Product Bulletin
Product Name: Aquamill X
Product Code: 2101010
Revision Date: January 19, 2024

Aquamill X

Aquamill X is an accelerated mass-finishing liquid compound for ferrous alloys, normally used in vibratory finishing mills. When used in vibratory mills we recommend the use of ceramic long-life or ceramic medium cut media. Media shape and size will be determined by part configuration.

Aquamill X may also be used in oblique finishing barrels and in flow through and closed bowl vibratory processes.

Features & Benefits

No strong acids	Will not cause embitterment
Soft black phase film for easy removal	No pitting or etching
Very fast cut cycles	High rate of stock removal

Typical Applications

- Accelerated mass finishing of steel
- Machining and grind line removal
- Part on part de-burring
- Part on part heat treat scale removal
- Vibratory heat treats scale removal

Operating Conditions

Concentration	Full strength
Flow rate	50 – 100 mL/ft^2 of surface area (parts) per hour, depending on media and desired finish
Time	2.5 – 8 hours depending on starting surface finish

Media

A. 5, 10 or 20 Bond Media will produce a reasonably bright finish after burnish without too much excess work on the part's edges. It is competitive to High Density Media when used correctly.

B. Media must be selected to prevent lodging and be large enough to move the parts.

C. Media can be various shapes and sizes such as Angle Cut Cylinders, Triangles, Cones, and Tri-Star. They are chosen based on their ability to reach critical areas; usually areas that are shielded present the biggest problem.

D. Media's are often mixed in size and shape to reach all critical areas.

Equipment

1. Flat bottom bowl lined with chemically resistant material including the drain.

2. The bowl is generally set up with a 3 mm to 4 mm amplitude with a 60 to 70-degree lead angle. This is usually done with the minimum weights required to roll the media and parts.

3. The vibratory bowl should be fitted with a closeable drain if batch processing is the method chosen to finish the work.

4. Metering pumps are required particularly when a flow through process is chosen.

5. Burnishing setup is required.

General

Rule 1 – Generally 75 mL per square foot of surface area per hour. It is preferable to make additions to the bowl
every 3 hours as needed for longer cycles.

Rule 2 – Chemistry is depleted when the black phase film is no longer present, or the liquid becomes too thick for the bowl to move the parts.

Rule 3 – Additions of water can be made if the bowl runs very hot and evaporation becomes a problem, however, the volume of water (metered into bowl) should not exceed 250 cc. per cubic foot per hour.

Rule 4 – The best surface finish (non-etched) is achieved by allowing the active chemistry to be consumed before burnishing.

Closed Bowl

1. Cut using Aquamill X at 50 to 100 mL per square foot of surface area per hour with the drain closed.

2. Open drain.
3. Burnish using Metal Guard 850 at 2% to 3% by volume with a flow rate of 0.5 to 1 gallon per cubic foot of bowl capacity per hour. Normal burnish times are 30 to 60 minutes.

4. Unload

Flow Through

1. Cut feeding Aquamill X at a constant rate over the course of the cut cycle, using the calculation of 75 mL per square foot of surface area per hour of cut. The flow of the Aquamill X should be stopped approximate 0.5 hours prior to the end of the cut cycle to allow the chemistry to die.

2. Burnish using Metal Guard 850 at 2% to 3% by volume with a flow rate of 0.5 to 1 gallon per cubic foot of bowl capacity per hour for 30 to 60 minutes.

3. Unload.

Your Hubbard-Hall technical service representative is available to assist with process development.

It is advantageous for our technical service laboratory to process parts to fine-tune the process to your needs prior to field trials.

Waste Disposal

Discharge spent solutions, rinse waters, and burnishing solutions to a permitted wastewater treatment system. Discharge and treat these in accordance to any applicable local, state, and federal environmental regulations.

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For more information on this process,
please call us at 203.756.5521 or email: techservice@hubbardhall.com

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