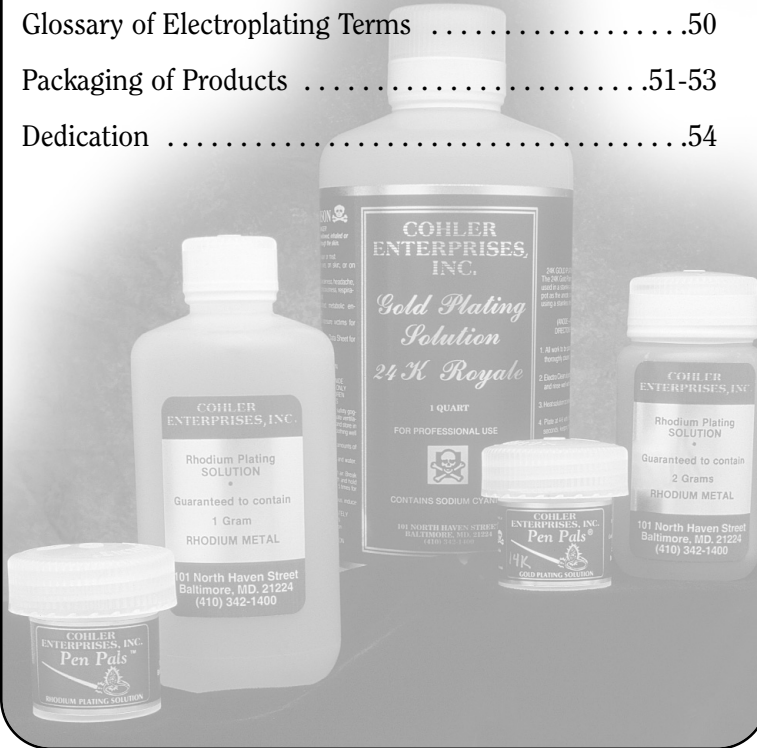


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List of Products

The following guide should be used as a reference when electroplating with the following Cohler Electroplating Products:

- Pre-Mixed Rhodium for Bath Electroplating
- Pre-Packaged Rhodium Plating Kits - **Hazmat Free Shipping**
- Rhodium Concentrate for Bath Electroplating
- Rhodium Replenisher for Bath Electroplating
- Rhodium Pen Plating Solution
- Black Rhodium Bath Electroplating Solution
- Black Rhodium Bath Pen Plating Solution
- Pallabrite™ Mirror Palladium Bath Electroplating Solution
- 14Karat Gold Bath Cyanide Solution
- 14Karat Gold Bath Cyanide **Super Hard™** Solution
- 14Karat Gold Bath **Cyanide Free** Solution
- 18Karat Gold Bath Cyanide Solution
- 18Karat Gold Bath Cyanide **Super Hard™** Solution
- 18Karat Gold Bath **Cyanide Free** Solution
- 24Karat Gold Bath Cyanide Solution
- 24Karat Gold Bath Cyanide **Super Hard™** Solution
- 24Karat Gold Bath **Cyanide Free** Solution
- Green Gold Cyanide Solution
- Rose Gold Cyanide Solution
- Rose Gold **Cyanide Free** Solution
- 14Karat Gold Cyanide Solution for Pen Plating
- 14Karat Gold Cyanide **Super Hard™** Solution for Pen Plating
- 14Karat Gold **Cyanide Free** Solution for Pen Plating

List of Products

- 18Karat Gold Cyanide Solution for Pen Plating
- 18Karat Gold Cyanide **Super Hard™** Solution for Pen Plating
- 18Karat Gold **Cyanide Free** Solution for Pen Plating
- 24Karat Gold Cyanide Solution for Pen Plating
- 24Karat Gold Cyanide **Super Hard™** Solution for Pen Plating
- 24Karat Gold **Cyanide Free** Solution for Pen Plating
- Rose Gold Cyanide Solution for Pen Plating
- Rose Gold **Cyanide Free** Solution for Pen Plating
- Green Gold Cyanide Solution for Pen Plating
- Silver Cyanide Bath Electroplating Solution
- Silver Free™ Silver **Cyanide Free** Bath Electroplating Solution
- Copper Cyanide Bath Electroplating Solution
- Copper Primer™ & Copper Mirror™ **Cyanide Free** Baths Solutions
- Platinum Pen Plating Solution
- Nickel Mirror™ Nickel Bath Plating Solution
- Nickel Free™ Nickel Replacement (cobalt) Solution
- Tin Immersion Bath
- Black Free™ Black Antique Electroplating Solution
- Strip Free™ Gold Stripping **Cyanide Free** Solution
- Electroking™ Electrocleaner
- Activator T™ Mild Acid Etch
- Activator SS™ Activator for Stainless Steel
- Ultrasonic-Eco™ Ultrasonic Cleaner
- Metalform A™ Acrylic Based Copper Conductive Paint

DEFINITION OF THE ELECTROPLATING PROCESS FOR USE IN THE JEWELRY INDUSTRY

Electroplating is the process of applying a very thin layer of precious metal over a piece of jewelry by electro-chemical deposition.

Using an electric current, positively charged metal ions move through the solution and adhere to a negatively charged piece of jewelry. There are many variables to take into consideration when electroplating. These variables will be discussed throughout this manual.

ELECTROPLATING EQUIPMENT AND SUPPLIES

Hot plates are used for heating solutions. Not all Cohler electroplating solutions need to be heated. Please check plating instructions prior to heating a solution.

Pyrex beakers hold up to heat very well. Solutions in the beakers can be placed directly onto the hot plate. Please purchase enough beakers so you can label each beaker with the specific electroplating solution you are using.

Plating rectifier/power supply for providing the necessary electrical current.

When electroplating with plating baths of less than one gallon, a 12-amp rectifier that offers both amp and voltage plating controls will work very nicely. When electroplating with baths over a gallon a 25-amp rectifier should be the power supply of choice.

Note: Please make sure that no matter which power supply you use it should have voltage control capabilities. All electroplating instructions will be based on the voltage reading.

Alligator Clamp and Leads At least 2 sets of leads are needed. Each with a positive and negative lead.

These leads are used to run electrical current from the power supply/rectifier to the piece you are plating and also to the anode.

Anodes are a strip of high purity metal that brings current from the positive lead of the power supply to the plating bath. Plating anodes are available in pure gold, pure copper, pure nickel, pure silver, pure platinum, platinized titanium, and stainless steel. Each type of anode is used only with a compatible electroplating solution. Please see electroplating instructions in notes to choose the proper anode for the solution you are using. The typical anode dimension is 1 inch wide by 6 inches in length.

EQUIPMENT

Protective Glasses

Rubber Gloves

Protective Chemical-Resistant Aprons

Proper Ventilation is very important to remove any hazardous vapors that are released by the cyanide and sulfuric acid solutions. When plating with both cyanide and acid solutions at the same time, do not place both under ventilation at the same time. We highly recommend plating with either cyanide based materials or acid based materials separately.

SAFETY WHILE ELECTROPLATING

For safety purposes, it is recommended that only trained personal should be permitted to work with the chemicals. Please use the following rules when electroplating with sulfuric acid and cyanide based electroplating solutions. **Please read all material safety data sheets provided by Cohler prior to doing any electroplating job.**

- Never mix an acid-based solution with a cyanide-based solution.
- **Always wear the proper eye and skin protection.** Wear rubber gloves, eye glasses or shields and chemical-resistant aprons. Cyanide is a poison that can be absorbed through the skin and is especially dangerous if you get it in your eyes. Sulfuric acid can cause severe burns. Remember, when you are electroplating with Cohler rhodium solutions, you are using a sulfuric acid based product. Our gold, silver, and copper solutions are cyanide based.
- Always designate a specific area where you will be doing the electroplating. This area should be properly ventilated. All equipment, supplies and safety items should be kept in this specific area. Only trained employees that are familiar with handling electroplating chemicals, equipment and supplies should be permitted in this area.
- When mixing distilled water into rhodium concentrate to make up a ready to use rhodium bath, always add the water to the rhodium concentrate. Adding the rhodium concentrate to the water will cause a dangerous reaction.

- Please follow carefully the instructions provided for each Cohler product. **Overheating** of these products will cause unnecessary additional fumes.
- Never pour hazardous spent electroplating solution down the drain. First of all, they may contain traces of precious metals that you can send out to be recovered by a refiner. Second, when you pour spent gold, silver or copper solutions down the drain, you are also pouring cyanide down the drain. When you pour spent rhodium solutions down the drain, you are also pouring sulfuric acid down the drain. Once down the drain, these hazardous chemicals end up in our waterways and destroy our environment.
- Label each beaker with the name of the specific electroplating solution in that beaker. Each beaker should be rinsed out completely after use. Be sure to only place the specific solution back into assigned beaker during the electroplating process.

Cleaning Process

CLEANING AND PREPARING JEWELRY TO BE ELECTROPLATED

The cleaning and preparation process is one of the most important steps in achieving the results you are looking for when electroplating. The jewelry surface must be prepared and cleaned properly in order to get a proper finish even with all other steps followed correctly. **All jewelry must be free of oils, dirt, polishing compounds, Electrocleaner, Ultrasonic cleaner, fingerprints, soaps and acids.** Below you will find a cleaning process that I have successfully used over my many years in this business.

1. Polish all pieces to be electroplated using a jeweler's polishing wheel and rouge.
2. Put all pieces to be electroplated into an ultrasonic unit on hot temperature for 10 minutes. Please be sure to change ultrasonic fluid regularly.
3. Steam clean pieces
4. Prepare electrocleaner solution. Cohler sells ready to use electrocleaner as well as powder electrocleaner that should be mixed with distilled water at a ratio of 2 ounces of Electrocleaner powder per 1000 ML'S (liter). Follow instructions on the side of the container.
5. Rinse in clean distilled water.
6. Use Activator T mild acid etch powder at a ratio of 2 ounces of powder per 1000 ML'S (liter) of distilled water. Follow the directions on the side of the container. Just dip pieces into the solution. No electricity is needed.

Cleaning Process

7. When electroplating rhodium, the last cleaning step always should be to submerge the piece into distilled water.

8. Electroplate

Please note that your distilled water rinses, as well as your electrocleaner, activator and ultrasonic cleaner solutions should be changed on a regular basis to avoid contamination of the different cleaning solutions as well as your electroplating solution.

Instructions:

ULTRASONIC-ECO™ CLEANER

ULTRASONIC-ECO™ ULTRASONIC CLEANER

Ultrasonic-Eco™ is an aqueous cleaner that provides excellent degreasing properties when used in tumbling, ultrasonic, or standing heated tanks. It is biodegradable and non hazardous.

1. Mix 1 part Sonic-Eco with 10 parts water.
2. Heat to 120-140 degrees Fahrenheit.
3. Clean piece for 60 seconds.
4. Piece is now ready for electrocleaning.
5. See page 13 for electrocleaning instructions.

Instructions: ELECTROKING™ ELECTROCLEANER POWDER

ELECTROKING™ ELECTROCLEANER POWDER

Electroking™ powder is an excellent deep jewelry cleaner for many substrates in the jewelry and industrial industries. Simply mix 2 ounces of powder per liter and start cleaning.

PLATING PROCESS

1. Using a stainless steel anode, connect the (+) lead to the anode and the (-) lead to the work.
2. Mix powder into distilled water at a rate of 2 ounces of powder per liter of distilled water.
3. Heat solution to 140 degrees Fahrenheit.
4. Set voltage at 4-6 volts.
5. Place work piece in solution for 15-60 seconds.
6. Rinse in distilled water.
7. Piece is now ready for activating.
8. See page 14 for activating instructions.

Note: Please replace your Electroking electrocleaner regularly so as not to contaminate other cleaners or electroplating chemistries.

Instructions: ACTIVATOR-T™

POWDER

ACTIVATOR T™ POWDER MILD ACID ETCH

Activator T™ powder when mixed with distilled water creates a mild acid with super etching, brightening, and cleaning properties. By etching the metal, Activator T™ assures a strong metallic bond when electroplating.

PROCESS

NO ELECTRICITY IS NEEDED FOR THIS STEP

1. Simply mix 2 ounces of Activator T™ powder per liter of distilled water to create a ready to use bath.
2. Use at room temperature.
3. Leave pieces in bath for 30-60 seconds.
4. Rinse in distilled water.
5. Your piece is now ready for plating.

Instructions: RHODIUM

INSTRUCTIONS FOR USING COHLER BATH ELECTROPLATING PRODUCTS

RHODIUM ELECTROPLATING SOLUTIONS (BATH OR DIP)

Cohler Rhodium plating solutions produce a corrosive resistant, tarnish resistant, bright white finish that is extremely durable. The best results can be achieved when plating Cohler rhodium over gold, platinum, palladium, nickel, or cobalt.

When electroplating, Cohler rhodium over silver, copper, or other non precious metals, it is best to preplate with nickel, cobalt (Nickel Free™) or palladium plating solution prior to rhodium plating. When preplating nickel or cobalt solution prior to rhodium plating, please make sure to clean the piece properly as explained in the cleaning process stated in the previous section on cleaning and prep.

Cohler rhodium plating solution is sulfuric acid-based. Please note that when pouring the rhodium bath into the beaker for the first time, you should mark the outside of the beaker with a black magic marker at the top of the solution level. This process should be done in order to know when you must replace the distilled water that will evaporate over time. Replacing the evaporated distilled water level is the only maintenance you need to perform for the Cohler rhodium bath. Keeping the acid to distilled water ratio intact is very important.

Note: Always use the entire rhodium bath at one time, do not deplete half the bottle and then add in the rest over top of the depleted bath. This will make your bath too acidic. If you want to use part of the original bath, keep the balance in the original bottle and replace the bath entirely when the batch is depleted or not working properly.

Instructions: RHODIUM

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Cohler rhodium solutions come in ready-to-use 1/2 gram, 1 gram, 2 gram, 4 gram and 5 gram baths, and in a concentrate form into which must be added the proper amount of distilled water in order to create a ready-to-use bath.
2. Pour the entire rhodium bath into a Pyrex beaker. Mark the solution level on the outside of the beaker with a magic marker.
3. Attach either a platinized titanium anode or pure platinum anode to the (+) lead and immerse the anode into the solution bath. The surface area of the anode must be at least twice the size of the work piece.
4. Turn on the rectifier and set at 4-6 volts.
5. Attach the handling wire (rhodium plated copper wire) to the (-) lead. This wire is used to hold the piece that you are electroplating. Immerse the work piece and agitate slightly back and forth in the rhodium solution. **Please note that Cohler rhodium solutions do not need to be heated above room temperature. This allows you to use our rhodium in a safer manner by not creating additional sulfuric acid fumes while plating.**
6. See cleaning and preparing instruction pages prior to plating.
7. Electroplate for 15 to 30 seconds only. Do not electroplate for longer than 30 seconds. Longer plating will cause a dark plate and will not yield a thicker or more durable plate. Remove the plated piece after 30 seconds maximum.
8. The final step is very important! Rinse off the rhodium electroplated piece in distilled water.

THE MOST COMMON WAYS OF

Instructions: RHODIUM

CONTAMINATING THE RHODIUM BATH ARE:

- **Failure to rinse off all materials with distilled water prior to pouring the rhodium into the beaker.** Use a squeeze bottle filled with distilled water to wash down the sides of the beaker and the entire platinized titanium or pure platinum anode. The important last step to any good cleaning and prep process is to submerge the piece to be plated into a distilled water rinse (beaker filled with distilled water). **Do not use tap water, which contains chlorine and which, after time, will drop the rhodium out of the solution.**
- If the rhodium bath is left in the beaker when not in use, it should be covered or returned to the original bottle. Airborne dirt and other foreign items can easily get into the solution and contaminate it.
- **Be sure that the power supply is always on before putting the handling wire and the electroplating piece into a rhodium bath. If you put the handling wire or piece in without electricity, the sulfuric acid will attack the metal on the handling wire and contaminate the rhodium bath. This will cause metal contamination that cannot be filtered out and will ruin your bath.**
- If you suspect that your rhodium bath is dirty with organic matter, you may filter the rhodium bath through activated charcoal in order to try and remove the contaminant.

Instructions: PALLABRITE™ MIRROR PALLADIUM SOLUTION

PALLABRITE™ MIRROR PALLADIUM SOLUTION (BATH OR DIP)

Cohler's palladium solution is a ready to use bath with 2.5 grams of palladium metal per liter. Pallabrite™ Mirror is a maintenance free, ready to use plating bath, purposely designed for flash plating over white metals. This product produces a consistent bright white mirror finish that is tarnish resistant. It can be used as an intermediate layer over gold, silver, palladium and platinum, as well as a final plate over low end jewelry or jewelry such as earrings that do not get a lot of wear. Pallabrite™ Mirror is an excellent pre-plate prior to rhodium plating, allowing you to save money on rhodium plating by keeping the piece in the rhodium bath for up to 50% less time and without compromising results.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

Warning: Keep away from acids to avoid contamination. A thermometer is crucial to detecting proper temperature for this product.

1. Using a platinized titanium anode, attach the (+) lead to the anode and the (-) lead to the work.
2. Heat solution to 125 degrees Fahrenheit.
3. Set rectifier at 2-3 volts.
4. Plate for 15-20 seconds.
5. Rinse Well.
6. If used as a preplate, continue the final plating process.

Clean your anode well if using the same anode for rhodium plating as there will be a stain on the anode from the palladium.

Instructions: BLACK RHODIUM

PROCEDURE FOR BATH ELECTROPLATING WITH COHLER'S BLACK RHODIUM:

Cohler's black rhodium electroplating solution is sulfuric acid based. Depending on the setting on the rectifier, black rhodium will plate grey, red, or purple. 4 volts will provide a shiny grey finish, 5 volts a shiny reddish grey finish, and 6 volts a shiny dark grey, red and purple finish. Black rhodium solution is used in the jewelry industry to create an antique finish. This solution is ready to use; no mixing! It is available in 1 and 2 gram ready to use bath.

PLATING PROCESS

Note: It is very very important to clean and prepare the piece to be plated when using rhodium plating solution in general and black rhodium electroplating solution specifically. Please follow the prep and cleaning process on pages 10 and 11 carefully not missing any steps.

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. After the cleaning process, pour the entire black rhodium bath into a Pyrex beaker.
2. Attach the positive lead to a pure platinum anode or platinized titanium anode. Attach the negative lead to the piece you are plating.
3. Set the power supply at 4-6 volts and turn on the rectifier.
4. Dip the piece to be plated into the solution. When gas bubbles surround the piece, plating is in process.

Instructions: BLACK RHODIUM

5. Move the piece slowly back and forth in the solution. Make sure to turn the piece so that each side is able to face the anode for 20-30 seconds. Remove the piece. Inspect for coverage and color. If the results appear satisfactory then rinse off. If you need to replating, dip the piece into solution again for 20 seconds.
7. Rinse the piece off right away under hot tap water to prevent water marks or streaking.
8. Dry the piece with a cloth.

Instructions: GOLD CYANIDE

SOLUTIONS

GOLD ELECTROPLATING SOLUTIONS

(BATH OR DIP)

14K, 18K, 24K, ROSE AND GREEN

Cohler's gold plating solutions produce a very durable gold finish. Our gold bath solutions are packaged in quart containers and are ready to use right out of the bottle. It is very important to follow the below instructions.

Remember to clean and prep the piece to be electroplated prior to plating. Please use the cleaning process as explained in the cleaning and prep section.

IN THE CLEANING AND PREP SECTION:

Please remember to rinse off your piece after dipping it into the activator solution. Activator T™ solution is a mild acid and should not mix with gold cyanide.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Heat solution to between 120-140 degrees Fahrenheit. Using a stainless steel anode or stainless steel pot as the anode, attach the (+) lead to the anode and the (-) lead to the work.
2. Turn on the power prior to submerging the work into the gold bath. Plate at 4-6 volts using slight agitation.
3. The plating time is between 15-30 seconds.
4. Remove the work piece. Rinse well under hot tap water. Dry right away to prevent water spots.

Note: When the liquid level in the gold bath drops due to evaporation, add tap water to bring the bath volume up to the original level.

Instructions: GOLD CYANIDE SOLUTIONS

PREPLATING

When gold electroplating over zinc alloys or nickel, please preplate the work with Cohler's copper electroplating solution.

When gold electroplating over brass, bronze, copper, silver, or tin alloy please preplate the work with a nickel electroplating solution.

Gold electroplating over stainless steel can be done but only by using a stainless steel activator solution and then nickel preplating it first.

Instructions: GOLD CYANIDE

SUPER HARD™ SOLUTIONS

GOLD ELECTROPLATING SUPER HARD SOLUTIONS

(BATH, DIP OR PEN)

14K, 18K, 24K

Cohler's Super Hard™ gold solutions are available in pre-mixed quart baths or ready to use pen solutions. By adding extra hardener Cohler provides an extra hard, durable finish. These solutions should be used when the traditional gold electroplating finishes fail to adhere properly, or the jeweler is looking for a more durable finish.

PLATING PROCESS

When plating with super hard plating solutions, please follow the same instructions for cyanide bath gold and pen plating.

Instructions: EARTHCOAT™ GOLD CYANIDE FREE SOLUTIONS

EARTHCOAT™ GOLD CYANIDE FREE ELECTROPLATING SOLUTIONS

(BATH OR DIP)

14K, 18K, 24K AND ROSE

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Heat solution to 140 degrees Fahrenheit. Using a stainless steel anode or stainless steel pot as the anode, attach the (+) lead to the anode and the (-) to the work.
2. Please turn on the power prior to submerging the work into the gold bath. Plate at 3-4 volts using slight agitation.
3. The plating time is between 30-45 seconds.
4. Remove the work. Rinse well under hot tap water. Dry right away to prevent water spots.

Note: When the liquid level in the gold bath drops due to evaporation, please add distilled water only in order to bring the bath volume up to the original level.

Note: Due to the fact that these solutions are completely cyanide free, they can all be shipped without a hazardous fee.

Instructions: SILVER CYANIDE SOLUTIONS

SILVER CYANIDE ELECTROPLATING SOLUTION (BATH OR DIP)

Cohler's silver cyanide electroplating solution stands alone in the jewelry industry. What makes our silver cyanide solution unique is that after electroplating, the work comes out of the bath with a bright white durable finish. **There is no need to polish the piece after plating** like other solutions. Cohler's silver cyanide solution is ready to use.

Remember to turn on the power supply prior to putting the work into the silver plating bath.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a stainless steel anode, attach the (+) lead to the anode and the (-) lead to the work.
2. Do not heat the solution! Do not plate at room temperature higher than 75 degrees Fahrenheit.
3. Plate small pieces at 1.5 volts. Plate large pieces at 2 volts. It is very important when using this solution not to electroplate at higher than recommended voltage.
4. Plate at 15 second intervals. Check the work to be sure that the desired result is achieved.
5. Remove work and rinse well under hot tap water. Dry all pieces right away to prevent water spots.

PREPLATING

Zinc, nickel and tin alloys must first be plated with Cohler's copper electroplating solution prior to silver plating.

Instructions: SILVER FREE™

SILVER CYANIDE FREE SOLUTIONS

SILVER FREE™ SILVER CYANIDE FREE ELECTROPLATING SOLUTION (BATH OR DIP)

Cohler's silver cyanide free solution will reflect the surface of its underplate. You will get a bright shiny silver finish over a shiny metal underplate and a matte or dull silver finish over dull underplates.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a stainless steel or silver anode, attach the (+) lead to the anode and the (-) lead to the work.
2. Do not heat the solution. Please plate at room temperature.
3. Plate at 1.5-1.8 volts for 15-90 seconds.
4. Remove work and rinse well under hot tap water.
Dry all pieces right away to prevent water spots.

Note: When plating with this solution it is very important to follow the above voltage and plating time instructions.

Instructions: COPPER CYANIDE SOLUTIONS

COPPER CYANIDE ELECTROPLATING SOLUTION (BATH OR DIP)

Cohler's copper cyanide electroplating solution provides a rich, durable, copper finish, and provides an excellent preplate when plating over zinc, nickel, or tin alloys.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a copper anode or stainless steel anode, connect the (+) wire from the power supply to the anode and the (-) wire from the power supply to the jewelry to be copper plated.
2. Plate at room temperature.
3. Plate at 2 volts for 10-30 seconds. Check the work piece every 10 seconds until you are satisfied with the results.
4. Remove the work and rinse under hot running water.

Note: Add tap water to the bath if the level gets lower than 1/2 inch below the starting bath level.

Instructions: COPPER MIRROR™ CYANIDE FREE SOLUTIONS

COPPER MIRROR™ CYANIDE FREE ELECTROPLATING SOLUTION (BATH OR DIP)

Cohler's copper mirror™ cyanide free solution will deposit a consistent, uniform, brilliantly bright and shiny copper over dull surfaces.

Air agitation required for this plating solution

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a pure copper anode attach the (+) lead to the anode and the (-) lead to your work piece.
2. Set voltage at 2-3 volts.
3. Set up air agitation and turn on air. Liquid should start to bubble.
4. Plate at room temperature.
5. Plate 30 seconds for flash plating.
6. Plate for 2-10 minutes for a heavier buildup. Check your work every 2 minutes until you achieve the desired finish.
7. Remove piece and rinse well.

Instructions: COPPER PRIMER™

CYANIDE FREE SOLUTIONS

COPPER PRIMER™ CYANIDE FREE SOLUTION (BATH OR DIP)

Cohler's copper primer™ cyanide free solution should be used as a preplate to go over difficult to plate metals as well as a bonding metal between plating stages.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Heat solution to 130 degrees Fahrenheit.
2. Using a pure copper anode attach the (+) lead to the anode and (-) lead to the work.
3. Set rectifier on 1-2 volts.
4. Plate for 2-5 minutes.
5. Remove piece and rinse well.

Instructions: NICKEL MIRROR™ CYANIDE FREE SOLUTIONS

NICKEL MIRROR™ CYANIDE FREE SOLUTION (BATH OR DIP)

Cohler's nickel mirror™ cyanide free solution plates a consistent, bright white, uniform nickel deposit. When used as a preplate, it enhances and brightens your rhodium, gold, and silver plating finishes.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a nickel anode or a platinized titanium anode, attach the (+) lead to the anode and the (-) lead to the work.
2. Heat the solution to 140 degrees Fahrenheit.
3. Set rectifier at 2-4 volts.
4. Plate 30 seconds for flash plating.
5. Plate for 1-10 minutes for a heavier buildup to achieve desired finish. Your plating time will depend on how shiny your undercoat is.
6. Remove piece and rinse well.

Instructions: NICKEL FREE™ NICKEL REPLACEMENT (COBALT)

NICKEL FREE™ NICKEL REPLACEMENT (COBALT) SOLUTION (BATH OR DIP)

Cohler's nickel replacement solution should be used where nickel cannot be used due to allergy or laws within your country. This solution will give you an extremely hard, bright white, shiny finish. You may use this solution as a preplate prior to rhodium, gold, or silver plating, or as a final finish.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a platinized titanium anode, attach (+) to the anode and (-) to the piece.
2. Heat the solution to 140 degrees Fahrenheit.
3. Set the rectifier on 2-3 volts.
4. Plate for 30-90 seconds.
5. Remove piece and rinse well.

Note: When using this product your anode will be stained black. Please put the anode into a heated electrocleaner bath, 140 degrees Fahrenheit, to remove the black stain from the anode.

Instructions: IMMERSION TIN™

IMMERSION TIN™ SOLUTION (BATH OR DIP)

Cohler's immersion tin™ solution is used in the electroforming process as a preplate after the part is coated with a conductive paint. Simply dip your piece into this solution for a bright white tin finish.

Instructions: WHITE FREE™

SOLUTIONS

WHITE FREE™ PLATING SOLUTION (BATH OR DIP)

Cohler's white free™ electroplating solution deposits a bright white finish similar to bright white silver. White free will reflect the base metal finish. If you desire a bright white shiny finish your undercoat should be shiny. White free helps prevent tarnishing.

PLATING INSTRUCTIONS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a stainless steel anode, connect the (+) lead to the anode and the (-) lead to the work.
2. Set rectifier on 2-4 volts.
3. Plate at room temperature.
4. Plate for 30-60 seconds.
5. Remove piece and rinse well.

Instructions: BLACK FREE™

SOLUTIONS

BLACK FREE™ / BLACK ANTIQUE FINISH PLATING SOLUTION (BATH OR DIP)

Cohler's black antique finish plates a rich black coating which is easily relievable with minor abrasion. After plating, relieve the high spots to give it a final antique look. This is a great alternative to flammable, toxic black lacquer dipping baths.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Using a stainless steel anode, connect the (+) lead to the anode and the (-) lead to the work.
2. Heat solution to 130 degrees Fahrenheit.
3. Set rectifier at 3-4 volts.
4. Plate for 30-120 seconds.
5. Remove piece and rinse well.

Pen Plating: RHODIUM

SOLUTIONS

RHODIUM PEN PLATING SOLUTION

Cohler's pen rhodium provides you with a bright white finish. This solution is ready to use and can be plated directly over gold, nickel, palladium, or platinum. If you are plating over any other surface see the instructions under rhodium bath plating for the proper preplate. Cohler pen rhodium is sulfuric acid based.

PLATING PROCESS

Clean and prepare the piece or pieces to be pen rhodium plated. With rhodium plating it is very very important that all pieces are cleaned very carefully prior to plating. **If the pieces are not cleaned properly, the rhodium will not stick to the pieces and contamination is possible.**

*Note: Cohler pen rhodium should be used as is.
No mixing or adding water!*

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Pour a small amount of rhodium pen solution into a 30 ml beaker or into the cap of the bottle.
2. Use at room temperature.
3. Attach the clean piece of jewelry to the (-) lead. Plug the pen into the positive outlet on the rectifier. If using a disposable pen, follow instruction for pen plating with disposable plater.
4. Dip the felt tip of the pen into the rhodium pen solution and let it sit for 1-2 minutes.
5. Turn on the rectifier and set to 4-6 volts.

Pen Plating: RHODIUM SOLUTIONS

6. Making contact with the felt tip of the pen and the piece to be plated, slowly move the felt tip back and forth on the piece. The felt tip should be moist but not dripping. The pen tip may have to be dipped into the rhodium pen solution several times before achieving a nice even bright white electroplate. Look for tiny gas bubbles. This is a good indication that you are pen plating properly and that the rhodium is adhering to the piece.
7. When the results are satisfactory, rinse off the piece and any excess rhodium under very hot tap water.
8. Pour rhodium solution back into the container to prevent contamination.

Pen Plating: BLACK RHODIUM SOLUTIONS

BLACK RHODIUM PEN PLATING SOLUTION

Cohler's black pen electroplating solution is sulfuric acid based and is used to touch up small areas. Cohler's black rhodium pen solution is unique. When plated there will be a shiny finish that is grey, red and purple depending on the voltage. Many jewelers use this product to create an antique finish to their jewelry. This solution can be plated directly over gold, platinum, palladium, or nickel metals.

PLATING PROCESS

Note: It is very very important that the piece to be plated is properly cleaned and prepared. The following cleaning process is strongly suggested before even trying to plate with this product.

1. Polish the piece with rouge.
2. Put the piece into an ultrasonic cleaner on hot temperature for 10 minutes.
3. Steam clean.
4. Electroclean then rinse in distilled water.
5. Mild acid etch with Activator T then rinse in distilled water.
6. Shake off any excess water and pen plate.

Pen Plating: BLACK RHODIUM SOLUTIONS

AFTER CLEANING PROCESS:

7. Pour a small amount of the black rhodium pen solution into a 30 ml beaker or into the cap of the bottle.
8. Use at room temperature.
9. Attach the clean piece of jewelry to the (-) lead. Plug the pen into the positive outlet on the rectifier. If using a disposable pen, follow instruction for pen plating with disposable plater.
10. Dip the pens felt tip into the black rhodium pen solution.
11. Set the rectifier on 4-6 volts. There should be a grey finish at 4 volts; at 5 volts red and purple colors blend with the grey; and at 6 volts a darker grey, red, and purple finish will be seen.
12. Rub the felt tip back and forth over the area to be plated. It may be necessary to dip the felt tip into the solution 2-4 times prior to getting the results you are looking for.
13. When you reach the desired results, rinse the entire piece off under hot tap water.
14. When you are finished plating, please return the solution to the original bottle and close the cap. Rhodium can easily become contaminated.

Pen Plating: GOLD CYANIDE OR CYANIDE FREE SOLUTIONS

GOLD PEN PLATING SOLUTION CYANIDE OR CYANIDE FREE

Cohler's gold pen plating solutions are ready to use. The gold pen plating solutions are available in cyanide based or cyanide free chemistries. Cyanide based gold pen plating solutions are available in 14K, 18K, 24K, Rose and Green. The cyanide free gold pen plating solutions are available in 14K, 18K, 24K, and Rose. Only Cohler's Cyanide Gold Solutions are available in a Super Hard formula. Our 14K, 18K, & 24K Super Hard solutions are available in bath or pen.

Warning: Do not mix the cyanide or cyanide free chemistries with any acid based solutions.

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Pour a small amount of the pen plating solution into a 30 ml beaker or you may use the cap from the solution bottle.
2. Attach the clean piece of jewelry to the (-) lead. Plug the pen into the positive outlet on the rectifier. If using a disposable pen, follow instruction for pen plating with disposable plater.
3. Use at room temperature.
4. Place the felt tip of the plating pen into the plating solution for 1-2 minutes.
5. Turn on the rectifier and set at 4 volts.
6. Take the pen in hand and place the felt tip onto the piece to be plated.

Pen Plating: GOLD CYANIDE OR CYANIDE FREE SOLUTIONS

7. Slowly move the felt tip back and forth over the area that you wish to pen plate. The pen tip should not be dripping solution onto the piece, so please shake off all excess solution that was not absorbed into the felt tip. The back and forth motion may have to be repeated several times before the desired results are achieved.
8. Be sure to rinse off the piece under hot tap water immediately after pen plating. Do not rinse the piece off until the desired results are achieved.
9. Return all solution to the original bottle for safe storage.

Pen Plating: COPPER CYANIDE

SOLUTIONS

COPPER PEN PLATING SOLUTION

Cohler's copper pen plating solution is cyanide based and can be plated over any base metal except stainless steel or aluminum. This solution is ready to use and when applied provides a thin layer of copper metal.

Cohler's copper pen solution is ready to use as is!

PLATING PROCESS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Pour a small amount of the copper pen solution into a 30 ml beaker or into the cap of the bottle.
2. Connect the work piece to the (-) lead and the pen to the (+) terminal of the rectifier.
3. Use at room temperature.
4. Dip the entire felt tip of the plating pen into the copper pen solution for 1-2 minutes.
5. Turn on the rectifier and set on 3-5 volts.
6. Rub the felt tip back and forth over the area that you wish to plate. If necessary do this several times in order to reach the desired plating results.
7. Rinse the entire piece under hot tap water and dry with a cloth.
8. Return the solution back to the original bottle for safe keeping and in order to prevent contamination.

PLATINUM PEN PLATING SOLUTION

Platinum pen solution provides an extremely resilient layer of platinum metal over nickel, sterling silver, platinum, rhodium, and palladium. Cohler's platinum pen plating solution offers a cyanide free alternative to using other hazardous based solutions. Our platinum pen solution is ready to use.

OPERATING INSTRUCTIONS

Note: Please clean piece prior to plating using cleaning and prep instructions in prior section of manual.

1. Pour a small amount of platinum pen solution into a 30 ml beaker or into the cap of the bottle.
2. Use at room temperature.
3. Attach the clean piece of jewelry to the (-) lead. Plug the pen into the positive outlet on the rectifier. If using a disposable pen, follow instruction for pen plating with disposable plater.
4. Dip the felt tip of the pen into the platinum pen solution and let it sit for 1-2 minutes.
5. Turn on the rectifier and set to 4-6 volts
6. Making contact with the felt tip of the pen and the piece to be plated, slowly move the felt tip back and forth on the piece. The felt tip should be moist but not dripping. The pen tip may have to be dipped into the platinum pen solution several times before achieving a nice even grey white electroplate. Look for tiny gas bubbles. This is a good indication that you are pen plating properly and that the platinum is adhering to the piece.
7. When the results are satisfactory, rinse off the piece and any excess platinum under very hot tap water.
8. Pour platinum solution back into the container to prevent contamination.

Instructions: PEN PLATING WITH A DISPOSABLE PEN PLATER

ELECTROPLATING INSTRUCTIONS FOR PEN PLATING WITH DISPOSABLE PEN PLATER

Pen plating is a process used for applying a thin layer of metal over jewelry in a small area where bath plating is not practical.

Cohler Enterprises, Inc. has the perfect pen plater. The pen plater is disposable after 1 hour of plating time. This pen has a built-in battery and platinum anode. The battery acts as the rectifier so there is no need to plug this pen in. Each pen comes with a felt tip and an alligator clip. When you are ready to pen plate: simply clip the piece with the alligator clip; dip the felt tip into the electroplating solution; and apply the solution to the jewelry by rubbing the felt tip onto the area you wish to plate. The beauty of this pen is that you can electroplate anywhere and anytime without a rectifier.

Cohler's pen plating solutions are ready to use and do not need to be heated prior to use. Our pen plating solutions must only be used for pen plating and are not formulated to be used as a bath or dip solution. The pen solutions are clearly marked on each of the bottles.

Instructions: STRIP FREE™

GOLD STRIPPING CYANIDE FREE

STRIP FREE™ GOLD CYANIDE FREE STRIPPING SOLUTION (BATH OR DIP)

Cohler's cyanide free gold stripping solution works by simply reverse plating the gold plated item. Within 20-40 seconds the gold plated surface is removed and dissolved into the solution without affecting the surface underneath.

PLATING PROCESS

1. Using a stainless steel anode, attach the (+) lead to the anode and the (-) lead to the work.
2. Heat solution to 120-150 degrees Fahrenheit.
3. Set voltage at 5 volts.
4. Reverse plate for 30-90 seconds depending on the size of the part.
5. Rinse well with water.
6. If you are going to gold plate the piece, follow cleaning instructions and then gold plating instructions. If you are not going to continue the plating process immediately, then dry the part thoroughly.

*Note: Do not use with sterling silver.
Will only work on taking the gold plating off of an item.*

Instructions: ACTIVATOR SS™

ACTIVATOR FOR STAINLESS STEEL

ACTIVATOR SS™ STAINLESS STEEL ACTIVATOR SOLUTION (BATH OR DIP)

Cohler's stainless steel activator solution is a liquid activator that will allow metals to plate over stainless steel. This solution will activate the steel and allow the precious metal to adhere to the steel surface. Use this solution at room temperature.

PLATING PROCESS

1. Using a platinized titanium anode, connect the (+) lead to the anode and the (-) lead to the piece.
2. Use at room temperature.
3. Set voltage on 6-8 volts.
4. Activate for 45-60 seconds.
5. After activating, rinse part thoroughly in water and continue the plating process with EarthCoat™ gold plating solutions at 140°F. Plate 15-30 seconds longer than normal.
8. If you are not going to continue the plating process immediately, then dry the part thoroughly. When you continue the plating process, re-activate the part in Activator-SS™ to assure better adhesion.

Instructions: CONDUCTIVE PAINTS

CONDUCTIVE PAINTS: METALFORM-A™

Cohler's Metalform-A™ copper conductive paint is acrylic based, non hazardous and non flammable. This conductive paint can be brushed on or dipped. Please allow 2-4 hours of drying time. It is available in 1 and 6 ounce jars.

Quick Guide: PROBLEM SOLVING

A more comprehensive explanation of these plating problems and their solutions begins on page 48.

PROBLEM

CAUSE

No Adhesion

Jewelry not properly cleaned
Needs preplate
Contaminated bath
Wrong anode being used
Depleted bath
Work piece did not properly face anode
+ and – wires not correctly attached
+ and – wires old (poor connection)
Fingers touched the workpiece
Voltage set too high or too low

Spotting

Poor cleaning practices
Anode breaking down
Voltage too high
Surface is poor
Letting piece air dry
Water content to acid or water content to cyanide are unbalanced
Contaminated solution

Dull Plate

Not cleaned properly
Voltage too high

Brown Spots

Voltage too high

Color is wrong

Not cleaned properly
Bath temperature incorrect
Depleted bath
Improper labeling of beaker
Wrong bath
Voltage instructions not followed

Peeling/chipping off

Not properly cleaned
Voltage setting wrong
Preplate instructions not followed
Solution contaminated
Jewelry surface uneven

COMMON PLATING PROBLEMS & SOLVING INSTRUCTIONS

PLATED METALS MAY NOT STICK TO THE PIECE BEING PLATED

If cleaned and prepared properly the plated metal will stick to the work piece and stay there for a long time. Do not take short cuts in this very important step. Take your time and go through the proper cleaning process that I have carefully stated throughout this manual. If followed correctly you will always get a very strong thin layer of metal plated over top of your jewelry.

Always apply a preplate over top of metals that will best allow the plate to adhere to the work piece. An example of this would be when plating over brass. You should first apply a layer of nickel preplate prior to plating the piece with Cohler's gold solution. The reason for this preplate is gold does not stick well to the brass metal and nickel does. By applying a thin layer of nickel over the base metal, in this case brass, the gold will adhere very nicely. The bottom line is to make sure that the final plated metal will adhere to the base metal.

Always turn on the rectifier prior to dipping the work piece into the plating bath. Failing to turn the power supply on first will result in a loosely electroplated dark finish. This dark plated finish can easily be polished off. Once this problem occurs you must start the cleaning process again. However, the main problem, created by dipping the work piece into the solution prior to turning on power, is contamination of the solution, by leeching out the cathode metal into the solution.

Fingerprints can cause poor adhesion. Please be

Quick Guide: PROBLEM SOLVING

careful not to touch the piece to be plated with your fingers after the last cleaning chemical soap or acid dip is completed.

All electroplating solutions can become contaminated. If your electroplating solution becomes contaminated you will not get proper adhesion on the work piece.

Plating at high or too low voltages can cause poor adhesion. Always follow the electroplating instructions in an exact manner.

ELECTROPLATED PIECE HAS SPOTS OF IS DISCOLORED

Again, this problem is caused mostly by poor cleaning practices. However, some dark spots when rhodium electroplating, can be the cause of a platinized titanium anode breaking down. When these anodes are manufactured, there is only a thin layer of platinum over titanium. This thin layer will eventually start to chip and peel. During the plating process, dark spots may appear on the work piece wherever the platinum has chipped or peeled.

Contamination of the solution is also a culprit in creating spots or streaks and discoloration on jewelry. Always store solutions in a covered beaker or in its original bottle with cap tightened.

Air drying a plated piece instead of rising the piece off right away after being plated can cause streaking or spotting.

In using Cohler's gold, silver, or copper bath solutions, always replace the water that naturally evaporates from the solution. When using Cohler's rhodium electroplating bath solution always replace the distilled water that naturally evaporates. **This can be done by pouring the original premixed solution into a beaker and marking the outside of the beaker with a black magic marker at**

Glossary

the top of the liquid level. When precious metal content has been almost depleted in a solution you will get a dark streak on the work piece, or you will notice a dull plate rather than the bright finish of a well balanced electroplating solution.

A very important rule to follow when electroplating is that the surface you begin with will dictate the final results you get. If there is a chemical barrier between the electroplating solution and the work piece you will get a very poor plate. If the surface you are electroplating on is too rough and inconsistent, the final results will be unsatisfactory. Cohler's electroplating solutions are made so that when electroplated over a smooth finished metal they react by biting into this metal and staying on this metal for a very long time. Create the proper environment for Cohler solutions to electroplate and the results will be dazzling.

ELECTROPLATING TERMS

Adhesion The process of the electroplating solution metal sticking to the workpiece.

Anode The positive electrode in the electroplating solution

Bath Electroplating The solution that is used for dipping the workpiece in order to perform the process of electroplating

Burn A dark finish on metal that is due to improper electroplating conditions

Current The flow of electricity in a circuit

Deposit The metal layer that forms on the jewelry during the electroplating process

Electrocleaning: A part of the cleaning process prior to electroplating. During the electrocleaning process a current goes through this electrocleaning solution. The solution chemically cleans the piece to be plated by this method.

Packaging of Products

RHODIUM BATH PLATING SOLUTIONS

Pre-Mixed baths or packaged in kits for non hazardous shipping

- 1/2 Pint Bottles - 1/2 Gram
- Pint Bottles - 1 Gram
- Quart Bottles - 2 Grams

SOLUTIONS

Pen Plating, Replenisher, and Start-Up Solutions

- Pen Pals®
- 1/2 Gram Bottles 2 Gram Bottles 8 Gram Bottles
- 1 Gram Bottles 5 Gram Bottles 10 Gram Bottles

BLACK RHODIUM PLATING SOLUTIONS

- Pen Pals®
- 1/2 Gram Pen 1/2 Pint Bottle - 1/2 Gram
- 1 Gram Pen Pint Bottles - 1 Gram
- 2 Gram Pen Quart Bottles - 2 Grams

FORMULATIONS

- 1 1/2 Gram Pints 4 Gram Quarts
- 2 Gram Pints 5 Gram Quarts
- 3 Gram Pints

INTERNATIONAL FORMULATIONS RHODIUM BATH CONCENTRATE

- 1 Gram Rhodium in 50 ML's
- 2 Gram Rhodium in 100 ML's
- 5 Gram Rhodium in 250 ML's

INTERNATIONAL FORMULATIONS RHODIUM PEN CONCENTRATE

- 1 Gram Rhodium in 50 ML's
- 2 Gram Rhodium in 100 ML's
- 5 Gram Rhodium in 250 ML's

GOLD BATH PLATING SOLUTIONS

Available in Regular or Super Hard Formula. Supplied in Quart Bottles.

- 14 Karat Yellow 18 Karat Yellow 24 Karat Yellow

Not in Super Hard:

- 18 Karat Green True Rose Gold - for tricolor application

Packaging of Products

PEN PALS® GOLD

Regular or Super Hard Gold Formula. Gold Pen Pals® formulated for pen plating jewelry and cars.

14 Karat Yellow
24 Karat Yellow

18 Karat Yellow
Rose Gold

18 Karat Green

BRUSH GOLD PLATING FOR CARS

2 Ounce Bottle
16 Ounce Bottle

4 Ounce Bottle
32 Ounce Bottle

8 Ounce Bottle

PEN PAL® PLATING KITS

Gold Kits

Rhodium Kits

Disposable Pen Platers

FASTFORM SILVER™ PLATING SOLUTIONS

Quart Bottles

FASTFORM SILVER ELECTROFORMING SOLUTIONS

Quart Bottles

COPPER PLATING SOLUTIONS

Pen Pals®

Quart Bottles

Packaging of Cyanide Free Products

EARTHCOAT™ GOLD PLATING SOLUTIONS

14 Karat, 18 Karat, 24 Karat and Rose Colors

Quart, Gallon, 5 Gallon

EARTHCOAT™ GOLD PEN PLATING

14 Karat, 18 Karat, 24 Karat and Rose Colors

1 Ounce Jars, 2 Ounce Jars, 4 Ounce Jars

PLATING

Quart, Gallon, 5 Gallon

PLATINUM PEN PLATING

1 Ounce Jars

ELECTROCLEANER ELECTROKING™

2 LB, 5 LB, 50 LB

ACTIVATOR-T™

2 LB, 5 LB, 50 LB

STRIP FREE™

Quart, Gallon, 5 Gallon

ACTIVATOR-SS™

Quart, Gallon, 5 Gallon

SILVER FREE™

Quart, Gallon, 5 Gallon

PLATINUM PEN PLATING

1 Ounce Jars

WHITE FREE™

Quart, Gallon, 5 Gallon

COPPER PRIMER™

Quart, Gallon, 5 Gallon

BLACK FREE™

Quart, Gallon, 5 Gallon

COPPER MIRROR™

Quart, Gallon, 5 Gallon

TIN (BRASS RELEASE™)

For Metalforming

Quart, Gallon

NICKEL MIRROR™

Quart, Gallon, 5 Gallon

METALFORM A™

1 Ounce Jars

6 Ounce Jars

NICKEL FREE™

Quart, Gallon, 5 Gallon

Dedication to our Founder

1935-2002

In the early 1970's our company founder and personal mentor, David Leon Cohen, opened a precious metal refinery. David remained in the refining end of our business until the day of his passing in August of 2002. Since my father-in-law's passing, Toby and I have implemented everything we were taught. Some of the main lessons that were passed on to us were: 'Take no short cuts' and 'Spend as much time as needed with each customer, no matter how big or small.'

In 1984, David taught Toby the electroplating chemistries. With David's coaching, Toby started Cohler Enterprises, Inc. Our main focus is our electroplating chemistries which are sold and distributed in 24 countries.

Thank you David for everything!

Joe & Toby