

## Proper Placement of TempCheck and Data loggers in Shipments

Proper placement/use of any temperature-monitoring device is critical to proper operation and results. You wouldn't stick a thermometer in your pocket to get the room temperature or even to get a proper body temperature. So to get a [TempCheck](#), [2c\temp](#), [c\temp](#) or other [datalogger](#) to perform proper temperature measurement, proper placement is critical. This might seem too obvious yet over and over I see thermometers in coolers and freezers placed in precisely the worst spots, such as right in front of the air blast where the temperature is coldest and an air chill factor will apply. For shipping, factors such as over packed trailers, loads shifting and reefers being turned off to conserve fuel simply complicate these issues. If you are shipping frozen products then you simply need to pick the potential warmest locations for datalogger placements. Typically heat rises and since reefers are at the front of



trailers then the warmest spot is typically the top near the back doors. If the load shifts and blocks normal air flow this affect is compounded. If like the majority of shipments, your products are refrigerated then you need to monitor for the potential coldest and hottest spots. Seasonal affects: In winter your lettuce freezes and in summer it wilts. If the load shifts and air flow is blocked, the back

half of the load can overheat in the summer while the front half can be partly frozen by your own reefer! In the winter the reverse is true, so several sensors per load are advised. If a trailer is making many stops throughout a day to deliver goods, the back half of the trailer quite likely never cools or heats up to the point it should.

Therefore the [TempCheck recorder](#) should be placed at the warmest and/or coldest point in the container. If placed properly in the load, the TempCheck will record the ambient air temperature surrounding the [TempCheck](#), which with proper air circulation should be representative of the container temperature. If there is only a slight temperature difference between the air temperature and the surface temperature of the product the recorder is affixed to (e.g. 3-5 Deg C) then there should be little effect to the recorded temperature.



In the event that a product is frozen and the recorder is fixed in place on the product, then a low temperature will typically be recorded within a short period of time (less than 1 hour). At this point you will usually see the temperature stabilize as the product and container temperatures equalize (no major increases or decreases). Any subsequent drops or increases in temperature recorded can be attributed to a corresponding drop/increase in the container temperature.



If the temperature recorder is placed in a box with the product, then temperature increases or decreases will be buffered by the thermal mass of the product. If the recorder is placed in the container or on the products then the buffering effect of the product will be lessened and changes in the container temperature will result in faster and sharper changes in the recorded temperature. Since [Tempchecks](#) are a bit larger we suggest single use [c\temps](#) or reusable coin sized [Micro DL dataloggers](#) for such studies. These also offer the advantage of downloading the dataloggers electronically and mapping several parts of a load on one chart for much easier analysis if you are trying to do troubleshooting.



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