

SGS Wool Testing Services

Info-bulletin

Probabilities of large differences between 2 test results on a lot of raw wool

Introduction

Occasionally a lot of wool is sampled and tested twice. This could be because of doubt concerning the original results (recore checktest, or retest), or simply the result of a purchaser checking a delivery. Whilst the IWTO core test regulations detail the maximum probable differences that should be encountered in this situation, these figures are based on a

fixed probability level of 95%. In other words, once in 20 occasions there is a finite probability that these maximum probable differences could be exceeded.

Sometimes the reverse situation applies and the question is asked as to what the probability is that two results could differ by more than a certain amount. This bulletin gives some guidance on that question. It should be noted, however, that these figures are not definitive - factors such as the number of bales in the lot (which governs the coring schedule), the type of core sampling (machine or manual), number of subsamples tested, and type and source of wool can all influence the statistics. Woolbase, and some other characteristics such as colour, can also be affected by storage time and conditions.

The tables are based on the assumption of a normal statistical distribution, and on both sets of sampling and testing fully complying with the IWTO Core Test Regulations and applicable Test Methods.

Woolbase (IWTO-19)

Probability level		Woolbase of lot (%) - 2 subsamples			
		45 - 50	50 - 55	55 - 60	60 - 65
95%	1 in 20	2.1	1.8	1.6	1.3
98%	1 in 50	2.5	2.2	1.8	1.5
99%	1 in 100	2.8	2.4	2.0	1.7
99.9%	1 in 1,000	3.6	3.1	2.6	2.1
99.99%	1 in 10,000	4.2	3.7	3.1	2.5
99.999%	1 in 100,000	5.3	4.6	3.9	3.2
99.9999%	1 in 1 million	5.8	5.0	4.2	3.5

Mean fibre diameter (Laserscan - IWTO-12)

Probability level		Mean diameter of lot (µm)				
		15	17.5	20	22.5	25
95%	1 in 20	0.3	0.4	0.5	0.6	0.7
98%	1 in 50	0.4	0.5	0.6	0.7	0.8
99%	1 in 100	0.4	0.5	0.7	0.8	0.9
99.9%	1 in 1,000	0.5	0.7	0.8	1.0	1.1
99.99%	1 in 10,000	0.6	0.8	1.0	1.2	1.4
99.999%	1 in 100,000	0.7	1.0	1.2	1.5	1.7
99.9999%	1 in 1 million	0.8	1.1	1.4	1.6	1.9

An example of the use of these tables is as follows: if the difference between the independent sampling and test results on a single lot of raw wool is 1.0 microns, and the original result on that wool was 17.5 microns, one could estimate that the probability of the two results being equally valid is 1 in 100,000.