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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Test method for the yield of greasy wool and raw cashmere - Oil
pressure method**

毛绒洗净率试验方法 油压法

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1 Scope

The document describes a test method for determining the yield of wool and cashmere fibres with an oil press.

It applies to the testing of the yield of greasy wool and raw cashmere.

3 Terms and definitions

Greasy wool: sheep wool that has not been scoured, degreased with solvent, carbonised or treated by any other method.

Raw cashmere: unprocessed wool and down fibre taken from a goat with a double fleece, made up mainly of the lower down with a small amount of natural impurity, the source being given as GB 18267-2013, 3.2.

Yield: the conventional mass of a greasy wool or raw cashmere specimen after scouring, as a percentage of its mass before scouring.

Hygrometric state sample: the specimen taken out of the clean water after scouring to the last bowl of the scouring process, on which no external force has been applied.

Wet press weight: the mass of the hygrometric state specimen after it has borne the prescribed pressure for the prescribed time in a container of given volume.

Moisture content index: the ratio of the difference between the wet press weight and the oven-dry weight to the wet press weight.

4 Principle

A specimen of greasy wool or raw cashmere of given mass is scoured to give a hygrometric state specimen, put in a container of given volume and pressed at the prescribed pressure. Because the moisture content index of sheep wool or raw cashmere fibre is constant, the wet press weight of the specimen is proportional to the yield, and the yield is calculated from the linear relationship between wet press weight and yield.

5 Instruments and appliances

Oil press: measuring range not less than 25 MPa.

Opening and cleaning machine: suited to loose fibre such as greasy wool and raw cashmere, able to open, remove dirt and impurities and blend, with a pin roller speed of (2 000 $\pm$ 100) r/min and an air speed at the fan outlet of (12 $\pm$ 1) m/s.

Scouring equipment: scouring bowls, automatic scouring equipment or other scouring equipment, of an effective capacity above 10 L or able to meet the testing requirement, fitted with a double copper mesh false bottom of 100 mesh per 25 mm and a suitable drainage system.

Sieve: 100 mesh, aperture 0.15 mm.

Balances: range not less than 200 g with a scale interval of 0.01 g, and range not less than 2 000 g with a scale interval of 0.1 g.

Core sampler: a powered or manual core sampler with a cutter head of 25 mm inside diameter, the manual one taking in the sampling tube and a rawhide mallet.

6 Drawing of the lot sample

The lot sample is drawn by the method of Annex A.

7 Preparation of the test specimen

7.1 The laboratory sample drawn from the lot is weighed on the balance before opening and cleaning, to the nearest 0.1 g, and that mass is recorded. The sample is then opened once or twice on the opening and cleaning machine, or pulled apart by hand, dirt, sand and impurities being shaken out before and during opening and foreign fibres picked out. The impurities shaken out are collected and sieved, any sheep wool or raw cashmere left in them is picked out and added back to the opened sample. The opened sample is blended evenly and weighed again on the balance to the nearest 0.1 g.

7.1.3 A coefficient K is calculated from those two masses; the symbols named are the coefficient, rounded to four decimal places, the mass of the laboratory sample after opening, cleaning and blending in grams, and the mass of the laboratory sample before opening and cleaning in grams.

7.2 The mass of each yield specimen is 200 g multiplied by the coefficient, to the nearest 0.01 g, for homogeneous fine wool, and 150 g multiplied by the coefficient for homogeneous half-fine wool, heterogeneous wool and raw cashmere.

7.3 Five test specimens are drawn at random from the opened, cleaned and blended laboratory sample; three are used for the yield test and two are kept in reserve. The yield specimens are weighed as in 7.2.

8 Test procedure

8.1 Each yield specimen of sheep wool is scoured in turn in the scouring equipment. During scouring the grease, dirt and sand are removed from the wool and any remaining foreign fibres and other non-wool impurities are picked out; vegetable matter in the wool need not be picked out. After the specimen has been scoured through to the last bowl of the process it is taken from the clean water to give the hygrometric state specimen. Any sheep wool and vegetable matter left on the scouring equipment and on the sieve is picked up and added to the hygrometric state specimen. Scoured sheep wool shall be clean and loose in structure.

8.2 Each yield specimen of raw cashmere is scoured in turn in the same way, the grease, dirt and sand being removed and remaining foreign fibres, grass and other non-cashmere impurities picked out. After scouring through to the last bowl the specimen is taken from the clean water to give the hygrometric state specimen, and any cashmere left on the scouring equipment and on the sieve is picked up and added to it. Scoured raw cashmere shall be clean and loose in structure.

8.3 The scouring conditions for sheep wool and raw cashmere follow Annex B.

8.4 The whole hygrometric state specimen is put into the pressing cylinder of the oil press and the cover is closed at once. The cylinder is set into the slot of the press and pressure is applied so that the pump works. The gauge reading is watched from 0 MPa up to 17.65 MPa, held steady at 17.65 MPa for 1 min, and the pressure is then stopped. The cylinder wall is wiped dry, the cylinder is taken off and the specimen removed.

8.5 When the pressing is over, the whole specimen is taken out of the cylinder and weighed at once on the balance to the nearest 0.01 g; that mass is the wet press weight of the specimen.

9 Calculation of results

9.1 The yield of homogeneous fine wool is calculated from an equation whose symbols are

the yield in percent; the wet press weight of the specimen in grams; the moisture content index, taken as 0.29 for homogeneous fine wool; and the conventional moisture regain of the scoured specimen in percent, taken as 16.0 for scoured homogeneous fine wool according to GB/T 9994. The denominator of the expression is the 200 g specimen mass.

9.2 The yield of homogeneous half-fine wool, heterogeneous wool and raw cashmere is calculated from an equation with the same symbols, the moisture content index being 0.29 for raw cashmere and 0.30 for homogeneous half-fine wool and heterogeneous wool, and the conventional moisture regain being 16.0 for scoured homogeneous half-fine wool and 15.0 for scoured heterogeneous wool according to GB/T 9994 and 15.0 for scoured cashmere according to GB 18267. The denominator of the expression is the 150 g specimen mass.

9.3 The permitted range of the yield test results follows Annex C. Where the range falls within the permitted limit, the mean yield of the three specimens is taken as the result. Where it goes beyond the permitted limit, the two reserve specimens are tested as well and the mean yield of the five specimens is taken as the final result. The result is rounded to one decimal place according to GB/T 8170.

10 Test report

The test report shall hold at least the description of the sample; the number of the document; the yield test result; the name and model of the instrument; the tester and the test date; and the details of any departure from the document.

A Annex A (normative) Method for drawing the lot sample

A.1.1.1 For sheep wool in soft bales the number of bales sampled follows Table A.1, which pairs the total number of bales in the lot with the number of bales to be sampled: 33 to 50 bales, sample 33; 51 to 75, sample 37; 76 to 100, sample 39; 101 to 150, sample 42; 151 to 200, sample 43; 201 to 300, sample 46; 301 to 400, sample 48; 401 to 500, sample 50. Where the lot is of 32 bales or fewer, every bale is sampled and the number of sampling points per bale may be increased until the mass of the lot sample drawn meets the requirement. Where the lot is above 500 bales, one further bale is sampled for every 50 bales added, a part lot of fewer than 50 bales counting as 50.

A.1.1.2 Soft bales are sampled by opening the bale, drawing from two different places in the bale at a depth of 150 mm or more below the wrapping. One place is at the centre of the bale and the other at least 500 mm away from the centre. The sample drawn shall be put at once into a sealed plastic bag and weighed within 4 h to the nearest 0.1 g. The total mass of the sample drawn from soft bales shall be not less than 2 kg.

A.1.2 Hard bales are sampled bale by bale by coring. The coring direction shall be parallel to the direction of baling or perpendicular to the direction in which the fleeces are stacked,