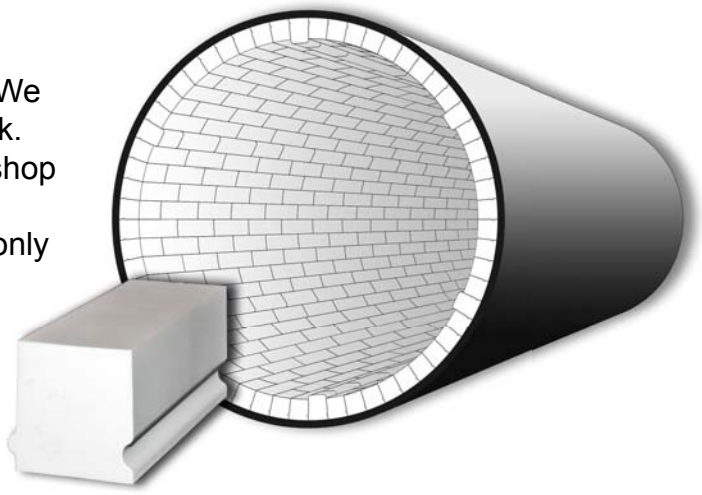
Ceramic Mill Relining and Refurbishing

PAUL O. ABBE® Since 1911

Repair and Refurbishing Services:

- We reline all sizes of ceramic lined or pebble mills. We can also replace Burrstone linings with alumina brick.
- Relining can be performed at your facility or at our shop in Bensenville, IL.
- Polyurethane and rubber lined mills can be relined only at our Bensenville facility.
- We use only high quality, fine-grain 90% alumina brick with tongue and groove design.
- Bricks are secured and grouted with pure Portland cement. Two-part epoxy can also be used to provide a crevice free milling surface.



Typical Composition of Alumina Brick:
Al_2O_3 90%, SiO_2 6%, other 4%

Repair or Replace Other Components:

- Mill cylinders
- Replace portions of a corroded cylinder
- Repair babbitted bearings
- Replace Babbitted bearings with roller bearings including machining the trunnions to size
- Replace ring & pinion gears and gear reducers or entire drive systems.

Alumina Brick Properties:

- Mohs Hardness: 8.5-9
- Density: 3.5-3.6 g/cc
- Apparent Porosity: 0%
- Maximum Temperature: 2,292°F
- Chemical Resistance:
  - All acids (except hydrofluoric)
  - All bases - Std. NaOH 25%@ 95°F

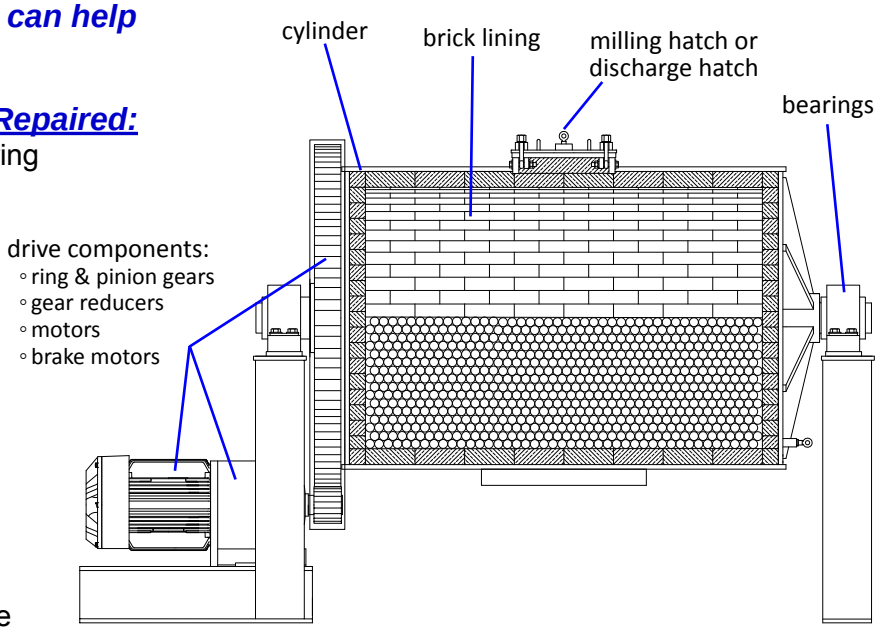
No matter what type of mill you have, we can help you put it back into productive service.

Types of Mills Repaired

Ball Mills
Batch Mills
Burrstone Mills
Ceramic Lined Mills
Conical Mills
Continuous Mills
Dry Grinding Mills
Pebble Mills
Polyurethane Lined Mills
Rod Mills
Rubber Lined Mills
Tube Mills
Tumble Mills
Wet Grinding Mills

Brands of Mill Repaired:

Abbe Engineering
Allis Chalmers
Alpine
Denver
Epworth
FL Smith
Hardinge
Marcy
Metso
Netzsch
Patterson
Paul O. Abbe
Stevco Co.
U.S. Stoneware



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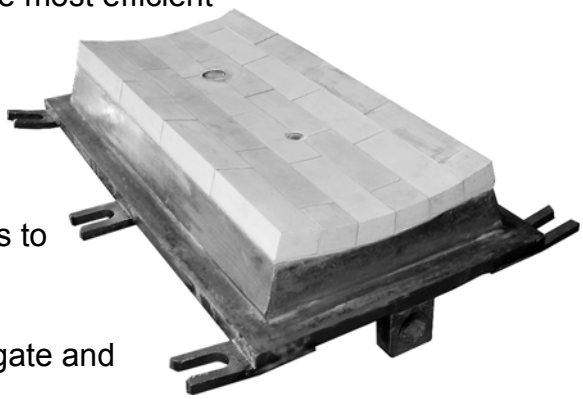
Tapered brick is often used on smaller diameter mills. This keeps the “gap” between the bricks a constant dimension even as the bricks wear.

Several rows of taller “lifter” brick can be used to reduce media slippage. This increases efficiency, and reduces excess lining and media wear.

Dos and Don'ts for Relined Ceramic Mills

Failure to follow these guidelines may result in brick damage and voiding of any warranties.

- ***DO*** follow the curing instruction exactly – too fast or too slow curing will cause the cement to crack.
- ***DO NOT*** drop grinding media directly into the mill. This will damage and crack the bricks.
- ***DO*** load the media gently by rolling the media in or fill the mill with your product first to cushion the addition of media.
- ***DO NOT*** operate the mill above 60%-65% of critical speed. Doing so may cause the media to cataract (fly through the void space) and strike the mill wall causing chipping or cracking of the brick. Below 65% of critical speed the media will tumble and cascade and give the most efficient milling.
- ***DO NOT*** drop the covers – The ceramic brick will chip and crack.
- ***DO NOT*** strike the covers if they are stuck. Use the lever points to pry the cover.
- ***DO*** expect some minor chipping of the brick around the cover gate and frames – this may occur as a NORMAL part of the break in.



If in doubt, call the experts at Paul O. Abbe and we will assist you with installation, media loading and operation of your mill.