

HIMACS Finishing (Sanding and Polishing)

HM2100

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Introduction

This section guides finishing (sanding and polishing) of HIMACS products.

Overview

Finishing (sanding and polishing) is a very important parts of the fabrication process. Finish considerations can make or break the aesthetic value of your surface. And, the finished surface will be the first place that customers find error. However, the finishing process can also be the most time consuming and frustrating experience to the fabricator in the process of fabrication. Therefore, in this section LX Hausys would like to guide simplified process as you finish your products from a standard matte to semi-gloss to high-gloss finish.

Note !

1. This guideline has been created to provide technical information for successful fabrication and installation of HIMACS, and it is intended to be used in a safe environment considering their own discretion and risk by who has technical skill for fabrication and installation of HIMACS.
2. This guideline is continually revised to provide reliable and up-to-date information, replacing all previous versions of the guideline and technical information, however the usage and conditions of use are beyond LX Hausys control, LX Hausys cannot guarantee the suitability of material, fabrication and installation for all usage and conditions of use. Users should not regard or rely on this guideline as a complete, sole, up-to-date or absolute information. HIMACS users, fabricator and installer should review whether the design for HIMACS, fabrication method, installation method and required performance are suitable for the intended use and conditions of use. LX Hausys shall not be liable for any direct or indirect, commercial damages or losses caused by the fabrication and installation results of HIMACS using any or all of these guideline. In addition, the results of joining with other materials, and the fabrication and installation guidelines for other materials shall not be covered by LX Hausys.
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Visit our web site at www.lxhausys.com for the latest version of HIMACS fabrication guidelines.

Contact LX Hausys HIMACS territory manager or distributor of your market for specific questions and information.

1. Material and Color Characteristics

- HIMACS sheets are factory sanded prior to cover with protection film. The result of this superior quality factory finish offer fabricators less final sanding time in the shop or on the jobsite. However, factory finish should not be used as final finish. Every surface of final product made of HIMACS sheets should be finished through proper sanding and/or polishing by fabricator or installer.
- Be aware, that **the recommended gloss finish for HIMACS sheets standard fabrication is a “Semi-Gloss-Finish”**. High-Gloss-Finish can be done as well, but recommended using for art applications or applications that do not get any touch.
- Do not oversell the performance of a specific finish, especially in a darker color selection and in a satin or gloss finish selection. For example, **darker and black color are not recommended for matt finish**, those colors with matt finish are prone to showing oil (finger mark) from hand contact. And **high-gloss finish for all color are not recommended at high-traffic/high-use areas as top**, as the finish will show wear and scratches very quickly and require constant maintenance.
- Be aware, that some colors of HIMACS sheets, especially darker and black colors with higher color pigmentation need to have more sanding and finishing care. This should be taken into consideration when discussing and planning projects.

2. Tools and Machines

- The best finishes have been made using a random orbital sander by air or electrical power.
- Most of the time working with a pad of ø 150mm will be done, because sandpaper disks of this size are more available in the market.
- For large areas use a sanding pad as big as possible up to ø 500 or ø 600mm (if available) when working with hand machines.
- Large sections of HIMACS sheets can be sanded with a wide belt sanding machine having at least 3 belts in one row. Such work process allows to achieve a better calculation price of fabrication and labor costs.
- **Avoid use of a hand belt sander** as it generates a great deal of heat and can fail a seam. Furthermore, the belt sanding equipment is very aggressive and can remove material quickly. That being said you can create more problems for your products fabrication if more material is removed than is supposed to be.
- For special applications or specific fabrication processes, wet sanding may be a better option to reduce and keep dust more efficient under control. Ensure all necessary items are water proof and water resistant as well as environmental friendly to use water with a recycle system.
- Dust control is always recommended by any sanding process. And, plan for dust control at the installation site. Lots of sanders are equipped dust collector that can be used on-site with convenience.

Finishing might be confusing to the fabricator because of the multitude of sanding equipment, systems and sand paper companies available to the fabricator. As you decide the best equipment and sanding papers to incorporate into your fabrication process, remember to purchase good quality sanding equipment and sandpapers. Refer to 'HM2060 HIMACS Tools and Accessories' for more details.

3. Techniques for High Quality Finish

The finish quality might be different worker by worker. A well skilled sanding and polishing techniques are required to make high quality

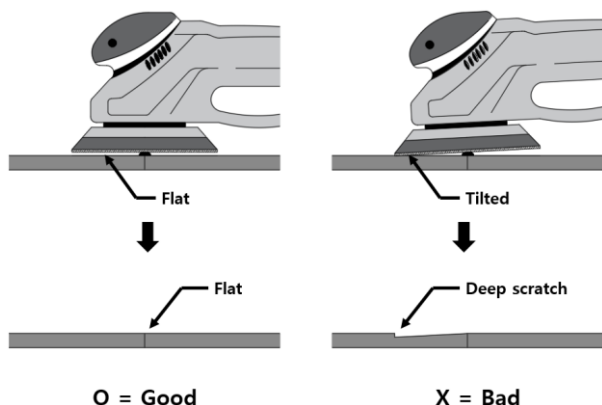
finish and to minimize or to avoid sanding marks or cloudy shadow marks on the surface. Refer to following minimum techniques for standard finish.

- Before start finishing check the surface condition of HIMACS sheets if there are scratch or dirt or dust. If there is deep and large/deep scratch that can't be removed by sanding, it should be repaired or re-fabricated to avoid the time waste and low quality. And the dirt and dust should be cleaned up.
- Level of the seam also should be checked. And, it should be well leveled by leveling method before sanding, if there is uneven seam.
- Use same type of sandpaper for the entire finishing steps. Do not mix the type of sandpaper. For example, do not use grit type sandpaper and micron type sandpaper together for one finish as the sandpaper grade at each step are not always same.
- Hard pads are recommended for flat and straight surface, and soft pads are recommended for curved surface.
- Place the sandpaper (disc) at the center of the sanding pad of the sanding and polishing machines. And match the holes of sandpaper and sanding pad for dust collecting, if the machine has dust collecting system.
- An important step in the process of sanding is to thoroughly clean the top between each step or grit changes. You can do so with a spray bottle of water or preferably denatured alcohol and a clean white rag. Cleaning off sanding dust between steps allow for a more consistent and high quality finish.
- Apply even pressure and overlapping coverage in both directions of the top. For example, left to right and front to back. Complete one direction before starting the other. Do not apply too much pressure during sanding but use equal pressure and speed.
- Never concentrate on one specific area, particularly near seam and edge, because this can lead to undulation by dipping.
- Change or clean your sandpaper as you sand as it will get loaded and become less efficient. As you get to a more detailed finish the sandpapers will load more quickly. If care is not taken to keep the sandpaper loading to a minimum, it will impair your ability to achieve a high quality, consistent finish. In a gloss situation, you may never achieve it.
- To make the higher gloss finish, the lower speed sanding and polishing are needed.
- For checking easy the sanding quality at each step during finishing process, place low-angle lighting behind the worktable.
- If there are large light like big window in the installation site, the imperfect points like swirl marks and sanding motion patterns will be highlighted, and will be easily noticed by customer or user. And, it will lead to customer complaint. In this case, use random motions like circle and figure-eight to smoothen the swirl marks and sanding motion patterns.

3-1. Leveling uneven seams

- Uneven seams can be leveled with rigid 60 ~ 80 grit grinding paper and gear driven orbital sander.
- Put the grinding paper on the sanding pad of orbital sander and set the normal pattern.
- Carefully keep the sanding pad flat on the surface during grinding to avoid deep scratch on HIMACS sheets.
- Never try to make seam to even level at once. And, do not concentrate only seam parts. Grinding is an aggressive work that can make excessive grinding lead to the undulation by dipping. Grind a little bit wide area near the seam for seconds and then check. Repeat this process until you get the even seam.

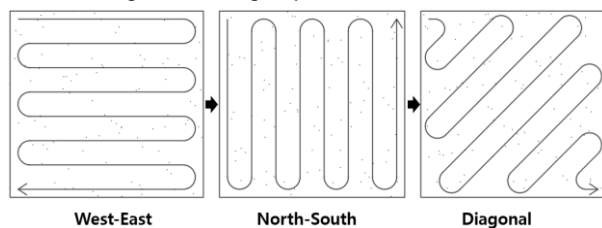
Fig. 3-1. Leveling with grinding



3-2. Motion technique

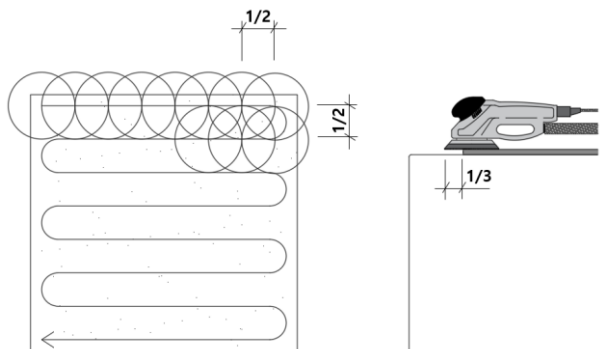
- Put the right sand paper following the sanding step on the sanding machines.
- Start sanding away from your body following the direction West-East, and finish close to your body.
- Change the direction into North-South after finish the West-East direction sanding. Start from West.
- Change the direction into diagonal direction after finish the North-South direction sanding. Start from West-North corner.
- The sanding sequence above should be done 2 to 3 times for each sandpaper grade (sanding step).

Fig. 3-2. Sanding sequence and direction



- Keep the sander moving slowly and flatways with small circle motion all time.
- The small circle motion should be overlapped in half of circle. For example if you use 150mm sanding paper/disk, overlap 75mm.
- Do not over in 1/3 of sanding pad size from the edges. For example if you use 150mm sanding paper/disk, do not over 50mm.

Fig. 3-3. Motion overlap and edge sanding



4. Process for Each Grade Finish

4-1. Matt finish

“Matt Finish” is strongly recommended finish for lighter color of HIMACS sheets. Because, matt finish provides easy maintenance. On the other hand, matt finish is not recommended for darker color and/or black color of HIMACS sheets. Matt finish in darker color and/or black color may be prone to showing oil (finger mark) from hand contact during using, and it may make cloudy mark easily during sanding.

Process

- Remember to follow the motion technique for all steps, and each sanding step has been completed, clean the top.
- First, sand the top with 120~150 grit (or 100 micron) sandpaper. Clean the top.
- Switch sandpaper to a 180~240 grit (or 60 Micron) and sand the top. Clean the top.
- Switch papers to 3M Scotch Brite™ 7447 pad (maroon) and surface the top. Clean the top one again and finish.

If you are working with a darker or black colors, you have to add additional steps in sanding. It will require a 320~400 grit (or 30 micron) sandpaper, and will require 3M Scotch Brite™ Ultra Fine 7448 pad (gray). Actually, it is the same process for semi-gloss. In other words, the finish for darker or black colors are recommended minimum semi-gloss finish.

4-2. Semi-gloss/Satin finish

“Semi-Gloss-Finish” is the recommended gloss finish for HIMACS sheets standard fabrication. Because, it has easy maintenance during service life of top. However, there is no single global standard appearance of semi-gloss finish. Sometimes, satin finish is used as an alternative finish of semi-gloss finish. Therefore, the two methods are guided in this section.

Process

- Complete steps 1~3 from matt finish process above.
- Switch sandpaper to a 320~400 grit (or 30 Micron) and sand the top. Clean the top.
- Switch sandpaper to a 600 grit (or 15 Micron) and sand the top. Clean the top.
- Switch papers to 3M Scotch Brite™ Ultra Fine 7448 pad (gray) and surface the top. Clean the top one again and finish.

If you skip step 7th, you will get satin finish.

4-3. Gloss/High-Gloss finish

“Gloss/High gloss-Finish” may be an appropriate finish that can show better aesthetic of HIMACS products, if it is used as a finish type of proper applications. Scratches and damages by user during service life are more visible with gloss/high gloss-finish. Therefore, it needs more careful and frequent/constant maintenance to keep the aesthetic appearance, and these finish type is not recommend for high-traffic/high use area. If your customers want gloss/high gloss-fish, clearly advise the strong points and weak points of these type finish above. Never oversell the finish type.

Process

- Complete steps 1~7 from matt and semi-gloss finish process above.

10. Switch sandpaper to a 1000~3000 grit (or 5~9 Micron) and sand the top. Clean the top.

Switch the sandpaper often. Finer sandpapers for gloss/high-gloss finish tend to clog faster. You will get higher gloss finish if you finish with finer sandpaper in this step. For example, you can finish with 1000 grit sand paper, or you can finish with 2000/3000 grit sandpaper for higher gloss finish.

11. Change tools from orbital sander to polisher. Use approx. 250 / 300mm variable speed polisher. Several machine manufactures offer a few models that can maintain 2500 RPM's and 8-10 amps of power.
12. Install a 3M Buff Adapter to the polishing equipment. This is important so as not to allow the arbor to damage the surface in the polishing process.
13. You must now install a 3M Super Duty 2+2 White Pad to the polisher assembly.
14. Apply 3M Marine Paste Compound 06039 White to the top. This paste is abrasive and will remove swirls to 30 Micron. You may need to repeat this step. Keep the buffer moving in a controlled fashion across the countertop and then from front to back across the countertop.
15. Clean all compound residue from the polished surface. You can do so by reversing the white pad. Then clean the top with denatured alcohol and a clean soft white rag.
16. Take off the 3M Super Duty 2 + 2 White Pad and replace it with a 3M Super Buff (Wool) Polishing Yellow Pad.

17. Apply 3M "Finesse-It" Polishing Material 81235 White to the countertop. Remove any remaining swirls to produce a high gloss surface.

18. Clean all polishing residue from the polished surface. You can reverse the Yellow Pad to remove any residue left behind from this step.

19. Check again that the polishing residue has been cleaned well.

Useful Tip !

- Several polishing pads and compounds can be used in the market. The pads and compounds above are explained as just a kind of example. You can find more efficient and higher quality pads and compounds applied latest chemical technique in the market. But, remember the minimum grade of pads and compounds are marine or automobile grade.
- Consult your polishing product and/or polishing equipment supplier for their recommendations.

Note !

- Most of the polishing compounds are not intended for food. Therefore, make sure the finished surface are free from any residue of compound.
- Remember the polisher will build a lot of heat as you buff the surface with the polishing compounds. Maintain moderate consistent pressure to prevent overheating of the top and burnishing of the gloss finish.

Table. 4-1. Sanding and polishing process

Finish		Matt		Satin & Semi-Gloss		Gloss & High-Gloss	
Work	Step	Micron	Grid	Micron	Grid	Micron	Grid
Sanding ¹⁾	1	100μ	120~150	100μ	120~150	100μ	120~150
	2	60μ	180~240	60μ	180~240	60μ	180~240
	3	3M Scotch Brite 7447®(Maroon)		30μ	320~400(Satin)	30μ	320~400
	4			15μ	600(Semi-Gloss)	15μ	600
	5			3M Scotch Brite 7448®(Gray)		9μ~5μ	1000~3000
Polishing ¹⁾²⁾	6					3M Super Duty 2+2 White Pad White and, 3M Marine Paste Compound 06039 White or, 3M Trizact 3000	
	7					3M Super Buff(Wool) Polishing Yellow Pad and, 3M Finishing Material 81235 White or, 3M Trizact 5000	
Remarks ³⁾		Not recommended for darker/black colors				Not recommended for darker/black colors	

- 1) All brands and products for sanding and polishing here are examples that can be purchased in many place worldwide. Therefore, it can be alternated by local or other global brands and products with similar performance in your market for your convenient.
- 2) All residues of compound after polishing should be cleaned completely as it is not purposed for foods contact.
- 3) Remember, darker and black colors are not recommended for Matt and Gloss & High-gloss finish.

Referenced documents

'HM2060 HIMACS Tools and Accessories'

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