Condensate Dry, Rinse Aid and Steam

Condensation works on the principle of water evaporating off something hot and returning to its liquid form on something cooler. After the wash cycle is complete the heat retained from the warmer dishes have water or moisture evaporating off them. This moisture has to go somewhere. Since the tub of the dishwasher cools off more quickly than the dishes do, it evaporates or condensates to the sides of the tub. The water then runs down the sides and down the drain!

Condensation drying requires a few key ingredients; a stainless steel tub, hot rinse water, time and preferably some rinse aid. Condensate dry requires a stainless tub. It won’t work with a plastic tub because it doesn’t have the same cooling effect. The hot wash and rinse water will need to heat up the dishes (the hotter the better). It’s the building of the heat that causes the evaporation process. Unlike a heating element that forces rapid drying, the natural process of condensation also takes time. Dishes made of glass or steel retain heat better so the evaporation process lasts longer on these materials. Plastic items lose their heat more quickly and get less favorable results.

Finally, adding rinse aid will increase drying results. Rinse aids contain surfactants which disrupt the hydrogen bonding, lowering the surface tension. Rinse aid makes water ‘sheet’ instead of ‘bubble’ creating more surface area for evaporation causing faster drying. This sheeting action also reduces spots once dishes are dry.

The addition of steam in a dishwasher can enhance this evaporation concept. The idea behind steam is that prior to the drying portion, water inside the tub is heated to the point that the dishes steam up. If you’ve ever taken a really hot shower you may have noticed the bathroom mirror covered with steam. If you’ve resisted the temptation to write a note in the steam you also may have noticed that once the steam is gone the mirror is clean. The hydrogen bond in water is completely broken when it turns to steam. All the moisture is evaporated without any visible trace of spots or residue.

Stainless steel dishwashers that use condensate dry don’t have vents, keeping the moisture inside the unit. This avoids steam escaping into your kitchen and also from getting on your cabinets or countertops. Despite the need for hot rinse water, condensation drying also uses less energy than having to heat up an element to do the drying. Not having to heat up an element also avoids the risk of melting any plastic dishes or through a plastic tub.

And that’s the principle behind condensation drying. The water evaporates from your hot dishes, condensates on the steel tub and runs down the drain.