



## **THIN LAYER CHROMATOGRAPHY PLATES**

- **Stocking Recommendations and Cautions**

It is generally known that Thin Layer Chromatography (TLC) plate performance deteriorates with age. However, the actual time period may vary radically depending on the particular adsorbent and/or physical storage conditions. In our experience, we have found that under “average” conditions, a reasonable limit for plate storage is nine (9) months for non-shrink-wrapped plates and one (1) year for shrink-wrapped plates.

Adsorbent materials used in TLC plates are extremely active substances, meaning that they pick up moisture and any other ambient fume or vapor in the vicinity. Warehouses and storerooms are known for having miscellaneous vapors and above average humidity levels. Therefore, a rigorous stocking program is critical.

### **FIRST IN – FIRST OUT (*Mandatory for TLC Plates*)**

We recommend maintaining a minimal stock. More frequent yet smaller stocking orders from Miles Scientific will insure that you will always have fresh plates. Since Miles Scientific processes 80% of orders within 48 hours, there should never be a reason to have old stock in your storeroom.

If any boxes of plates have been stored for longer than 9 months, they should still be useable. The longer a TLC plate is exposed to atmospheric conditions, the more vapors could be adsorbed. Over time these adsorbed vapors can become visible to the naked eye as a yellow discoloration, especially near the edges of the plate. Such plates can be reconditioned by way of a two-step process.

### **RECONDITIONING OLD TLC PLATES**

Step one is prewashing the plate in a solvent that is considered strong for the particular layer. For instance, acetonitrile or methanol can be used to prewash a silica layer. To prewash a plate, set up a dedicated developing chamber, containing the prewash solvent only, to a level of 2cm. Place the plate in the tank and let it develop to the top. This can also be done with 2 plates or more if a rack is used. This will wash the adsorbed organics to the top of the plate. Upon removing the plate, mark the top edge to prevent it from accidentally being used as the bottom edge, thus smearing the contaminants back over the plate during chromatography. (If time is critical



this wash can be started at the end of a day and allowed to run overnight.) After marking the top edge of the pre-washed plate, place it in a fume hood for several minutes to remove heavy solvent vapor.

The plate can then be heated for 45-60 minutes @ 90-100° C. This will accomplish two goals. First it will ensure that all pre-wash solvent has been completely driven from the layer. Residual pre-wash solvent could alter the chromatography of the sample compounds. Secondly, the heating step drives off any water vapor the layer might have picked up during storage.

Performing these two steps can return yellowed, or aged TLC plates to like new condition. Rigorous TLC procedures sometimes dictate that a pre-wash be performed regardless of the age of the TLC plate. In doing so all plates are brought back to a baseline condition that helps further eliminate slight inconsistencies brought about by storage conditions.

In conclusion, the recommended shelf life of TLC plates is by no means an expiration date. It is simply a date after which precautions must be taken to avoid chromatography interference from adsorbed contaminants.

Please direct questions or concerns to Miles Scientific's Technical Director, Ed Dugan ([dugan@MilesScientific.com](mailto:dugan@MilesScientific.com)).