



Fig. 35 Swelling isotherms of gelatin.

12. MICROCAPSULES

Microcapsules may decompose as a function of time. This has been reported by Makine et al. (1987) for the case of poly(L-lactide) microcapsules. Logical means of estimating the loss of intact polymer is (a) from the decrease in weight-averaged molecular weight, (b) by monitoring the loss in weight of polymer by gel permeation chromatography, and (c) by determining the amount of lactic acid formed. Figure 36 is an example of the decrease in weight-averaged molecular weight upon storage.

13. LIGHT SENSITIVITY TESTING

Both the ICH and the 1987 Guidelines advocate exposure of dosage forms to UV light, and although this might be instructive, it does not represent a test that simulates conditions in actual commerce (in general). There are exceptions: certain products are liable to be kept in handbags and kept out in the open, but these are the exception. In general products are considered to be kept in controlled plant environments, in warehouses or in controlled pharmacy conditions or in (short) transit.

To define a storage condition it is necessary to examine the actual conditions in the marketplace, and this has been done by Esselen and Barnby (1939), Lachman and Cooper (1959a, 1959b), and Lachman et al. (1960). They determined the spectral composition of light and light intensity in the typical American pharmacy, and in general it is assumed that the average foot-candles in a pharmacy is 5–15, and 10 is used as an average.

One could now proceed by checking a product for three years under such conditions, but rather than do that, it is desirable to accelerate the conditions so as to obtain an answer somewhat more rapidly. The guidelines' suggestion of using more energetic (UV) light is not good for such acceleratory attempts, because the more energetic light will (or may) give rise to reactions that would never take place in the light in a pharmacy (which is much more poor in ultraviolet light).

Lachman and Cooper determined that a #48 12 CWRS GE lamp 1.5" in diameter and 48" long produced a good average spectrum and produced 3250 lumens per