MICRO-MESH MX

DESCRIPTION: MICRO-MESH is a series of cloth-backed cushioned abrasives designed to produce very low roughness average (Ra) scratch patterns on a variety of materials. On metal the coarse grades of MICRO-MESH MX can achieve finishes below 1.0 micro inch with proper surface preparation and application.

Surface preparation prior to MICRO-MESH MX use includes establishing the geometry of the part reduction of the Ra to 20 micro inch or less using the most economical conventional method available. One application of MICRO-MESH MX should reduce the Ra to 10 micro inch.

Subsequent applications will further reduce the Ra by approximately 1/2 until the specified finish is reached. Using a combination of one or more of the MX series and variation of material feed, speed or pressure can produce sub 1.0- micro inch finish.

MICRO-MESH MX can also be used on painted metal surfaces and other hard surfaced materials.

MATERIALS: Silicon carbide crystals on a resilient layer over cloth back. The backing is stamped with the following grade number for easy identification.

60MX	120 MX	240 MX	400 MX	*1200 MX
80 MX	150 MX	320 MX	600 MX	
100 MX	180 MX	360 MX	*800 MX	* aluminum oxide crystals

AVAILABILE IN:

Sheets: 3" x 6"
6" x 12"
12" x 12"

Tapes: 1/2" - 2" widths

Discs: Various Sizes

Rolls: 4" x 50'
6" x 50'
6" x 25'
12" x 25'

Handi-Files: 1/2" x 5 3/4"
5/8" x 5 3/4"

Soft Touch Pads: 2" x 2"
3" x 4"

Kits : MX-90 Metal Finishing

Belts: Various Sizes

STORAGE & HANDLING: When stored between 0-120 degrees Fahrenheit a clean and dry environment, life is nearly unlimited. No special handling required.

APPLICATION: MICRO-MESH MX may be used by hand or machine. A firm foam block should be used as back-up during hand applications. The cutting ability of MICRO-MESH MX is increased by increasing the rigidity of the back-up material. MICRO-MESH MX may be used wet or dry. Most water or oil base lubricants are acceptable for used with MX. Lubricants should be tested for compatibility before general use. Always finish clean-up with soap and water to remove solvent.

When using water as a lubricant do not soak MX in water for more than four hours. Apply water by dipping or spraying.

Using MX with a sharp edged back-up may cause it to wear faster on the narrow edge.

Specific application instructions are available upon request from MICRO-SURFACE at 1-800-225-3006.

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METAL FINISHING WITH MICRO-MESH® MX

Sanding is used to establish a part's geometry or finish. Geometry is commonly established with coarse grits of coated abrasives, bonded abrasive wheels or by hand turning. Finishing is generally achieved with successively finer grades of abrasives until the desired surface quality (appearance) is obtained.

MICRO-MESH MX is a series of cushioned abrasives with a slightly stiffer backing, and several coarser grades than the MICRO-MESH Regular series. MICRO-MESH MX enables the user to achieve the desired finish faster and often with less steps than with conventional abrasives. Start to use MX as soon as practical in the finishing sequence.

All MICRO-MESH Regular and MX grades are constructed with a thin layer of soft resilient material between the cloth back and the abrasive crystals. This provides the unique "cushioned" action for the abrasives. This unique design allows the abrasive crystals to recede into the resilient layer and float to an even cutting plane. This eliminates deep random scratches and results in uniform scratch patterns and significantly longer product life than conventional abrasives.

MX grades cut rapidly due to the relatively large crystals and because the flexing action allows more abrasive crystals to contact the workpiece. The flexibility of the crystals keeps the swarf loose and prevents loading. MICRO-MESH outlasts conventional abrasives because the relatively large crystals do not load up. The flexibility prevents the crystals from fracturing and generating heat into the workpiece.

MX is economical to use. In dry applications, it outlasts conventional abrasives 5 - 7 times, When used wet, the life advantages increase 7 - 15 times that of conventional abrasives. MX can be used with most standard cutting oils, honing oils or coolants, either water or oil based. The objective is to flush the surface of the MX and the workpiece to keep it free of swarf. MX can not be used with solvents like acetone or certain chlorinated solvents. Lubricating with grease type or filler type lubricants will cause rapid loading. Such belt compounds are used to soften the cut of common abrasives which is not necessary since MX is engineered to have a controlled aggressiveness. Once the abrasive crystals have receded to their given level, further down pressure will not increase the rate of removal or surface quality but will put stress on the material. Keep the pressure light.

Machine Speeds

On .plastics and woods - speeds of 1000 sfpm (less if possible). Plastics should always be worked with a water mist.

Metals - Speeds below 6000 sfpm are recommended.

The floating action of the abrasive crystals in MX does not require high speed operation to achieve super finishes. If higher speeds are used, feed rates and pressure should be reduced. As a general rule, higher speeds promote a faster cut, while slower speeds produce a better finish.

Contact wheels should be kept as soft as possible for best finish and longest life. A non-serrated 40 durometer rubber wheel or a cloth wheel should be used. MX can also be used on inflatable wheels as replacement for buffing wheels.

If a "mirror" or highly reflective surface with no visible scratches are required, more steps are needed than for a #4 or #7 finish.

Steel, stainless and ferrous metals
The following is general information to help, not meant as an instruction sheet. Variables such as speed, pressure and differences in materials to be finished may change the combination of MX used. When starting with mill finished or ferrous stock, it may be desirable to use a conventional 240 or 280 p grit to remove all mill marks, scale, etc. A combination such as 100MX and 240MX. 400 MX is recommended for finishing steels. 400 MX cuts like a 400-600 grit but should leave a 1200-1500 grit finish. When a finer finish is required, use 600, 800 or 1200 MX. Sand casted material will require more steps with conventional abrasives before using MX.

Copper, brass, bronze, aluminum and other soft metals
The procedure is similar to that of steel. However, the starting point can be 80 MX, 100 MX or finer depending on the softness of the material. Coarse castings will require conventional abrasive steps prior to using MICRO-MESH. When finishing aluminum, it is important to slow the surface speed down and use a coolant made for aluminum.

Hataloys, titanium, nickel, stellite and other special materials and alloys
Each of these materials requires a trial piece run to determine the best sequence for achieving the desired finish. For more information and reference call 1-800-225-3006.

DO'S, DON'TS, CAUTIONS WHEN WORKING WITH MICRO-MESH®

The polishing of surfaces can be very exacting. Success or failure depends on the technician's knowledge of, and his ability to follow, an established sequence.

MICRO-MESH® Can be Used by Hand. Wrap the abrasive around a foam sanding block to give you even, uniform pressure during your sanding strokes.

MICRO-MESH® Can be Used With an Electric or Pneumatic Random Orbital Sander. Keep sanders to no more than 3500 rpms. Do not use with high speed die grinders. Ripples and swirls are typically caused by sanding with an uneven motion, tilting the sander, or working in one spot too long. For best results, sand smoothly with even, sweeping motions.

Keep Belt Machines at 5500 Rpms or Less. Adjust pressure and tension so that the contact point allows the abrasive to work without smearing. Typically durometers of 30-40 in rubber are best for a cushioned abrasive or cotton buffing wheels work well. Do not use lubricants containing solvents, alcohol or ammonia that could delaminate the MICRO-MESH®.

Pressure Should be Light. Remember the cushioned abrasive cuts with the abrasive crystal tips. The sharp cutting edges are floating on a resilient matrix. Extreme pressure pushes the tips back into the matrix rendering them ineffective and resulting in surface smearing, burning, and possible orange peel and distortion. If using with a belt machine, polish on the slack of the belt on using a soft contact wheel. If using a random orbital sander, polishing steps may require a soft back up pad between the MICRO-MESH® disc and the sander head.

KEEP EVERYTHING YOU USE CLEAN. This includes equipment, sandpapers, MICRO-MESH®, and all wiping materials. A minor scratch here or there is not a crisis situation, but picking up a piece of metal or other contaminate from the top of a work area can be a disaster. Watch where you set things down.

Acceptable Cleaning and Maintenance Materials:
100 % cotton flannel
Genuine chamois, not synthetic or imitation
Biodegradable liquid detergent
MICRO-MESH® Anti-Static Cream
MICRO-GLOSS® polish and cleaner

Unacceptable Cleaning and Maintenance Materials:
Paper towels or other paper products
Shop towels or synthetic fiber fabrics
Commercial window cleaners
Any product containing ammonia or solvents or alcohol

Clean the Work Surface between each step, especially in cracks and crevices. Flush surface several times with clean water to remove dust and dirt before touching it with anything. Clean abraded particles from the work piece by rinsing and then dry and inspect.

Inspect the Work Piece between steps with a bright light to ensure you are removing the previous scratch pattern before continuing on.

Keep the Abrasives Clean. Keeping them clean will improve performance and extend life.

To Avoid Scratching the Surface, do not wear watches, rings, or bracelets. Long fingernails should be covered with gloves.

For Superficial and Light Surface Damage, use MICRO-GLOSS® liquid abrasive following the directions on the label of the bottle.

For Deep Damage and Crazing, you will be required to remove the damage firstly with sandpaper and then restore the surface to its original state using MICRO-MESH®. After damage is removed by using sandpaper in a succession of steps from coarse to fine, ie: 120 grit, 220 grit, 400 grit wet/dry, then begin the MICRO-MESH® series with MICRO-MESH® 1500 and proceed through the series to 12000 or until the original surface is matched.

Use a Straight-line Crossing Pattern. Do not use a circular pattern except in the final hand buffing or anti-static operations. When using a random orbital sander, use sweeping motions from left to right for one grit, then change the pattern to an up and down motion on the next.

Using MICRO-MESH® with Water and a few drops of detergent will generally result in a less effort having to be used and a slightly better finish. Only use enough water to provide lubricity to the surface, but not so much that poor contact is made with the work piece.

DO NOT wear out one of the meshes by trying to make it do too much work on your first step. If your estimated damage is not readily removed, go immediately to the next coarser mesh.

Work an area slightly larger with each step to blend. Working one small area on a highly curved section could create flat spots or distortion.

DO NOT skip steps in either the sandpaper or the MICRO-MESH® series.

Work in a brightly lit area but not in the sun.

Removing the initial damage with the sandpaper series will take up 85% of the restoral time. The MICRO-MESH series and the buffing procedures will take as little as 15% of the time.