

Brentwood Industries' CDX-80 drift eliminators have been field tested in a multi-cell, counterflow cooling tower and the average of six tests resulted in a drift rate of 0.0004% of the circulating water flow rate. The test was conducted by a licensed CTI testing agency using the CTI Drift Test Code STD-140. Since drift eliminator effectiveness is related to the design, quality of the installation and operation of the cooling tower, to ensure this level of performance the following guidelines must be followed.

Installation Guidelines

1. The drift eliminator panels may be supported on their own independent support level or directly on the distribution piping. When installed on the distribution pipes, the pipes must provide a uniformly flat and horizontal surface to allow the drift eliminator panels to nest tightly & fully side-to-side and end-to-end. Special provisions must be made at the header to maintain a full seal at this interface. The nozzle water spray must not impinge onto the pipes or the bottom of the drift eliminator panels.
2. To obtain predicted (or guaranteed) performance there must be an adequate plenum (air equalization chamber) allowed in the tower to minimize the air velocity peaks and swirl turbulence, which occurs directly under the fan.
3. The eliminator modules must be installed to fully nest from side-to-side and fit tightly from end-to-end with adjacent modules. Gaps between panels allow droplet laden high velocity air to bypass the drift eliminators and significantly increase drift.
4. Drift modules installed adjacent to casing or partition walls must be sealed to prevent air bypass.
5. Column penetrations must be sealed with Brentwood's Dri Seals or their equivalent sealing gasket. Diagonal support penetrations and all other misc. penetrations must be sealed with expanding foam to eliminate any possible gaps that would allow air to bypass.

Cooling Tower Operation

1. Drift rate predictions are based on the design value of air velocity and waterloading. Operation of the tower in excess of the nominal design value will result in drift in excess of the predicted value.
2. Performance of the drift eliminator section is related to uniformity of airflow. Excessive air velocity leads to excessive drift. To meet predicted drift performance, the average air velocity at the drift eliminator plane should not exceed 725 ft/min (3.7 m/s). In no case should peak air velocities exceed 900 ft/min (4.6 m/s) - the breakthrough velocity of the CDX-80 drift eliminator.
3. Nozzles must be operating properly and not be clogged and/or damaged. The nozzle spray must not impinge directly on the underside of the drift eliminator panels. Operating nozzle pressure must not exceed 2 psi (14 kPa).
4. Expected drift performance will not be achieved until complete aging of the PVC surface has occurred. This is accomplished usually after 4 to 6 weeks of tower operation.
5. Certain water treatment chemicals adversely affect drift rate by reducing water surface tension. Reduced surface tension increases the population of very small droplets that is produced by the air-water interaction within a cooling tower. The smallest of these droplets can become fluidized in the exhaust air stream, passing largely unimpeded through the drift eliminators. These surface acting chemicals are called surfactants and includes most biocides, scale inhibitors and some non-oxidizing biocides. Pure water at 120°F (49C) has a surface tension of 68 dyne/cm. To minimize small droplets becoming fluidized, the surface tension of the circulating water must not fall below 63 dynes/cm (equivalent to pure water at 176F (80C)). When testing drift emissions, all surface-active additives must be discontinued 72 hrs. prior to and throughout the entire test period.
6. To assure an unbiased and accurate drift test, the Cooling Tower Institute's (CTI) Drift Test Code, ATC-140 should be followed.
7. A licensed CTI testing agency having previous experience with full-scale field-testing of cooling tower drift will be the most reliable testing agent.