L&L KILN BRICK REPAIR

(BRICK REPAIR KIT: P/N M-G-BKIT/00)

OVERVIEW

Firebrick is a very fragile material and subject to breakage, spalling, and thermal shock. The good news is that it is very easy to repair and maintain with the proper materials and techniques. Enclosed in this brick repair kit are all the materials you will need to do a first class job.

Included with Brick Repair Kit

- ½ Pint of Brick Cement
- ½ Pint of Brick Dust
- ½ Pint of Pot-Sil (Potasium Silicate)
- ½ Pint of Brick Facing
- 1 New Firebrick
- 1 Brush
- 1 Sponge
- 1 Plastic Spatula
- 1 Tongue Depressor
- Rubber Gloves
- Instructions

CAUTIONS

Use protective glasses and gloves when working with the Cement, Pot-Sil, Mixed Brick Patch, or Facing.

This brick repair kit is Intended for L&L kilns. If you use it on anything else you do so at your own risk. It will not work on other types of refractories such as those used in wood stoves, etc.

BRICK PATCH (Made from Brick Dust and Pot-Sil)

Brick patch is a versatile material that can be used to repair a variety of chips, holes, and gouges in kiln brick.

Brick Patch will work best on small to medium sized defects on a flat face of firebrick.

Brick Dust is the primary ingredient of brick Brick Patch. It is what ensures the repair will have the same look and thermal properties as the original firebrick.

For more severe damage, consider cutting out and cementing new pieces of kiln brick.

Repairing small holes and chips

- Remove dust and debris with a brush or vacuum.
- Press the Patch into the voids with a plastic spatula.
- Use a twisting motion of the wrist and push it in from several directions to ensure the patch sticks to all sides of the hole.
- Coat the repair with Brick Facing to strengthen it. (Optional)
- Allow to dry for 24 hours before firing. (We recommend a fast glaze fire to cone 05)

Brick Patch Formula

Brick Patch is mixed from water and the included Pot-Sil and Brick Dust.

- The mixing ratio is 1 part water, 3 parts Pot-Sil, and about 6 parts Brick Dust.
- Start by mixing the water and Pot-Sil, then slowly add the Brick Dust and mix thoroughly.
- Mix with a tongue depressor or plastic spatula.
- It should be on the edge between a liquid and a solid and have the consistency of wet clay or silly putty.
- If need be, add a little water to moisten it or a little brick dust to dry it until the correct consistency is achieved.

BRICK CEMENT

Brick cement can be used to repair severe damage to your kiln brick, such as large holes, chipped edges, and cracks.

Repairs with brick cement are more involved. For less severe damage, consider using Brick Patch.

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Repairing very large holes and chips

If damage is too severe to use brick patch, you can use brick cement to adhere a new piece of firebrick into place.

- Use a saw, router, or chisel to remove the damaged area, leaving behind an even and square void.
- Cut a piece of the new firebrick to fit in the void. The piece should be slightly smaller (about 1/16" to 1/8".) than the void, but should be taller that the surrounding brick, so it can be sanded flush.
- Thoroughly clean all surfaces of dust and debris.
- Wet down the area before applying cement.
- Apply an even coat of cement onto all surfaces using a plastic spatula.
- Press the new brick piece into place and wipe away excess cement.
- Allow to dry for 24 hours before sanding flush.
- Coat with Brick Facing and allow to completely dry before firing.

Repairing hairline cracks

It is normal for your kiln to develop hairline cracks. Most are not a cause for concern and don't require repair. However, if these cracks start to get more severe they can be repaired with this method.

- Use a drill with a 1/8" drill bit to rout a channel along the crack. (The bit should protrude 1" into the brick.)
- Remove all dust from the channel with a vacuum.
- Wet down the channel. (A spray bottle works best.)
- Thin out the cement with water to ensure it seeps in.
- Use a plastic spatula to fill the channel with cement. Push it deep into the channel and blend it smooth.
- Allow to dry for 24 hours before sanding smooth.

BRICK FACING

Brick Facing can be used to strengthen the surface of the brick and protect from future damage.

Application

- Mix the facing thoroughly.
- Use a sponge to lightly smooth the facing onto the brick surface.
- Only small amounts should be needed.

BRICK PROBLEMS

Excessive Brick Wear

Excessive brick wear can be the result of various conditions. Most common is improper curing of the brick when first fired. ***Follow the instructions in the installation section for the first firing and curing cycle!***

All insulating firebrick expands and contracts when heated and cooled. Over time, this movement can cause cracking and spalling, where the brick progressively breaks down and pieces begin to flake off or fall away. This is a normal and expected condition. Factors such as how often the kiln is fired at or near maximum temperature, how often and how fast the kiln is cycled up to heat and then cooled, and how heavy the loads are, all figure into the brick wear equation. There is no set rule as to how long a brick lining will last. There are some L&L kilns, which are 25 to 30 years old with the original lining still in place. Note that the type of brick we use is the same that we have always used and is the same brick generally used in the hobby kiln industry.

- Frequent door openings when the kiln is at high temperatures can cause thermal shock, leading to excessive cracking and spalling. Do not open kiln when hot (>200°F). Thermal shock can destroy the brick and your ceramic pieces.
- For light to moderate spalling, coat the brick with the Brick Facing

Removing glaze spots

- Be sure to remove any spots of glaze that get onto the firebrick sides or on the element holders. When the kiln is fired the glaze will remelt and potentially damage the elements.
- Once removed, use Brick Patch to repair the hole left behind.

Loose bricks

Firebrick will shrink slightly over time. This is more pronounced when using the kiln at higher temperatures like cone 10. If you only use the kiln for low fire bisque you may never notice this condition. If the bricks shrink too much they can become loose.

- Occasionally tighten the case by turning the screws of the case clamps. Do this 1/4 of a turn at a time on each of the clamps. Keep a balanced tightening (i.e. don't tighten one clamp too much at one time). Slow is good.

- You can do this on the bands around the top and bottom also. This will help maintain the integrity of those slabs even if there is a crack.

General lid and bottom maintenance

- Mechanical shock can crack the fragile lid if you close it too quickly.
- Lids and bottoms developing hairline cracks is normal and not a cause for concern. These shouldn't require repair.
- If repairing cracks becomes necessary, see the section on Repairing Hairline Cracks.
- Be careful not to overload the bottom.
- As long as the bottom is fully supported by the stand the cracks in the bottom will not adversely affect the operation of the kiln.
- If the bottom deteriorates over time, try putting a full ceramic shelf directly on top of it.
- In many L&L Kilns the bottom can be reversed once the initial inside surface deteriorates.
- It is okay to double up. You can buy a new bottom and place it under your cracked or spalling one.
- Cover the bottom with kiln wash to prevent dripping glaze from sticking.
- If glaze does get onto the bottom be sure to scrape it off. Apply kiln wash over area that you have scraped clean.

VIDEOS

You can find video tutorials and demonstrations of these techniques on our website: **hotkilns.com/support/repair**