

CMT Materials recommends the use of bonded inserts for ease of plug attachment to a supporting base structure. Following the guidelines listed below will improve the bonding quality of inserts and ensure consistency in plug performance.

These guidelines were established using aluminum inserts. To prevent plug damage, regardless of the style of insert, it is critical that the top of the insert is flush with the surface of the plug.

1. DO NOT USE COOLANT. Coolant will affect adhesive bond strength.
2. Face mill bottom surface of plug.
3. For US size inserts with ¼-20 internal thread
  - a. Drill 0.3125" diameter hole to 0.750" depth at insert locations.
  - b. Cut 0.500" diameter hole with a finish end mill to 0.490" depth at insert locations.
4. For Metric size inserts with 6mm internal thread.
  - a. Drill 8mm diameter hole to 19mm depth at insert locations.
  - b. Cut 12mm diameter hole with a finish end mill to 11.75mm depth at insert locations.
5. Thread a screw into the dot side of inserts to facilitate adhesive application and insertion into hole.
6. Apply a small amount of Loctite 495 (instant cure cyanoacrylate adhesive, [www.loctite.com](http://www.loctite.com)) to the outer surface of insert.
7. Immediately push insert to the bottom of hole with dot facing up/out and ensure insert is installed to bottom of hole. The adhesive will begin to cure within 5 - 15 seconds of application to the insert.
8. Remove screw after adhesive sets (approx. 60 seconds)
9. Repeat steps 5 – 8 for all inserts.
10. Face mill bottom of plug making sure insert and bottom of plug are flush.

## KEY SUCCESS FACTORS

Do not use coolant during cutting (for proper adhesive bonding).

Face milling the bottom of the plug after insert installation (to ensure a flush mating surface for the plug to the base is created).



Pull out tests performed after 24-hour periods are shown in the chart below.

