

# SGS Wool Testing Services

## Info-bulletin

### Wool yields

#### Woolbase

“Wool” in any form contains wool fibre and varying amounts of other materials. Woolbase is the amount of pure wool fibre expressed as a percentage of the total weight of material. All yield figures are derived from the woolbase.

Woolbase is determined in the laboratory by scouring core samples, determining the oven-dry weight, and then measuring the other residual materials. Residual dirt is measured by ashing at 750°C, grease by extraction with alcohol, and vegetable matter, skin, etc, by dissolving samples of wool in hot caustic soda. All these tests are highly controlled.

#### Vegetable matter base

Wool also contains varying amounts of vegetable matter in the form of seeds, straw, burr, twigs, etc. The vegetable matter will affect the yield of wool fibre after carding. The VM base is the weight of vegetable matter expressed as a percent of the total weight of material. As with woolbase, VM base relates to **content in the raw material**, and will therefore increase as the wool is processed and other components such as grease are removed. VM base may be taken into account in the yield calculation depending on the type of yield required.

#### Greasy wool

Greasy wool contains significant impurities. The diagram illustrates an average breakdown of the major components. With the exception of the water component, these all have to be removed in processing. Most of the wax, suint and dirt is removed during scouring. Vegetable matter (VM) is generally removed during carding, although with wools containing significant quantities, carbonising may be necessary.

#### Scoured wool

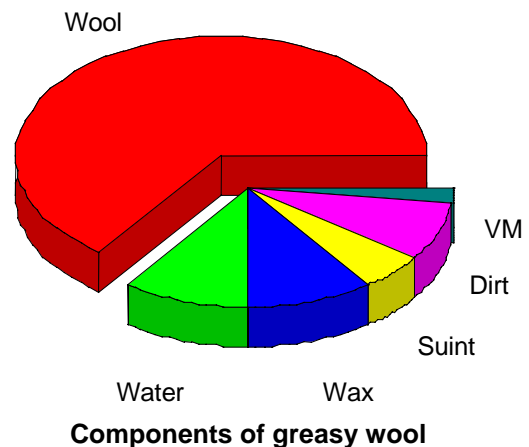
After scouring, the wool still contains water, and small quantities of wax and dirt. Depending on the type of wool, scours usually aim for 0.5 % or less of residual grease, and less than 1.5 % of mineral matter (dirt). Since the dirt has a major influence on colour, some scours now use a post scouring treatment to reduce this further.

#### Slip wool

Slip wool may contain additional residues from the slipping process, such as lime and skin pieces. Additionally, there is evidence to suggest that the slipping process may alter the way wool initially absorbs moisture. This may affect the measurement of woolbase.

#### Moisture

As is well known, wool has a great affinity for moisture. In general terms 1 tonne of wool at normal room conditions contains about 160 kg of water. However, the amount of water depends very much upon the atmospheric humidity - a 10% change in humidity can result in a 1% change in weight.



It is this dependence on humidity that has a significant impact on yield.

#### Yield

Yield is the amount of useful fibre that can be obtained from a known weight of wool. Clearly the yield depends on the form of the wool at the time of measurement, the moisture content, and the method of processing.

It is generally assumed that at the time of sampling raw wool, its moisture content is close to the standard equilibrium moisture content of about 14% (or a regain of 16% - regain is water content expressed as a percentage of the oven-dry weight, whereas moisture content is calculated as a percentage of the “wet” weight). This assumption could be in error if the wool was sampled in very dry or very wet conditions.

To allow for different methods of processing, IWTO has developed a number of calculations for estimating yield. In each case assumptions are made about the average levels of residuals after processing.

Some commonly-quoted yields include:

**IWTO scouring yield at 16%** - calculated using woolbase and vegetable matter base plus 1.7% ethyl alcohol extractives, 0.57% ash, and a regain of 16%.

**IWTO Schlumberger dry combed** - calculated using woolbase, a processing allowance calculated from vegetable matter base, an assumed tear of 8:1, top and noil regains of 18.25% and 16% respectively, and a total fatty matter content of 1%.

**IWTO carded sliver** - calculated on a similar principle to Schlum. Dry, but with allowances of 2.27% ash plus ethyl alcohol extractives, a total regain of 18.25%, and a different allowance for vegetable matter.

Additional yield values are calculated and shown on an IWTO core test certificate. They are all calculated using standard allowances which are detailed in the IWTO core test regulations.