

MicroLok[®] AO



Aluminum Oxide Finish for Iron & Steel

Coatings for Iron and Steel - MicroLok® AO

What is MicroLok® AO?

The MicroLok® AO process is a new, unique metal coating option for iron and steel components. Applied at 120-140° F, the MicroLok® AO finish is a non-toxic aluminum oxide conversion coating that is 0.000060" (1.5 microns) thick, silver-black in color and tightly bonded to the substrate. When sealed with a rust preventive, the MicroLok® AO finish has excellent corrosion resistance and also provides anti-galling protection and break-in lubricity to critical working surfaces. The process utilizes mild solutions and contains No EPA regulated chemicals; process rinse waters are generally sewerable as non-hazardous discharge.

MicroLok® AO serves as a direct replacement for room temperature copper/selenium-based blackeners or for zinc phosphate coatings, but without the heavy metal content and waste treatment requirements used for these processes.

Ideal for tooling and machine components, piston/cylinder assemblies, rotors & calipers, oil-field equipment or any part that does not require a dark black finish, but does require robust corrosion protection, anti-galling properties or break-in lubricity, without a dimensional change.

The MicroLok® AO Coating System Offers These Key Benefits:

1. Safe & Easy to Operate.

The MicroLok AO solution operates at a safe 120-140° F, with no fumes or splattering. This temperature is well below that of normal phosphate solutions and only a few degrees higher than room temperature blackeners. In addition, the working bath has a very mild pH of 4 to 5. Most cold blacks and zinc phosphates operate at pH 1-2, with significantly higher acid content.

2. No EPA Regulated Chemical Content.

The MicroLok AO solution contains no regulated materials. Consequently, process rinse waters are sewerable without waste treatment. (The solution does contain aluminum and iron – both classified as non-hazardous by EPA).

3. Short Process, Low Operating Cost.

For most parts, the MicroLok AO process requires only five steps and about 15 minutes. Capital costs are low because no waste treatment is required. Operating costs are only about half that of cold blacks.

4. Easy Process Maintenance.

The MicroLok AO bath is maintained by monitoring the pH. Easy to do! In addition, there is no scaling or sludging or tanks or heaters, like other processes. Consequently, process line maintenance is kept to a minimum.

5. Durable Finish. High Heat Stability.

The MicroLok AO finish withstands up to 1400° F without degradation, making it suitable for high heat applications, such as brake components.

6. Easy to Install.

Complete In-House Tank Line Systems are available at low cost and are supplied complete with training of your operators by factory personnel.

MicroLok® AO Five Step Process

For Most Parts, Five Easy Steps:

For machined parts, the MicroLok MZN process require just five steps and about 15-20 minutes:

1. **CLEAN** the parts for 5 minutes in Safe Scrub ST biodegradable cleaner: 150° F.
2. **RINSE** well in clean water: 20 seconds.
3. **APPLY** MicroLok® AO finish by immersing for 5-10 minutes at 120-140° F.
4. **RINSE** well in clean water: 20 seconds.
5. **SEAL** in Rust Preventive such as Dri-Touch® Amber IRP2: 1 minute. Allow to dry.

Parts that carry rust or heat treat scale should be descaled prior to coating with MicroLok® AO. Please consult with your Birchwood Technologies Representative for detailed guidance.

MicroLok® AO Examples

The MicroLok® AO finish has a uniform thickness of only 0.000060" – insignificant for most precision manufactured surfaces. In addition, the finish provides galling protection and break-in lubricity for critical working surfaces.



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- Ion Exchange & Near-Zero Water Recycler Options

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