Achieve Proper SPI Mold Finish Standards

Follow these steps to achieve an SPI A1 or SPI A2 Surface Finish using Falcon Tool Finishing Stones, Diamond Compound, Miniature Brushes, Felt, and Rotary Tools!

SPI Surface Finish Chart

Types of Finishes	Current SPI Finish Numbers		Description and Previous Finish Numbers		Roughness Comparison R.A.
Diamond	#3 Diamond Buff	**A1**	is comparable to	#1	0-1
	#6 Diamond Buff	**A2**	is slightly finer than	#2	1-2
	#15 Diamond Buff	**A3**	has more imperfections than		2-3
Paper	600 Grit	**B1**	is finer than	#3	2-3
	400 Grit	**B2**	is slightly finer than		4-5
	320 Grit	**B3**	is comparable to		9-10
Stone	600 Stone	**C1**	is finer than	#4	10-12
	400 Stone	**C2**	is slightly finer than		25-28
	320 Stone	**C3**	is comparable to		38-42
Dry Blasted	#11 Glass Bead	**D1**	is finer than	#5	10-12
	240 Aluminum Oxide Blast	**D2**	is comparable to		26-32
	#24 Aluminum Oxide Blast	**D3**	is a little more coarse than		190-230

1. The first step with mold polishing is to find an area in the shop that is clean and is away from other machining and polishing operations. Airborne dust and grit can greatly affect the final finish during the metal polishing process. Make every effort to eliminate these conditions.

2. Make sure all stoning marks are brought to a 600 or finer grit finish on the mold surface to achieve an SPI C1 surface finish. The type of metal being polished, the amount of material that needs to be removed, and the condition of your mold among other factors determine the type of Finishing Stone(s) required to achieve this step. If you are unsure of the abrasive stone you should be using, check out our Finishing Stone Application Chart to help choose the proper Finishing Stone for the job.

▲ Indicates most popular stone for the application

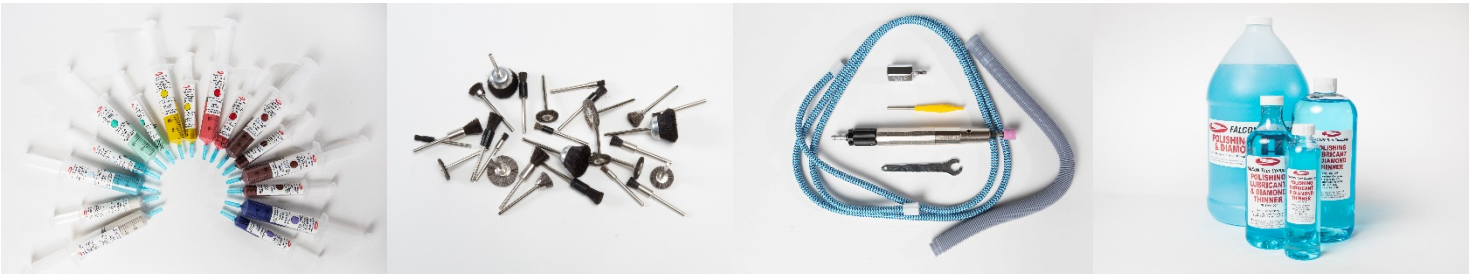
Type of Stone			Color	Grits Available	Surface	Tool Steel	Aluminum	Non-Ferrous	Stainless Steel	EDM	Method	Hard	Profiler	Ultrasonic	Use	Wet	Dry	Breakdown	0 = Slow 5 = Fast	Hardness	0 = Soft 5 = Hard
EDM Finishing Stones	EDM	Special aluminum oxide stone for polishing electrical discharge machine surfaces	Dark Brown	100 - 1200		•				▲		•	•	•		•			2		4
	GS	Offers superior breakdown characteristics and a smooth, silky finish	Gold	150 - 1000		▲				▲		•	•			•			4		3
General Purpose Stones	N	Fast cutting and general polishing	Tan	100 - 1200		▲	•	▲	•			•	•			•	•		4		2
	SE	Semi-hard aluminum oxide for general polishing - load resistant	White	100 - 1000		•	•	•	•			•	•			•	•		4		2
	SO	Regular silicon carbide for general polishing	Grey	46 - 1200		•		•				•				•	•		2		3
	PO	Softer silicon carbide with porous structure for even breakdown and fine velvet finish	Blue-Grey	150 - 1200		•	•	▲				•	•			•	•		4		2
Specialty Stones	HA	Hard structured aluminum oxide for polishing slots, ribs, letters and hard to get at places	Cream	100 - 1200		▲				•		•	•			•			3		4
	NF	Engineered for finishing aluminum and soft metals	Cream	150 - 1200		•	▲	•	•			•	•			•			4		3
	PRO	All-around aluminum oxide stone pre-filled with lubricant so no lengthy pre-lubrication is required	White	120 - 1200		•				•		•	•			•			3		3
Detail Stones	Ceramics	Detail Areas, Ribs & Slots														•	•				
	CNB	Agressive - Fast Cutting/Welds-Blending EDM														•					
	Cristone®	Extremely Strong & Thin - Fine Detail Polishing														•	•				

3. Using Polishing Lubricant & Diamond Thinner with a very soft tissue, make sure the surface of your tool is cleaned extremely well between each step to ensure there is no residue left behind prior to moving onto the next step.

4. Next, remove stoning marks using a Miniature Brush on a rotary tool with either Grade #30 Mahogany or Grade #15 Brown Diamond Compound. Use Polishing Lubricant & Diamond Thinner to thin the slurry and extend the life of the diamond compound. Using a slow speed (5,000 – 15,000 RPM) in a rotary pattern, apply light pressure to the mold surface. Note: If heavy pressure is used it can cause a surface condition called “Orange Peel”. Exercise caution as applying too much pressure can over-stress the mold surface, generating excessive heat.

   Suggested Products:

   Diamond Compound | Miniature Brushes | Air Grinders | Polishing Lubricant & Diamond Thinner

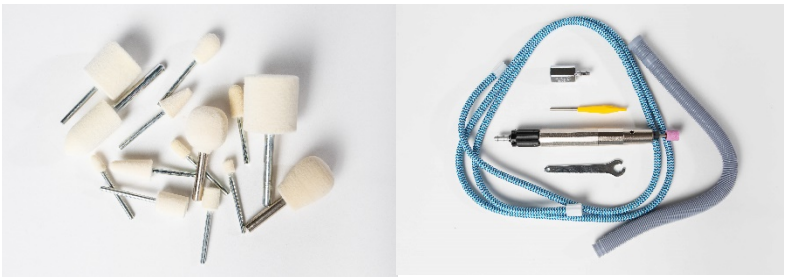


5. Once all the stoning marks are removed, clean the mold surface completely. It cannot be stressed enough that cleaning is a very critical part of this polishing process. Extra care must be used to make sure all previous grade diamond compound is removed from the mold surface. It is recommended to use Polishing Lubricant & Diamond Thinner with a very soft tissue to clean the surface in an effort to eliminate any unwanted scratches during the cleaning process.

6. Next, it is time to remove the brush marks from the mold surface. Use a medium-to-hard Mandrel Mounted Felt Bob with Grade #15 Brown or Grade #9 Red Diamond Compound to remove all brush marks from the previous polishing steps.

   Suggested Products:

   Mandrel Mounted Felt Bobs | Air Grinders



7. Clean the mold surface again to remove any previous grade diamond compound used.

8. Proceed to the next level of polishing using a Grade #9 Red Diamond Compound or Grade #6 Yellow Diamond Compound with a Felt Bob, stepping down to a medium or soft felt.

9. Clean the mold surface once more, be sure to remove all the previous diamond compound from the steps before.

10. Using a soft Felt Bob with a Grade #3 Green Diamond Compound, you are able to achieve an SPI A2 finish on the mold surface.

11. If an SPI A1 surface finish is desired, clean the mold surface once again and proceed with a Grade #1 Blue Diamond Compound or a Grade #1/2 Grey Diamond Compound with a soft Felt Bob.