



Wool Testing Services Info-bulletin

Scouring outcomes

Introduction

There are sometimes compliance issues when large consignments are constructed to tight specifications. It is often assumed that use of the formulae in IWTO-31 to combine greasy wool certification results should assure the same results on the scoured wool parcel. There are a number of pitfalls to this assumption.

Calculation errors

Some organisations still use spreadsheets or formulae that incorrectly calculate combinations. We have found errors in diameter and colour combination formulae. Whilst generally these errors are very small, they can mean the difference between some consignments meeting and failing their specification. In many cases the errors are so small that they are un-noticed on the majority of consignments and only come to light when a large delivery is put together.

Typical faults are diameter combinations that are based on the same weighted average formula as woolbase, and colour combinations that have not been updated since the IWTO colour combination calculation was updated in 2002.

Vegetable matter

There is a potential anomaly in the way in which vegetable matter base is calculated in IWTO (and ASTM). It is based on the amount of vegetable matter in the total sample, NOT by dry clean weight of fibre. In consequence, when wool is scoured, and since vegetable matter is largely preserved in scouring, the vegetable matter base actually increases (as indeed does the woolbase). Post-scour opening and milling may help to mitigate this, but will probably not do so completely.

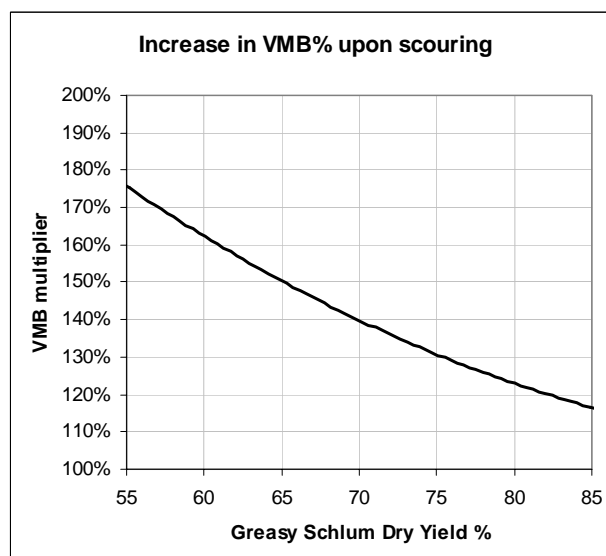
The amount by which the VMB may increase is largely determined by the woolbase or yield of the greasy input, as shown in the plot. For example, if the greasy input is calculated by combination to be 0.6%VMB and the Schlumberger Dry Yield of the greasy input is 70%, then the scoured VMB can be as high as 140% of the original 0.6%, or in this example 0.84%.

It is therefore important to allow for this effect when batching against specification.

Mean fibre diameter

It is usually expected and experienced that mean fibre diameter is preserved during scouring. Indeed there is no obvious reason for this not to be the case, especially since most consignments are constructed with relatively small ranges in the greasy input diameters.

However, there is one special case where this may go wrong. If a large consignment is constructed with a wide range of wool types, it will have a higher coefficient of variation of diameter than the average of the inputs. If the inputs and outputs were both measured on OFDA or Laserscan, this would probably



not cause any problems, but when the inputs and outputs are certified by airflow, this particular situation may sometimes give rise to a problem in meeting the specification.

In a recent example, 60 tonnes of scoured wool were put together with individual component lot airflow diameters ranging from 27 to 37 microns. Some of the components themselves were blends, and therefore could have had relatively high CvD values. The IWTO-31 combined mean fibre diameter was 33.5 μm (although the client's expectation was 33.7 μm because a weighted mean calculation basis was incorrectly used). The measured MFD of the scoured consignment by airflow was 34.0 μm and it failed to meet specification.

If, in this example, typical CvD values were assigned to each component lot, the average CvD of the lots would be approximately 25%. However, when combined in accordance with IWTO-31, the consignment CvD would be 27.6%. Because this is somewhat higher than the typical CvD of the Interwoollabs tops used to calibrate the airflow instruments, this additional 2.6% in CvD would be sufficient to increase the airflow value by just over 0.3 μm , which indeed is similar to what was experienced.

This situation does not happen often, but when it does, the consequences are generally more significant than anticipated simply because it will only tend to happen with large consignments.

Colour

Colour combinations are covered in Info-bulletin 2.3. Whilst colour should be preserved through scouring, this will obviously not be the case where treatments are used to enhance the colour. As indicated above, use of an incorrect colour combination calculation may also cause small differences to arise, especially in the Y-Z value. Failure to meet specification has arisen on a small number of occasions due to this cause.