

**METAL FINISHING PRODUCTS**

Source: Aurora, NC

Alternate Names: PB174LC, Bright Dip,  
Sulfuric Acid Containing Bright Dip, Low Copper Phosbrite

page 1 of 2

**DESCRIPTION**

PB174LC is a unique formulation for superior chemical polishing of aluminum. PB174LC offers several advantages over conventional phosphoric acid-nitric acid (R-5) solutions.

POTASHCORP PURIFIED PHOSPHATES PRODUCT CODES
PB174LC

TYPICAL CHEMICAL ANALYSES			
COMPONENT	TYPICAL	MINIMUM	MAXIMUM
Total H <sub>3</sub> PO <sub>4</sub> , %	79.0	–	–
H <sub>2</sub> SO <sub>4</sub> , %	10.0	–	–
Metallic Brightener as Cu, ppm	–	500	600
Fume Suppressant as N, %	–	0.60	0.75
Specific Gravity @ 80/60°F	–	1.740	–

**PACKAGES** 55 gallon plastic drums or bulk

**SHIPPING** Refer to SDS

**SAFETY, STORAGE & HANDLING**

PB174LC is a mixture of strong acids and is corrosive to skin, eyes and mucous membranes. The fumes evolved during the use of PB174LC are toxic and corrosive. The product does not burn but will emit toxic fumes when heated to high temperatures. Rubber gloves, apron and full face shield or chemical goggles must be used when handling this product. The Material Safety Data Sheet for PB174LC must be reviewed with all personnel who handle or come into contact with the product. A Material Safety Data Sheet may be obtained by calling PCS Sales Customer Service at 1 (800) 654-4514 or through our website at [www.potashcorp.com](http://www.potashcorp.com).

**APPLICATIONS & OPERATING GUIDELINES**

**Advantages**

- Increased specular reflectance on a wide range of alloys.
- Removal of fine scratches and other imperfections.
- Greater tolerance for soil contamination without producing contamination pits.
- Wider operating parameters.
- Elimination of transfer etch.
- Lower emission of fumes than similar processes containing nitric acid and sulfuric acid.
- Tolerates higher water content than PB172.

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**Addition** – As necessary to maintain volume in the tank (replacement of drag-out losses). The only other necessary operating additions are nitric acid and water.

**Operation** – The recommended operating parameters for PB174LC are as follows:

<b>Aluminum (g/L)</b>	15	30	45
<b>Spec. Gr. (80°F/60°F)</b>	1.73 - 1.76	1.73 - 1.77	1.73 - 1.78
<b>Nitric Acid (Wt. %)</b>	3.5 - 4.5	3.0 - 4.0	2.5 - 3.5
<b>Temperature (°F)</b>	205 - 220	205 - 220	205 - 220
<b>Time (Min.)</b>	1.5 - 4.5	1.5 - 4.5	1.5 - 4.5

Tanks and heating coils should be made of 316L stainless steel, and as these rely on the presence of nitric acid to prevent corrosive attack, the nitric acid content should not be allowed to fall below 2.0%.

The addition of water to lower the specific gravity is only necessary if the specific gravity exceeds 1.78 (80°F/60°F). Water addition should be made only when the appropriate amounts of virgin PB174LC solution and nitric acid have been made and the specific gravity exceeds the recommended parameter.

Contamination due to oils, greases and buffering compounds which have been dragged into the PB174LC bath will create a black scum on the surface of the solution. This should be skimmed off if it occurs. Contamination of this nature will increase the rate of attack and may lead to reduced brightening. Proper cleaning and rinsing will minimize this situation.

Air agitation is not recommended while operating PB174LC. Air agitation should only be used to thoroughly mix the solution after a chemical addition. Mechanical agitation, which moves the aluminum while immersed in the solution, is required.

Removal of the copper salt smut deposited by the PB174LC bath is required prior to anodizing. The use of a 35 - 40%, by weight, nitric acid solution or any proprietary de-smut solution which will remove copper salts is acceptable.

**For further information or technical assistance, please contact:**

**PCS Sales Customer Service**  
1101 Skokie Blvd.  
Northbrook, IL 60062  
1 (800) 654-4514

**Technical Services**  
PO Box 48, 1530 NC Hwy 306 South  
Aurora, NC 27806  
1 (866) 208-0931

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