.8 with 1.5 bar / 22 PSI pressure. The pressure on the gun (when the trigger is depressed) should be approximately 1.5 bar / 22 psi.
2. Compressors. The compressor used must produce dry and clean air. Like most materials, dry and clean air is essential for a good finish. The compressor used must have sufficient capacity (volume) so as not to run out of air during the spraying process. A standard HVLP gun requires between 11 to 13 CFMs. Ensure that all filters (supplied with gun cups) are removed so that the material flow is maximized.

Fill equipment & materials

The filler binders cannot be sprayed. It can be applied with a trowel, spatula

PPE

Personal protective equipment (PPE) and approved respiratory protection are mandatory when processing. Refer to the Safety Data Sheets (SDS) for the for PPE and handling instructions.

## Mixing

Example: In this example we start with the preparation of 1000 grams of Bronze VeroMetal® mixture. This is good for 10 square feet of surface. 25 grams of binder per sq foot of finished surface. The mixing ratio is the same for both the filler and the sprayable version.

1. Always stir the solvent binder before use (fast and vigorous shaking). This makes the metal particles "electrically charged" and they react better with the binder. Only stir the Aqua binders.
2. When using the Aqua Spray binder (only) it must be reduced 3-5% with water, by weight.
3. Weigh 250 grams of binder (on a gram scale for accuracy)
4. Weigh 750 grams of metal that you want to add to the binder. Weigh the metal separately
5. Add 5 grams of MEKP to the solvent binders (only), this is 2% of the weight and stir it well
6. Then add the metal while stirring.
7. Use a paint stirrer to thoroughly mix the two components together to prevent the metal from clumping in the bottom of the cup (approximately 60 seconds)

Mixing ratios

The mixing ratios are the same for waterborne or solvent-borne binders. Whether they are spray or trowel versions.

| Metal | Mix ratio | Metal | Mix ratio |
|---|---|---|---|
| Aluminum | 1:1 | Iron | 1:2 |
| Brass | 1:3 | Lava Copper | 1:1.5 (1:1 when using AquaFill) |
| Brown Brass | 1:2 | Manganese | 1:1.5 (1:1 when using AquaFill) |
| Bronze | 1:3 | Mellow Yellow Brass | 1:3 |
| Copper | 1:1.5 (1:1 when using AquaFill) | Nickel Silver | 1:2 |
| Gold | 1:2 | White Bronze | 1:3 |
| Gunsmoke | 1:3 | Zinc | 1:3 |

**Note**:

- Mix ratio is Binder to Metal
- MEKP for is required for the solvent-borne binders, use 2% of the weight of the binder only.

## Application technique

Training will assist the applicator to quickly get an idea of what is needed to achieve proper application. It is always a combination of speed and object distance to apply the needed layer with the desired effect.

Spray – Solvent & Waterborne

1. Spraying VeroMetal® differs slightly from spraying of other coatings. The aim is to build up a layer thickness of 120-150 microns (4.7 – 5.9 wet mils). This thickness must also be realized on the edges! With the Aqua spray binder (4.5- 5 wet mils in ideal)
2. When spraying, make sure that there is an overlap of 75%. Move at a pace where the applied layer is still wet when the next spray is applied with overlap. The layer thickness can be applied in one layer. A cross layer is not necessary or possible on large areas with the solvent spray binder.
3. Take your time to process. The processing time of the materials after MEKP has been added is 45 minutes at 20° C / 68° F ambient temperature. Every 10° F increase in temperature reduces the pot life of the solvent spray binder by 50%.

   Once the temperature reaches 85° F consider using the HOT MEK-P which will double the pot life per temperature gradient. Do not use it under 85° F temperature, or it will not cure properly.

4. Pay attention to the dew point when processing (this is a standard procedure when working with most spray materials).

Fill - Solvent

1. The Solvent Fill binder can be applied thick or poured.
2. When using the Solvent Fill binder, the thicker density can shorten the pot life. Spread out the mix to minimize pot life loss.
3. There is not a lot of open time when using the Solvent Fill binder.

Fill – Waterborne

1. The AquaFill binder can be rolled or troweled. It's not a good option for pouring or it will crack upon curing.
2. To increase its density or viscosity by up to 50% add up to 2% Aqua Reformer (DO NOT add more than 2%) to the weight of the AquaFill binder only. This additive will also provide extended working time and can increase the curing time.
3. Do not apply AquaFill more than 3/16" of an inch per layer. The previous layer must be cured if it was applied in the maximum density.
4. For an efficient troweled look consider the following: mix per instruction:
   a. Don't add the Aqua Reformer, reduce the binder weight only by 10% with water.
   b. Mix thoroughly and use a mohair or tight nap format, roll on an even coat of the mixed product.
   c. Allow the layer to dry 60-90 minutes on average.
   d. Then use a Gray or Maroon ScotchBrite (Non-woven pad) to knock off the high spots or nibs. Sandpaper may be too aggressive here.
   e. Then mix another batch without water (Aqua Reformer is an option which provides open time) and trowel on one full layer.
   f. This two-coat system will cover completely and provide a cost-effective result.

## Curing

The materials need 12-16 hours at a constant temperature of a minimum of 20° C / 68° F to be cured before any finishing can take place. Increasing the temperature achieves faster drying (at 60° C / 140° F that is 60 minutes). If the ambient temperature is below 68° the product will not cure properly!

Once cured (12-16 hours at 68°F), the surface can be sanded, polished, patinated, or left untreated, once binder layer has been removed to develop a natural patina over time.

**Note**: Zinc and Mellow Yellow Brass with solvent binders only must be heated for 2 hours at 60° C / 140° F to enable curing. They must be placed in heat within 15 minutes of application.

## Finishing

After materials have cured, you must first remove the top layer before any other finishing can occur. There are many ways to remove the top layer and to finish the materials, depending on the desired look and feel.

1. Removing the binder layer may be done using any of the following options:
    a. Steel wool or Scotch-Brite gives a direct finish to the metal that is released under the reaction layer.
    b. Abrasive Support is included only with solvent-borne kits. *It is not to be used with the Aqua kits*. Add 10% to 90% of the abrasive support to water, mix thoroughly to create a lubricant, and apply it to your cured surface, then start sanding with 220-240 grit. The Abrasive Support will keep the abrasives from clogging up.
2. Sanding and polishing
   The desired effect can then be achieved in sanding steps up to a highly polished surface.
    a. Sand in small steps: starting with 220-240 grit and increasing to 320, 400, 600, 800, 1000, 1500, 3000, 5000, 8000
    b. Polishing with flannel disk and rouge will help obtain a high polish
3. Patinating
   To achieve an aged look and feel, the metal surface can be treated with a patina. Some examples are copper, bronze and brass can be made green or brown / black, iron can become rusty or black. For example, almost all metals can be processed with different chemicals to achieve the desired aging effect.

For more information about VeroMetal® products or training please visit the Bespoke Finish website at www.bespoke-finish.com.

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