

Manufacturing Process Specification

Number:	MPS-Bond-1.0 Rev. K (CCQS 910)
Name:	Recommended Bonding Procedure for Custom Cupholders Company Products
Date:	January 15, 2009

This information covers the recommended bonding procedure of Custom Cupholder™ multi-piece cupholders and other assembled components distributed by the Custom Cupholders Company. Although Custom Cupholder™ units are specifically described in this document, the general bonding processes and bonding agents contained herein, when specified, may be used for bonding other Custom Cupholders Company products and parts.

Precautionary Information

Refer to Bonding Product Label and Material Safety Data Sheet (MSDS) for Health and Safety Information before using any of the products listed below.

Rim to Cup Dimensional Tolerance

Each Custom Cupholder™ is precisely machined to allow an adequate clearance for final finishing thickness (plating, anodizing, etc) between top appearance rim mounting flanges and bottom cup sidewalls (see Table 1).

Table 1

Size Series	Top Appearance Rim Series	Height of Cup	Clearance between top appearance rim mounting flange and the bottom cup sidewall (no finish)
2.75, 3.00, 3.25 & 3.45	S, C & D Series (Example: S102)	All	0.008" to 0.012"
3.00 & 3.25	R Series (Example: R106)	All	0.004" to 0.006"

A quality plated, anodized or powder coated finish should be 0.004" or less in total thickness. Painted finishes can vary depending on paint type and application. Poor quality control during the finish process may result in pooling of the finish material on the inside bottom edge of the top appearance rim flange and/or on the outside top lip of the bottom cup. When this happens finish thickness may exceed the provided clearance and will require careful grinding away of the pooled finish material.

Selection of Adhesive.

Because the clearances between the top appearance rim flange and the bottom cup can vary widely depending on the final finishes used, a high quality, gap-filling two part, industrial epoxy adhesive should be employed for final bonding. Recommendations for epoxy adhesives are given in Table 2.

Table 3

Adhesive Type	Part Number	Manufacturer
Epoxy	Devcon Epoxy Plus 25	ITW Devcon 30 Endicott Street Danvers, MA 01923
Epoxy	DP125 or DP190	3M Adhesives 3M Center, Building 220-E-05 St. Paul, MN 55144-1000

Adhesive Properties:

Refer to the Manufacturers specific information for each product.

Component Preparation

On many types of Custom Cupholders it is much easier to apply the bottom inserts prior to bonding the cupholder pieces together. This is especially true for the deeper and double cupholders as well as cupholders that are receiving the black vinyl bottom insert where there is a grain pattern to the insert. Reference Custom Cupholders Manufacturing Notice “*Installation of Black Vinyl Inserts into Cupholders*”

Bonding Surface Preparation:

Bonding surfaces must be clean and free from dirt, grease and oil. They should also be slightly roughened to provide a better surface for adhesion.

Custom Cupholder™ rims and bottom cups are manufactured with a threaded surface already machined into the bonding areas to act as surface roughness. However, if the final finish application has been applied too thick and has covered this area, “re-roughing” the bonding areas will be required.

Adhesive Application and Joining Parts

It is suggested that the adhesive to be used for bonding be tried on an expendable sample of the final finish material to confirm that the adhesive will not discolor or stain the final finish.

Bonding Procedure:

Apply the suggested adhesive in a narrow band around the top outer surface of the bottom cup, approximately 1/16” from the top edge. This band of adhesive should be approximately ¼” wide and thick enough to slightly overfill the threaded roughness.

Ensure that no adhesive is left on the top rim surface of the cup as this will squeeze out into the inside of the cups during joining. After adhesive is applied to the bottom cup, join with the top appearance rim using the following methods:

Single Cupholders (all “S” series) and Double Cupholders with individual bottom cups (series “D205”): Join by placing the rim on top of the bottom cup and rotating the bottom cup while also slowly seating the cup into the rim. If there is enough tolerance between the rim and the cup a slight side-to-side rocking motion can also help spread the adhesive around on the contact areas.

Double Cupholders:

Join by placing the rim on top of the cup and slowly working the cup into the rim with a slight end-to-end and then side-to-side rocking motion. On some units (Figure “8” style) it is also possible to apply slight squeezing pressure to the center sides of the bottom cup while inserting the cup into the rim. This will allow the adhesive to spread more evenly around the side centers of the cup.

The goal in all installations is to create an even layer of adhesive all around the bonding surfaces. Care must be taken to avoid adhesive squeezing out the top gap into the inside of the cup. Wipe off any residual adhesive immediately. Make sure that excessive adhesive that squeezes out between the bottom of the rim flange and the bottom cup is wiped off so as not to leave a mass of adhesive creating a larger diameter than the rim flange itself. Allow the adhesive to cure per the adhesive manufacturer’s recommendation.

Final Strength of Bond:

The information provided in this MPS is for reference only.

It is the responsibility of the final installer to assure that the completed units meet any and all structural, operational and appearance requirements.

It is recommended that all bonded multi-piece Custom Cupholders™ meet the following requirements with a down-force load applied to the bottom cup:

Cupholder Style	Total Force / Cup
Two-Piece, Single	20 lbs.
Two-Piece, Double	40 lbs.

Guarantee of provided information:

Because of the unlimited types of final finishes that may be applied to Custom Cupholder Company products the Custom Cupholders Company does not guarantee the above information for use with any or all types of finishes. Certain finishes may react negatively to the adhesives indicated above and certain finishes may not allow the necessary bonding strength.

Other adhesives than those indicated in this document may be used if the installer determines that the unit(s), in the bonded state, will meet the necessary requirements for the specific installation. If there are questions as to the suitability of a specific adhesive, or problems bonding units together because of a specific final finish, please contact the Custom Cupholders Company for more information.

NOTE: The information provided in this MPS is for reference only.

It is the responsibility of the final installer to assure that the completed unit(s) meets any and all structural, operational and appearance requirements.

Revision schedule

Date	Rev.	Explanation
03 Mar 2004	a	Changed maximum applied load capability.
20 May 2004	b	Added cautions of possible blushing caused by Loctite and other Cyanoacrolate adhesives.
20 May 2004	b	Added clarification of applied load requirements.
12 Sept 2004	c	Added clarification to bonding directions "for gaps greater than .002".
12 Sept 2004	c	Deleted Magnolia Plastic 65-A adhesive from suggested adhesives.
12 Sept 2004	c	Added Devcon Epoxy Plus 25 adhesive to suggested adhesives.
12 Sept 2004	c	Changed loading and bond strength.
05 Jan 2005	d	Clarified styles of rims and bottom cups being bonded. Deleted Loctite Cyanoacrolate adhesives from list of approved adhesives.
03 Mar 2005	e	Added information to include additional bonded parts
04 Mar 2005	f	Simplified selection of bonding adhesives versus final clearance gaps.
06 May 2005	g	Changed wording. Used "clearance" instead of "gap".
04 April 2006	h	Changed wording in "Guarantee of Provided information" paragraph.
03 Mar 2007	i	Changed wording throughout document.
01 June 2008	j	Updated and clarified procedures. Changed document name.
15 Jan 2009	k	Changed recommended epoxy adhesive DP100 to DP125 or DP190.

Manufacturing Notice

Name:	Handling, Buffing and Polishing Top Appearance Rims - All multi-piece units
--------------	--

To:	Plating Vendor
------------	-----------------------

Affected Parts:	All Top Appearance Rims on multi-piece Custom Cupholders
Part Name:	Top Appearance Rim

Notice:	Top appearance rims are precisely machined from 6061T6 aluminum to fit flat onto a mating bottom cup. Extreme care must be used when handling, buffing or polishing so as not to bend or distort the rim.
----------------	--

Manufacturing Notice

Name:	Final Finish on Top Appearance Rims of multi-piece cupholders
-------	---

To:	Plating Vendor
-----	----------------

Affected Parts:	All multi-piece Custom Cupholder Company Top Appearance Rims
Part Name:	Top Appearance Rim

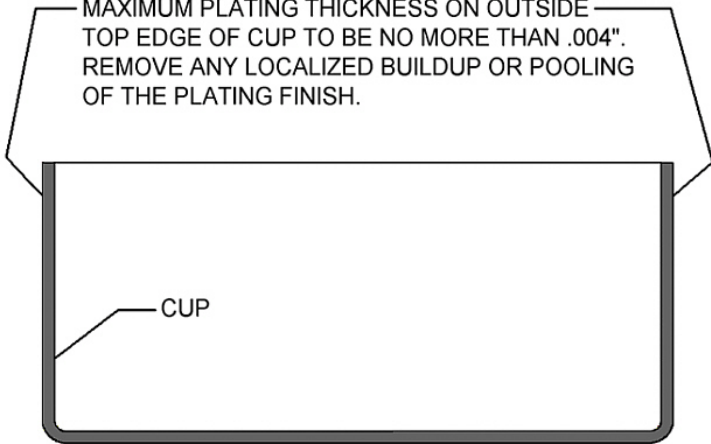
Notice:	<p style="text-align: center;"><u>IMPORTANT PLATING INFORMATION</u></p> <p style="text-align: center;">X-SECTION OF RIM SHOWN</p> <p style="text-align: center;">MAXIMUM PLATING THICKNESS ON INSIDE OF RIM FLANGE TO BE NO MORE THAN .004\". REMOVE ANY LOCALIZED BUILDUP OR POOLING OF PLATING FINISH.</p>
---------	---

Manufacturing Notice

Name:	Final Finish on Bottom Cups of multi-piece cupholders
-------	---

To:	Final Finish Vendor
-----	---------------------

Affected Parts:	All multi-piece Custom Cupholder Company bottom cups.
Part Name:	Bottom Cup

Notice:	<p style="text-align: center;"><u>IMPORTANT PLATING INFORMATION</u></p> <p style="text-align: center;">MAXIMUM PLATING THICKNESS ON OUTSIDE TOP EDGE OF CUP TO BE NO MORE THAN .004". REMOVE ANY LOCALIZED BUILDUP OR POOLING OF THE PLATING FINISH.</p>  <p style="text-align: center;">X-SECTION OF CUP SHOWN</p>
---------	--