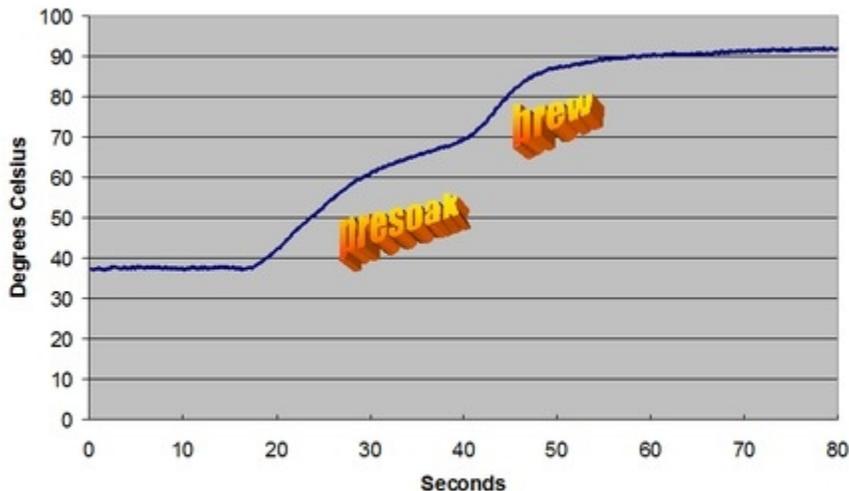


## Nomad Temperature User Guide

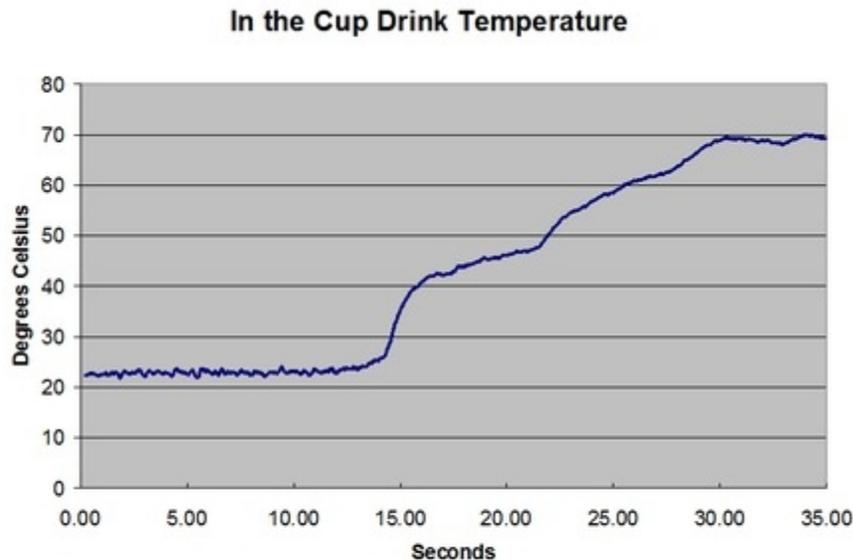
The Nomad, being non-electric, does not heat water but relies upon hot water heated externally, then added to the water tank. This means that the brewing temperature and resultant beverage temperature will be a function of many elements and always lower than the temperature of the water that is added. The Nomad is engineered to meet specific thermal requirements. Employing core concepts of low thermal mass and low thermal conductivity, the mechanical design and material selection minimizes heat loss and also ensures that the exterior of the Nomad remains cool to the touch. The result is that when filled with near boiling water both the coffee puck temperature in the filter basket and the drink temperature in the cup meet industry standard guidelines.

The Italian Espresso International Standard states that exit temperature into the coffee grounds be  $88^{\circ}\text{C} \pm 2^{\circ}\text{C}$  and final temperature of the beverage in the cup be  $67^{\circ}\text{C} \pm 3^{\circ}\text{C}$ . If the Nomad and the cup are properly pre-warmed as described below then these temperatures are easily achieved. The first chart below shows the brewing temperature measured in the coffee grounds with an electronic temperature sensor. The water tank was pre warmed by filling and then dumping out hot water and refilling. The chart below shows a first rise in temperature due to the presoak cycle followed by a ten to twenty second pause followed by the brewing cycle. The brew temperature rose continuously to over  $90^{\circ}\text{C}$  ( $194^{\circ}\text{F}$ ), just at the high end of the optimum espresso brewing temperature.

**In Filter Basket Coffee Puck Temperature**



The next chart shows the resultant beverage temperature in a Bodum double walled espresso cup. For this test the machine and cup were pre warmed and a double espresso shot of 60 cc was pulled. The rise in temperature reflects the drink filling the cup, to about 60 cc, over about 25 – 30 seconds. The final double shot temperature is about 70°C (158°F), very close to the desired 67°C ± 3°C, in fact a little on the warm side.



With choices of fill water temperature (99°-90°C) and whether to pre warm the machine or not Nomad users have easy control of the temperature parameters to achieve optimal brews tuned to grind, coffee volume, short or long shots, coffee varieties, and personal taste preferences.

While the Italian Standard stated above is widely accepted there are many devices and coffee houses that create a higher temperature beverage. For example stove top steam driven Moka pots are well known to brew at higher temperatures and produce a higher temperature drink. Some find this higher temperature destroys or "burns out" the more complex and subtle flavors of the coffee and others prefer the higher temperature result. For those wanting to get the maximum temperature drink from the Nomad a few tips follow.

1. Start with the water tank empty and the drawer and filter basket clean and dry. Dump any old water in the tank out by inverting the Nomad over the sink. (Old cold water in the tank will reduce the temperature of new hot water added to it).
2. For normal espresso use hot boiling water. When water is poured into the tank it drops in temperature by about 5 deg. C. and when pumped up to the coffee chamber about another 5 deg. C. Thus if you start with true boiling water at 100 C. it will be about 90 C at the coffee grounds, just right for espresso brewing. Water at 90 C can appear to be boiling thus if you're are not measuring the temperature of your heated water the temperature may be lower than

you think. If you are just going by sight and sound be sure to use very hot furiously boiling water.

3. The cup you use will affect how much heat is lost as the cup is filled. Don't use an oversized cup. A Bodum double wall glass cup is a good choice for minimizing heat loss.
4. If you want a very hot espresso shot pre heat both the water tank and cup. First fill and pack the coffee drawer with coffee, lift the metal filter basket out of the drawer brew chamber and put the drawer back in the Nomad without the coffee filter basket.
5. Fill both the water tank and cup with boiling water, pump 10 strokes to move hot water up into the brew head. Wait 1 - 2 minutes.
6. Carefully remove the drawer, dump any hot water out of it and put the coffee filter basket into the drawer.
7. Dump the hot water out of the water tank into the sink and refill full with hot boiling water. More water will have more thermal mass and thus loose less heat. Put the coffee drawer into the machine and perform the 12 stroke presoak.
8. Dump the hot water out of the warmed cup, place it at the coffee exit location and pull the espresso shot.