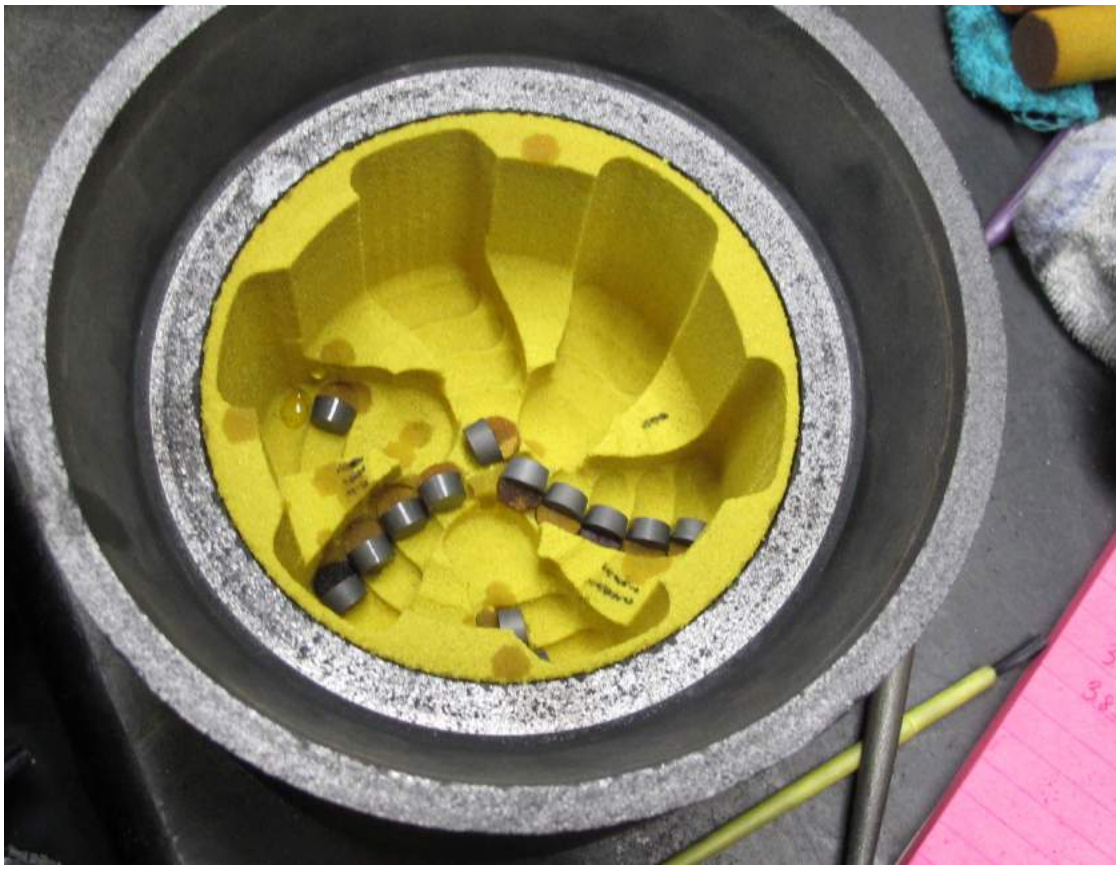
3.795” MX-C
#’s M-417, 418

Short Bit & Tool Co.
225 Gold St
Garland, Texas 75042
972-205-1011

A CNC mold is programmed and cut to spec.

The 3/8” round carbide inserts are set in the leading edge of each pod.



The pods are then packed with a powdered slurry that contains about 25-30% by volume of 30-40 mesh Titanium coated diamond grit to the full depth of the pods (1/2” in this case).

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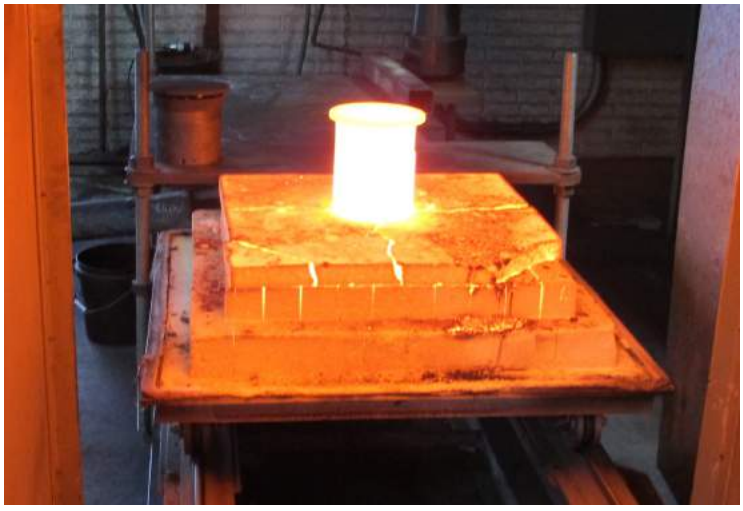
We add an 8620 steel “blank” that is the central component to which the the matrix powders will be bonded during furnace infiltration with a Nickel alloy. The furnace temp exceeds 2100F so matrix bits, mills, and shoes cannot have a HT tool joint run through the furnace…it is added by MIG weld later. There are two powders added to form the matrix. Tungsten Carbide which forms the active face of the mill and Tungsten which forms the capping powder that can be machined.

The mass is taken to 2150F where the binder alloy is melted to flow through the ID…through the face…and collect on the annulus.



The mold is directionally cooled to assure a solid bond matrix to the 8620 steel blank.

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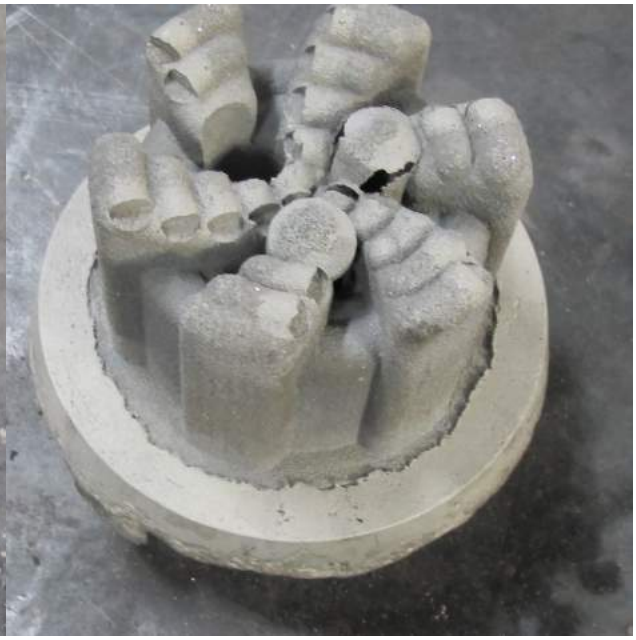
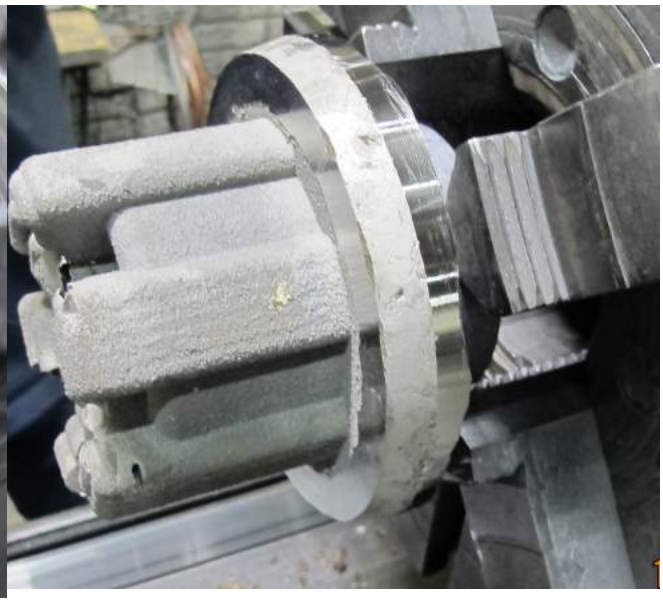
Lower left pic is the mill as it is dumped out of the mold. Lower right is the same after sand blasting

next step is to align the rough mill face out in the lathe and cut two surfaces that we use when the mill is chucked face in for machining. This assures perfect zero run-out from thread to mill face.

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Next step is to attach a 4140 HT rough tool joint that is shrink-fit, pre-heated… welded with 90,000 psi MIG weld…post heated to just under tempering temp (950-1050F) and allowed to slow cool. In rush bits that we don’t have time to slow cool we use 4130 HT (same weld steps) but air cool in about 1 hour.