

# 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 <sup>2</sup> of surface area (parts) per hour, depending on media and desired finish
Time	2.5 – 8 hours depending on starting surface finish



**Cleaning**  
the Hard to Clean



**Finishing**  
the Hard to Finish



**Treating**  
the Hard to Treat

### 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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## Our people. Your problem solvers.

For more information on this process please call us at

1-800-648-3412

or [techservice@hubbardhall.com](mailto:techservice@hubbardhall.com)

