

## ALKALI SOLUBILITY AND EXTENT OF BLEACHING

Occasionally users specify that alkali solubility, or some other test to determine the extent of bleaching, be carried out. Bleaching is sometimes carried out in the scour in order to bring the colour of the wool to specification.

The solubility of wool in alkali is determined using IWTO DTM-4. The forward to this draft test method states:

“The solubility of wool in alkali may provide a useful index of the extent of the change in its chemical properties brought about by certain agencies. Treatment with acids, oxidizing or reducing agents, and exposure to heat or light causes an increase in the solubility, whereas treatment with alkalis or crosslinking agents causes the solubility to decrease. The change in solubility is thus a measure of the severity of the treatment. The test is most useful

when an untreated control sample is available and when the nature of the treatment of the sample under test is known, i.e. as a method of control. When the sample has been treated by two agencies having opposite effects on the solubility, the interpretation of the results, even when an untreated control sample is available, is difficult and may be misleading. It is essential to maintain strict control of temperatures during the test if reproducible results are to be obtained. The test does not provide an absolute measure of damage, but is useful as an indication of relative levels of damage.”

In general terms the solubility of wool that has not received any treatment is in the range 10% to 13%, or 9 to 15%, depending on the source of the

reference. WRONZ (subsequently Canesis and now part of AgResearch) quoted 12 to 14% as typical for crossbred wools, and up to 18% for merinos. Normally bleached wools give values > 20%, and heavily bleached wools tend > 30%.

Ideally, both IWTO DTM 4 and ASTM D1283 recommend that tests are carried out on both the processed and unprocessed wool, since the test on processed wool alone can be misleading. The preliminary precision estimates shown in IWTO DTM 4 indicate that samples tested in different laboratories should be expected to give results within 3% for an average value below 20%, and within 4% for an average value above this. The test is not certifiable (see Trading certification services for an explanation of this term).

WRONZ (subsequently Canesis, and now part of AgResearch) has developed specific tests to determine the presence of bleach, and the extent of bleaching. These tests are available through SGS.

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