



CBC-2 and CBX Application Instructions

CBC-2 and CBX are high temperature, corrosion resistant, thermal barrier coatings designed for the combustion chamber (piston top and cylinder head) and ports of internal combustion motors. They are water based with no VOC. The finish can be a high polished near chrome or a burnished aluminum or left as a dull finish in the case of CBX. CBC-2 is designed to work best in naturally aspirated motors of 12.5:1 compression ratio or less. CBX is designed to perform in all other applications (turbo charged, super charged, nitros, 12.5:1 and greater compression ratio, combustion chambers with very tight quench area, etc...). CBX can be used in place of CBC-2 however some have found that the CBC-2 performs slightly better in the applications it is designed for.

These instructions have been written to address common questions in application.

Surface preparation:

- The parts to be coated must be clean and free of all oils, grease, moisture, dust, scale or corrosion.
 - If the part has oils, grease or other contaminants it must be cleaned to allow the coating to adhere to the substrate. This can be done by pre-baking the part at over 350° F. Solvents can be used if they will completely evaporate without any residue. The part should be free of oils before sand blasting.
- Sand blast with 120 grit aluminum oxide or similar.
 - After sand blasting clean any residue off with high pressure air. Protect yourself with safety shield, goggles and respirator.
- If needed a rinse with acetone or lacquer thinner can be done to further clean the part.

Preparation of the coating:

- Shake and stir the coating before use. Putting the coating in a blender and setting it on high for a few minutes will prepare the coating for spraying. In the case of a small quantity bottle adding a number of various size clean stainless steel ball bearings to the coating and shaking vigorously will mix it well.
 - If the coating has been in storage for more than 1 month, recondition it by running it in a blender on high for 15 min or until hot. Let it cool then stir and use as normally. Adding a little distilled water during blending will help recondition the coating.

Equipment:

- Use an airbrush or detail touch-up spray gun with a 1 mm or smaller tip, to apply the coating.
- Use a respirator with the correct NIOSH filter (consult the MSDS before using). Wear safety glasses or goggles. Wear gloves to protect your hands from the coating and from solvents

Spraying the coating:

- Spray the coating in all hard to reach areas first then move out to the other areas.
- Inspect part for complete coverage. Part should be glossy wet without runs or sags.

Tips on Spraying:

- This coating is water based and as such is sensitive to changes in temperature and humidity in the spray area. The following are guidelines to adjusting for various weather conditions.
 - If the temperature in the spray area is below 70° F. warm the part (80° to 110° F.) before applying CBC-2 or CBX .
 - If the humidity in the spray area is below 50% add distilled water to the coating to be sprayed. Add water only to the coating that will be used in the next hour. You may add an amount between 5% and 40% of volume of the coating depending on how warm and/or dry the air is.
 - CBC-2 and CBX will in high humidity conditions absorb water from the air as it is sprayed, it will in low humidity conditions loose water to the air as it is sprayed. CBC-2 and CBX are designed to allow you to add distilled water to it when the humidity is low or the temperature is high, so that it will dry slower and flow out.
- CBC-2 will not burnish or polish easily if it is applied in a way that causes “orange peel”. Adding a little distilled water will help to flow out the coating and make a smoother surface if this is happening.
- Air pressure should be much higher than with solvent based coatings. Some spray guns will require as much as 50 to 75 psi or higher, do not exceed the safe limits of your spray equipment.

Drying the Coating:

- If CBC-2 or CBX does not dry in 20 minutes after it has been sprayed it may be placed in a warm (not over 110° F.) area to help dry it.
- The coating is dry and ready to bake when it has turned to a gray white color, do not cure the coating if it still has the gray green color.

Tips on Drying:

- If the humidity is very low the coating may not turn gray when it is dry to the touch. If this happens the coating needs to have more water added to it for spraying, or the drying temperature was too high. It has skinned over and is not allowing the water to evaporate, this can result in the coating delaminating during baking, or it can prevent the coating from polishing properly.
- The coating will absorb water from the air if the humidity is high, or if left overnight. It will turn green again. Keep the parts in a warm dry area until the coating can be cured.

Curing the Coating:

- After the coating is dry, it is to be baked at 350° F. (part temperature) for 1 hour minimum.

Tips on Curing:

- 350° F is considered by most piston manufacturers to be a safe temperature to bake the parts at. If you have doubts on this consult with the manufacturer of the pistons. If the piston manufacturer feels that the 350° F is too hot we have other combustion chamber coatings that bake at 300° F, please feel free to contact our customer service desk for information.

Polishing the Coating:

After the CBC-2 is cured, it will need to be polished or burnished. This will seal the coating and make the surface thermally conductive, this helps to prevent hot spots in the combustion chamber.

- Burnishing may be done in a number of ways.
 - Rub with 0000 steel wool
 - Blast with fine (#12 to #14) glass bead at low pressure (about 25 psi).
 - Wet sand with 1000 grit wet dry sand paper
- Polishing can be done in a number of ways.
 - Vibratory polisher, with Ceramic Beads of 3 mm, 4 mm and 6 mm diameters using R-2 soap and pure water (filtered, distilled, demineralized, etc...).
 - Buffing wheel with aluminum polishing compound
 - Hand rubbing with Polishing compound

After CBX is cured it does not need to be polished. The dull surface finish is part of the erosion protection of the coating in high compression applications.

- Note: some applicators have found that they can burnish or even polish CBX and have had no problems with erosion.

Additional Notes:

Examine the parts carefully after baking for any signs of blistering or coating delamination. This would be a sign of contamination in the substrate, or water entrapment in the coating. The part surface should be stripped of any loose coating and re-coated. Do not assemble a motor with parts that have questionable coating quality.

Clean up of CBC-2 or CBX is done with water. CBC-2 and CBX do contain chromic acid, and so water from clean up should not be disposed of in a drain, but should be disposed of according to the environmental laws that are applicable to your operation. If the water used to clean up is not contaminated with foreign materials, it can be used as the water to thin CBC-2 or CBX when needed.

Cured CBC-2 and CBX have been tested for chromic acid and it has been found that the chromic acid is not present in the cured coating.

It is recommended that you keep a temperature and humidity gauge in the spray area and make notes of how CBC-2 or CBX are applied in different conditions of your shop. Additionally a gauge in the area for drying will also help to identify issues.

