



Canadian Forge Kast-O-Lite 30 Li Plus – Instructions:

1. Ideally store Kast O Lite 30 in a **dry location between 15-25°C**. This is especially important prior to mixing as bags of castable can take hours to a couple of days to equilibrate if brought in from the cold. Don't store bags directly on concrete floors or others that can accumulate moisture.
2. The castable should not drop below 10°C during setting and curing, and it must never freeze during this process.
3. The ideal Temperature at the time of mixing- The KOL-30 & the water should be between **10-21°C**. Note that bags of castable kept outside in the winter can take a couple of days to come up to temp, especially when stacked on each other. Use clean water.
4. **NOTE:** if you are planning to apply Kast-O-Lite directly onto refractory wool, it is a good idea to 'rigidize' the wool first to help avoid its compression.
5. Calculate the recommended and maximum water volume prior to your mix. The recommended ratio of water to castable, based upon weight, is **18%** and the advised maximum is 21%. Exceeding this ratio by more than 3% will result in some loss of casting integrity.
6. FYI 18% water equates to 4.5 Liters for a 55lb bag, and approximately 750 MLS of water per 1 gallon of dry Kast-O-Lite.
7. **Coverage Note:** 1 gallon of KOL will make about 180 cubic inches of castable.
8. Avoid inhalation of dust, wear suitable mask protection.
9. **TIP-** Add 75% of your water to the empty mixing container in advance of adding the castable for shorter mixing times. Add your castable and begin power assisted mixing while adding the balance of the recommended water to suit.
10. Kast O Lite should ideally be mixed with a power mixer, either a paddle or drum mixer or rotary mixer on a drill for small batches.
11. **Mixing time should be 1-3 minutes.** AVOID UNDER AND OVER MIXING.
12. **Warning–** mixing by hand is slower than using a power mixer, ESPECIALLY when Stainless Steel cross bracing 'needles' are added. Most people mixing by hand end up needing to add more water than when power mixing, which can have an effect of diminishing the maximum casting strength. Covalent bonds begin to form in the castable quite soon once water is added, and excessive mixing time breaks these bonds and weakens the final casting.

13. **Note-** Stainless Steel Needles can be added and mixed into the dry mix prior to adding the water. This helps act as micro 're-bar' elements that also holds the unset castable together mechanically prior to it setting. Doing so makes mixing more difficult and power mixing is further advised.
14. When filling a mold, use a rod in the wet material to remove trapped air. Tapping the sides of the mold help, as does adding a vibration mechanism like a palm sander to the side briefly. Don't over do it, it does not take long, and excess vibration causes 'stratification' with water rising to the surface, which can cause 'spalling'.
15. **TIP-** Prevent the surface from evaporative or migration drying during the setting process. Do this by ensuring forms are waterproofed (so that wood forms for example do not wick moisture from the casting during setting), and providing a damp cover to exposed surfaces post pour or casting. A thin coating of Vaseline on forms works well both as a sealant and a release agent.
16. Install the castable as quickly as possible after mixing. Trowelling to a slick surface is usually ill advised as it impedes proper water removal during dry out.
17. Curing time is a minimum of 24 hours & 2 days is advised (longer, even a week is ok, and it makes the heated dry out (below) more forgiving) **at 21 to 38°C** (room temperature to very warm). This brings the casting to a hard 'set'.
18. Next is 'dry out' which involves a gradual, slow & incremental increase in temperature to evaporate the moisture in the casting. The key is to avoid 'steam' expansion which causes micro fractures which weaken castings. The ideal protocol is to raise the temperature by 100°F (approx. 40°C) per hour for 12 hours, and then hold the temperature at 1200°F (650°C) for 1 hour for every inch of thickness of the casting. There is no concern going slowly with this step, the risk is only in going to fast and causing steam induced micro fracturing.
19. In a forge situation this dry out is accomplished by incrementally firing up your forge for short, slowly increasing bursts of time. The castable will continue to evaporate water while the forge is off between heat cycles.
20. Recommended- In most applications a very thin final topcoat of **ITC-100** ceramic refractory reflective coating is advised on the fire side surface to increase the reflective efficiency within the space often by 30% or more.
21. Any Questions? Don't hesitate to call the Canadian Forge Shop @ 780-470-0789.
22. Note the SDS (Safety Data Sheet) and Detailed Instructions are also available online at canadianforge.com (https://canadianforge.com/products/kast-o-lite-30-li-plus-55-lb-25kg-bag?_pos=1&_sid=4fc4221dd&_ss=r)

Kast-O-Lite 30 Li Plus is our most popular, versatile, & efficient insulating castable refractory.

Best Wishes.

