Distributed exclusively by:

Victory Etch®

The user friendly, low pH titanium and metal etch.
Contains NO dangerous Hydrofluoric or Nitric Acids!

1. Safety
2. Equipment
3. Prep
4. Use
5. Disposal
6. Trouble Shooting/FAQS

1. SAFETY

Description: Clear liquid-looks like water. All containers holding Victory Etch® should be marked with poison labels. Use only plastic containers for storage and heating. Never store or heat in glass or metal containers. Positive ventilation, eye and skin protection should be observed at all times.

FIRST AID INSTRUCTIONS

Call a poison control center or doctor if feeling unwell.

SWALLOWING: Rinse mouth. Call a poison center or doctor if you feel unwell.
SKIN CONTACT: Wash with plenty of soap and water. If irritation persists, seek medical attention. Wash contaminated clothing prior to use.
INHALATION: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. Seek medical attention if feeling unwell.
EYE CONTACT: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do and continue rinsing. Seek medical attention if feeling unwell.

For further safety information consult the enclosed Safety Data Sheets (SDS).

24 HOUR EMERGENCY HOTLINE 855-280-2838

Instructions, times, temperatures and information given here is for use on titanium. This process will work on other metals but the titanium information is a good base starting point.

2. EQUIPMENT

1. Fume Hood or open window with fan
2. Easy Heat Bath** which includes the heater, water bath, basket and etch containers OR a low heat source such as a pickle pot filled partially with water and a heat resistent plastic container to put the etch in.
3. Fast Read Thermometer** (glass thermometers should not be used due to risk of shattering eventually)
4. Plastic strainer or basket, plastic stir stick and/or plastic tongs (optional but helpful)
5. Distilled or Reverse Osmosis (RO) water
6. Proper safety equipment: Goggles, rubber gloves, vapor mask (if you don't have a fume hood)

**see our website page (https://www.reactivemetals.com/patinas-chemicals) for more information on these products

3. PREP

MIXING: Make sure you are wearing proper protective equipment (safety goggles, rubber gloves, mask). If you received your Victory Etch in a bottle add hot distilled or RO water to the bottle, filling about 1/3 of the volume. Swirl the contents to speed dissolving. Continue filling with hot water until full.

If you received your Victory Etch in a bag, add hot distilled or RO water to your plastic container, filling about 1/3 of the volume. Using a funnel, snip one corner of the bag and pour the entire bag into your container. Swirl the contents to speed dissolving. Continue filling with hot water until full. You MUST mix the entire container to ensure proper chemical ratios . It is recommended to then let the etch sit for 3 days before using--this will let the chemicals meld properly.

METAL PREP: Always clean and degrease your metal before etching. We recommend Simple Green® as a degreaser. For thick or stubborn grease, you can use it heated (works especially well in a heated ultrasonic). Rinse thoroughly in distilled or RO water before etching.

BATH SET UP: If using the Easy Heat Bath, follow the included instructions.
If using another heat source such as a Pickle Pot, fill your pot partially with water. Add Victory Etch to a heat resistant bowl and float this in the pickle pot.

4. USE

Etching times can vary depending on many variables such as metal grades, age and saturation of the solution. It is best to establish a base line time to start with each time you use a new batch/grade of metal. Use a scrap piece of your metal to determine the time that yields the result you want.

PRO TIP

When you've etched titanium for anodizing, it will begin to rebuild the oxide layer you just removed in a fairly short period of time when in contact with oxygen. We recommend "sealing" your etched surface by anodizing a 5 volt base coat to your piece. This will allow you to come back years later and still get good anodizing results. This is only necessary for titanium/titanium alloys.

Always store your used Victory Etch in a separate marked plastic container from the unused portion. Keep using it until it is spent, then refresh your bath using the unused mixture.

Victory Etch is made to be used at a low heat setting--around 93-99˚F which is easy to achieve using the Easy Heat Bath** set up. Other heat sources may be used but expect more aggressive etching to occur at higher temps and faster break down of the etch.

Etching Steps:
1. Turn on your fume hood/fan.
2. Add your Victory Etch to your plastic etching container. Use the smallest amount that will cover your pieces.
3. Heat to 93-99˚F. This temp should be maintained during the entire etch session. Check your temp with the Fast Read Thermometer** (remember to rinse in water after using in Victory Etch).
4. Submerge your cleaned & degreased piece(s) into the etch using the basket included in the Easy Heat Bath or a chemical/heat resistant all plastic basket. Jiggle or shake the basket to remove any air bubbles settled on the piece(s). Move/stir the pieces in the bath while etching to ensure proper flow around the piece(s). Approximate etch time is 1 minute on Grade 1 Titanium but thicker oxides may require longer times.
5. Remove your basket and thoroughly rinse the piece(s) in distilled or RO water.
6. Anodize to your desired voltage immediately or apply a 5 volt base coat to anodize at a later date.

Color Removal Steps:
1. Set up according to the instructions above. Higher temps work better for this so 99-100˚F should be used on titanium. Niobium requires even higher temps so you'll need to be able to heat to around 150˚F. (Note: The Easy Heat Bath max temp is 100˚F so you'll need a pickle pot)
2. Etch in the same manner as regular etch making sure to keep an eye on the progress. If you overshot your intended color, just etch back to the correct color. If you want to totally remove color, just keep going until you're down to raw metal.
3. Rinse in distilled/RO water and dry.

Removal times from green to raw metal:
Titanium: approx 2 minutes (96˚F), approx 10-15 seconds (150˚F)
Niobium: over 15 minutes (150˚F)

5. DISPOSAL
Dispose of contents/container in accordance with local/regional/national/international regulations.

6. TROUBLE SHOOTING/FAQS

What is the shelf life of Victory Etch?
Dry powder: over 10 years
Unused Solution (Wet): at least a year

How much titanium can I etch with Victory Etch?
One gallon can etch at least 2500-3000 square inches. Keep in mind that quantity of metal in the bath & heating time will cause the bath to break down over time. Your bath will eventually become saturated with etched titanium which can cause anodizing problems so it's best to do a full refresh every so often especially if you run a lot of metal through your bath.

Can I use Victory Etch for reverse anodizing?

Yes, just etch your piece and keep an eye on it as it goes back down the color scale until you reach your desired color.

Can I use anything other than plastic in my etch bath?

Aside from your Fast Read Thermometer, no other metals other than the piece you are etching should be used. Never use glass (even Pyrex) as it can weaken and shatter.

What can I use to suspend my pieces in the etch bath?

Chemical/Heat resistant plastic baskets (like the one in the Easy Heat Bath kit), plastic tongs, titanium or niobium wire (although you're etching those too so they will contribute to bath saturation).

My pieces aren't anodizing evenly or to the color I want, why not?

1. Make sure you cleaned and degreased well before etching. If you touch the piece with your ungloved fingers after cleaning and then etched it, there can be oils from your skin on the metal. Correct handling & cleaning can't be overstated.

2. Oxide is invisible so you have no idea how thick it is. Be sure to run a test piece from each different lot of metal to make sure your "normal" etch time is enough. The same grade of titanium can have a slightly different etch time depending on what happened when it was originally made.

3. Make sure you didn't contaminate your metal by using tumbling, sanding, bead blasting that has metal additives or been used on any metals other than titanium or niobium. It always a good idea to keep any of these surface prep tools separate from use on any other metals.

4. Make sure you didn't contaminate your bath by using other metals in it, including what you use to hold your piece(s). You will need a separate bath if you are using anything other than titanium or niobium. If you used it on other metals first, there's a chance that it reverse plated onto your titanium. If you suspect this is what happened, you'll need to start with a fresh bath. Make sure to not get any Victory Etch in your anodizing bath as it will cause problems.

5. If you're seeing spots it may just be that you didn't rinse well after degreasing before etching or after etching. Make sure you rinse longer than you think you need to. Don't allow pieces to air dry. Gently blot using a paper towel then dry using a hair dryer. We always recommend using a distilled or RO water rinse as the minerals in hard water can cause spotting that is difficult to remove.

6. If you're not getting up to green or higher then it likely means you didn't etch long enough. If the colors below that are nice and bright then your bath is still etching but you'll need to leave it a bit longer in the bath.

I'm not getting any color at all on my piece.

This is likely due to a bad connection rather than the etch not working. Check to make sure your black and red leads are connected securely both where the banana plugs fit in the machine and at the clip end. Without anything in your bath, try running up the voltage on your anodizing power supply. If you can see it go all the way up and down then it is working correctly.

If you have any further questions, please feel free to contact us at info@reactivemetals.com.