

HIMACS Cutting and Cutout

HM2080

Version : 21V3

Updated : December. 2021

Introduction

This section guides cutting and cutout method of HIMACS sheets.

Overview

Cutting and cutout for HIMACS sheets affect to the visible quality and the durability of finished products. Poor cutting surface makes visible seam line after join. And, it occurs crack issue from the seam. Improper cutout also makes crack issues especially at the corner of the cutouts. Keeping guaranteed performance of finished products made of HIMACS sheets for long service life starts with exact cutting and cutouts.

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.
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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. Preparation

Preparation and checking before cutting are the last chance to correct your job plan. More careful preparation and checking will make more efficient, economic and high quality job.

1-1. Material

Cutting List

Total cutting list including detailed information that are based on site inspection, measurement, templates, seam position rule, drawings and etc. is important for your efficient fabrication and installation. In addition, keeping the cutting list will help to rectify/repair defects points and/or respond to complaint from customer later. Follows are the essential information of cutting list.

- Project title and usage
- Customer information like address and name
- Sheet number of HIMACS sheets
- Cutting size, shape (drawing) and quantity of fabricated individual pieces of HIMACS sheets
 - : Thermal expansion and contraction should be considered for cutting size.
- Number of the fabricated individual piece
 - : Mark a number on the back side of each fabricated individual sheet and record it at the cutting list.
- And, additional special note

For more information that should be considered, refer to 'HM2070 HIMACS Site Inspection and Job Plan'.

Useful Tip!

- Making and using form sheet for cutting list will help communicate with fabricator, installer and customer.

Conditioning

Before starting fabrication and installation, HIMACS products should be conditioned at room temperature (20°C ± 5°C) for minimum 24 hours. Conditioning is essential to get the original performance of materials, to get correct size after fabrication. For example, if you have stored HIMACS sheets and adhesives at cold place like field, uncontrolled warehouse/workshop or truck for transfer in the winter season, adhesive will take long time to be harden for joining, and HIMACS sheets will be expanded in the warm workshop or installation place. Therefore, to avoid unnecessary additional fabrication and installation works, conditioning is important process. However, if you stored HIMACS products in the controlled warehouse under room temperature, conditioning is not necessary.

For more details of storage refer to 'HM2040 HIMACS Safe Handling, Storage and Transportation'.

Inspection

Inspect material defects before you start fabrication. For more details refer to 'HM2050 HIMACS Quality Inspection'.

1-2. Environment

Refer to 'HM2060 HIMACS Tools and Accessories'. Especially, careful handle for partially fabricated HIMACS products. Because,

partially fabricated HIMACS sheets are more susceptible against breakage and crack when are not fully supported.

2. Cutting

Think Twice – Before You Cut Once

2-1. Factory end and edge cutting

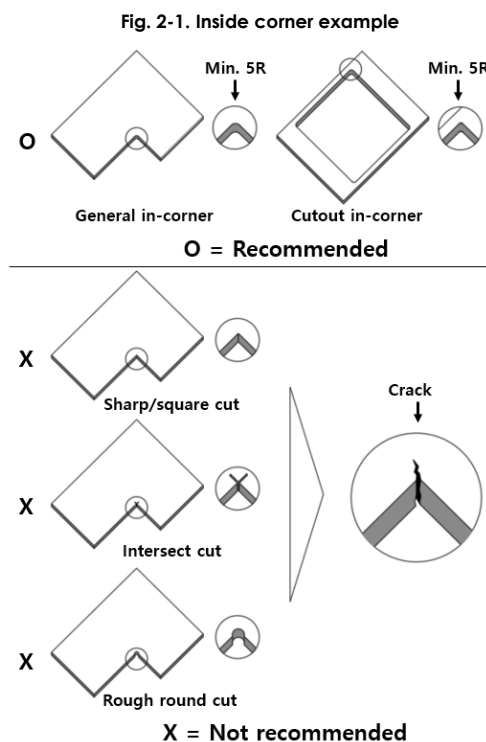
Factory end and edge of HIMACS sheets are not suitable for fabrication without additional finishing. Factory end and edge might be polluted/cracked during storage and transportation. And, the saw blade for HIMACS sheets in the LX Hausys factory does not guarantee the perfect edge condition for seaming, because it deals huge amount quantity of sheet. However, HIMACS sheets serve additional service area. Therefore, cut away and don't use the factory end and edge of HIMACS sheets if you want seaming.

For more information for service area (additional size) refer to 'HM2050 HIMACS Quality Inspection'.

2-2. Inside corner cutting

All inside corner for HIMACS sheets should have minimum of 5mm radius. And, the minimum radius for cutout is 5mm too.

Sharp/square inside corner are very susceptible against breakage and crack. The round shape cutting is the best solution for the breakage and crack. And, the larger radius is the better. Therefore, never make sharp/square inside corner with HIMACS sheets.



2-3. Key recommendation for cutting

There are lots of method, machines and tools to cut HIMACS sheets. However, for safe and correct cutting, follow the minimum recommendation below.

- HIMACS sheets should be fully supported and tightly fixed on the work table during cutting.
- Use machines and tools dedicated only for solid surface.
- Portable circular saw is for rough cutting to size only. If you used portable circular saw to cut HIMACS sheets, the cut edge should be finished through proper method for better seaming. Routing or sanding is recommended way for edge finish.
- When you using hand cutting tools like router and circular saw, you have to use cutting guide tools together like straight edge or template.

3. Cutout

3-1. General cutouts

Cutouts for lots of usage always will be subject to higher stress and as such will require to be handled very accurately in accordance with the latest instructions given in these fabrication guidelines of additional technical bulletins.

- Machine the cutout using a CNC router or hand router and a template.
- Always machine a radius around these corners and make the radius as large as practical, ($R \geq 5$ mm). See 'Fig. 2-1. Inside corner example'. Never leave a sharp corner.

There are several ways to make cutout. And, fabricators can consider the best way that matching their workshop condition and the project characteristics.

The method to make most exact cutout is using CNC machine. CNC machine can handle huge amount cutouts having same shape rapidly, and it fabricate from cutting to finishing the edged of cutout with the designed shape at once. However, CNC machine occupy big space and needs your investment for machine itself and the skilled operator of machine. And, if you don't get electronic drawing (AUTO CAD), CNC machine also can't make exact cutout.

The cutout using accurate template and hand held router is good way generally using. The template can be reused multiple time for the same cutout. However it's not proper for the cutout that be made only one time.

Sometimes, you can use just straight edges instead of template. If the cutout shape are straight and it will be made only one time, straight edges are most efficient way for time and cost. However, it does not mean crude handling for cutout. Straight edges for cutout should be carefully considered.

Single type sink bowl or vanity bowl can be used as template too. But, it needs more careful work.

3-2. Making template

The template made once accurately provides successful fabrication of a cutout in HIMACS sheet. And, template can be made by several ways and materials.

See following method to make template, and see 'HM2070 HIMACS Site Inspection and Job Plan' for proper material of template.

Prepare proper tools. 10mm router bit and 25mm template guide are required for all methods to make template.

Using HIMACS Under Mount Bowls

- Choose template material and cut to proper size.
- Prepare bowl, and wrap upper edge of the bowl with masking tape. The tape should be wrapped flat, and do not allow any wrinkles.
- Put hot-melt glue on the flange of the bowl, turn the bowl upside down, and fasten it to template material.
- Once the bowl fastened securely, turn the template material and bowl upside down once more.
- Carefully drill a hole away from the flange. Do not drill flange.
- Flush cut laminate trimmer bit should be set in the router, and the roller bearing of bit should be about 1mm below the bottom of the template material when adjusting the bit depth.
- Carefully route around the inside edge of the bowl with router set.
- Detach the bowl from template, and carefully remove the whole hot-melt glue form template and bowl flange.
- Sand and ease the inside edge of opening.
- Mark template the identification number or name of bowl.

Using supplier's paper template

- Prepare paper template, and find the line that presenting the shape and size of bowl. That is the inside edge line of bowl
- Draw offset line to the inside, 10mm away from the inside edge line. 10mm is the bit diameter.
- Cut the offset line carefully using scissor, and save the inside paper piece.
- Glue the inside paper piece on the MDF or plywood
- Cut the MDF or plywood tracing the outside of the paper piece. Use saber saw. But, never cut into inside of paper piece. Still the inside MDF or plywood piece will be used at next step.
- Sand the inside piece to the paper line, ease the edge of piece when the piece shape is matched at the paper line perfectly.
- Choose template material and cut to proper size.
- Glue or screw the piece on the template material.
- Carefully route around the piece using router set with 10mm bit and 25mm template guide.
- Sand and ease the inside edge of opening.
- Mark template the identification number or name of bowl.

3-3. Making cutouts for cooktops

Cutouts for heat generating appliances require more accurate fabrication, heat insulation and reinforcement against to stress. The stress from heat generating appliances makes crack and burn at HIMACS sheets. Therefore, LX Hausys recommend to follow the minimum fabrication method below to make hob cutouts for residential cooktops.

However, it is not possible to guide the cutouts for all heat generating appliances that do not have limited use and heat. Especially, the commercial heat generating appliances used with higher temperature and longer time require more optimized and strengthen fabrication method through discussing with appliances suppliers.

HIMACS sheets can take the heat, but must have an outlet for enough ventilation or dispersion in order to keep the temperature under critical performance limits for cutouts for all kind of cooktops.

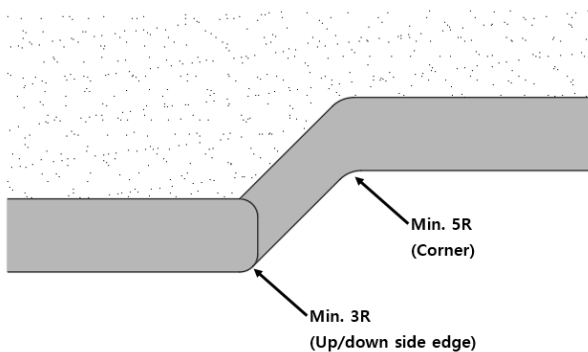
Cutout size and position

- Always leave a minimum of at least 3 mm space between the underneath of the appliance and the edge of the HIMACS sheet if possible (depending on the type of hob you may have to include a filling piece)
- Do not position a joint or any glue line across any kind of heating device. Always work in none glued top for any hob fabrication.
- Keep a minimum distance for a seam of min. 300mm from cut-out for hobs.
- A distance from hob cutout to splashback or upstand should be minimum of 50mm.
- The distance of cutout for hob to the wall should not below 60mm.

Cutout process

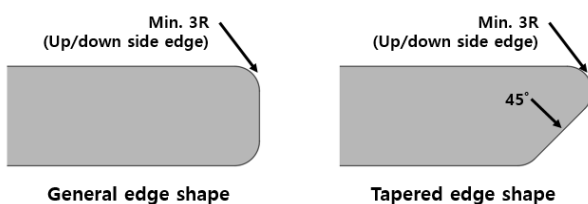
- Place and fix with clamps the template at the correct position, if you use hand router. Allow ample space at the back for the backsplash, and at the front for the finished-edge treatment.
- Machine the cutout using a CNC router or hand router and a template. Do not use jigsaws or any mason's hand saws.
- Always machine a radius around these corners and make the radius as large as practical, ($R \geq 5$ mm). See 'Fig. 2-1. Cutout Section Example'. Never leave a sharp corner.
- Cutout edges must be eased to a minimum radius of 3mm.
- For CNC user, run a second lap to trim the both edges with a radius of 3mm. See 'Fig. 3-1. Edge Trimming'.

Fig. 3-1. Edge trimming



- Finish-sand the edge of the opening using 180 grit. Clean the sanded edges using denatured alcohol or acetone and a lint-free white cloth.
- Some markets use the tapered edge in 45° for hob cutouts. The taped edge in 45° are can be considered if your market has been using this edge without issues.

Fig. 3-3. Corner reinforcement



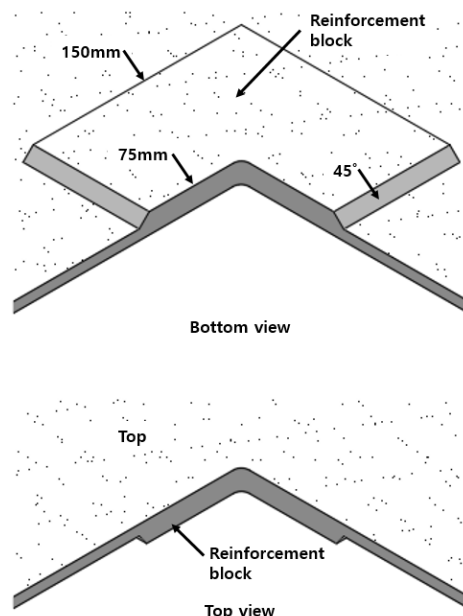
3-4. Protecting from heat

Excessive heat can make crack and/or burn on your top made of solid surface material. This defects issue can be solved through enough reinforcing, insulating and ventilating.

Corner reinforcing

- Prepare the required corner reinforcing blocks from HIMACS sheet. The blocks are to be 150 mm on all four sides.
- Bevel the four edges of the reinforcing blocks to 45-degrees and round each corner of the blocks to a minimum radius of one-eighth 3 mm.
- Clean the block using denatured alcohol or acetone and a lint-free white cloth.
- Scuff-sand and clean the area on the underside of the HIMACS where the four reinforcing blocks are to be adhered.
- Adhere the 150 mm by 150 mm reinforcing blocks to the underside of each corner of the cutout with joint adhesive.
- Position the blocks so that a 75 mm by 75 mm area of each block extends into the cutout area.
- The reinforcing blocks must be fully covered with a thick film of joint adhesive and securely clamped in position. Carefully remove the excess adhesive that is squeezed out. Allow the adhesive to harden.
- Trim the excess reinforcing block material from the cutout opening using a router.
- Ease the top and bottom edges of the cutout opening and the exposed edges of the reinforcing blocks to a minimum radius of 3mm.
- Finish-sand the edge of the opening and all edges of the reinforcing blocks using 180 grit. Clean the sanded edges using denatured alcohol or acetone and a lint-free white cloth.

Fig. 3-3. Corner reinforcement



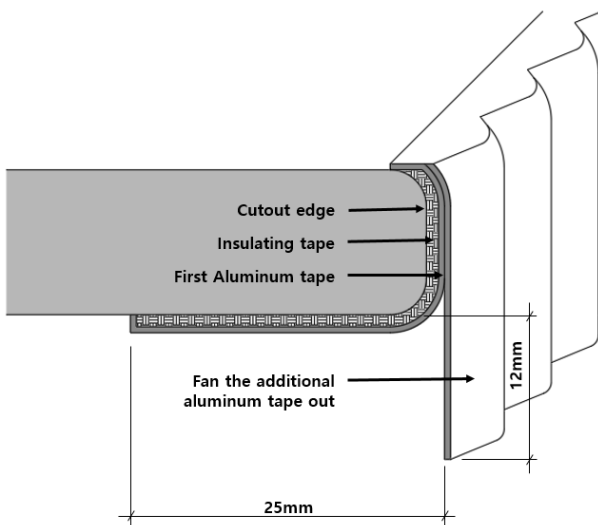
Edge insulating

The internal edge of hob cut-outs should be covered with heat resisting materials. Self adhesive tape with heat resistance material like ceramic tape , Neoprene tape, Koawool tape, Nomex® ,

SuperWool Paper® cover, and self adhesive aluminum reflective tape (3M, tape no.: 425) are good example. Or, other heat resisting materials that have enough performance for each residential or commercial heat generating equipment can be considered.

- Carefully apply self adhesive insulating tape around the opening edge and the underneath of top to 25mm.
- Use multiple layers of insulating tape when possible.
- Cover the insulating tape with an aluminum tape.
- Apply more layer of aluminum tape on the first aluminum tape. Extend the aluminum tapes at least 12mm below the cutout edge and separate the tape layers to serve as a “heat sink”. Remember to fan the aluminum tapes out like fins. This will increase the surface area for the heat to travel, and this increased surface area will also assist in faster dissipation of trapped heat.

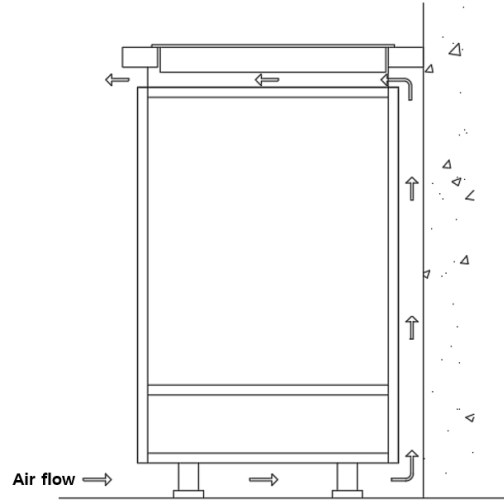
Fig. 3-4. Insulation example



Ventilating

Provide ventilation to the cabinet containing the cooktop by using a vent and fan system to help carry the heat way from the countertop

Fig. 3-5. Ventilation



Referenced documents

'HM2040 HIMACS Safe Handling, Storage and Transportation'

'HM2050 HIMACS Quality Inspection'

'HM2060 HIMACS Tools and Accessories'

'HM2070 HIMACS Site Inspection and Job Plan'

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