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Replacing GB 1103-1999

Cotton — Upland Cotton

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**Standardization Administration of the People's Republic of
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Foreword

With the **exception of Subsections 4.9.2, 4.9.3 and 4.9.4 of this Standard, which are recommendatory clauses, all the other clauses are mandatory.**

Compared with GB 1103-1999, the most significant amendments to this Standard are as follows:

- the definitions of “cotton modal grade, net weight, conditioned weight, dangerous foreign matters” have been revised.
- more detailed definitions have been given for “foreign fibre, the content of foreign fibre in a baled cotton, cotton colour grade.”
- the sampling and inspection of baled cotton have been clearly divided into “batch-by-batch inspection” and “bale-by-bale inspection.”
- it has been clearly determined that cotton length should be inspected using a hand-pulling measurement or a high-volume rapid cotton fibre testing instrument (referred to as “HVI,” hereinafter).

HVI inspection adopts the upper half mean length. The Hand-Pulling Real Cotton Length Standard is based on the resulting fixed value of the upper half mean length. When adopting a hand-pulling measurement for the inspection, the Hand-Pulling Real Cotton Length Standard should always be adopted for calibration.

- the 3 grades of Micronaire values have been revised to 3 grades in 5 levels.
- the content of foreign fibre in a baled cotton of different levels has been increased. The sampling requirements, inspection methods and quality indication for the inspection of the content of foreign fibre in a baled cotton are clearly determined for the cotton processing units. In a cotton transaction in batches, quantitative or qualitative inspection of foreign fibre in a baled cotton is requested. Negotiations can be carried out with the related transaction party to determine the concrete sampling methods and the number of samples.
- it has been clearly determined that HVI inspection can be adopted for batch-by-batch inspection of baled cotton.
- the contents of length uniformity and fibre strength of different levels have been increased.
- it has been clearly determined that all fibre strengths stated in the Standard should adopt the distance of 3.2mm, and High Volume Instrument Calibration Criteria (HVICC) be taken as the calibration criteria.
- the sampling methods, number of samples and inspection order for batch-by-batch inspection of baled cotton have been increased.

- it has been clearly determined that after the baled cotton, which is inspected bale-by-bale, has been processed, that the bales should be stacked in the correct order. After the inspection results are obtained, the cotton processing unit can sell them in batches according to the inspection results and the needs of the selling party.
- the stipulation, “cotton below grade 7 is out-graded cotton” has been deleted.
- the restriction, “Grade 5 cotton longer than 27 mm is counted as 27 mm” has been deleted.
- the length grade of “32 mm” has been increased.
- the maximum limit of regain percentage in cotton has been amended from 10.5% to 10.0%.
- it has been clearly determined that when the lint cotton is baled, its regain percentage can be tested using an online automatic regain percentage testing device.
- it has been clearly determined that for the “batch-by-batch inspection” of foreign matter in cotton, the bale of cotton being processed from the same large stack of seed cotton on the same day and on the same production line should be counted as one unit for the impurity percentage inspection, and the inspection result should be regarded as the impurity percentage of each bale of cotton in this unit.

This Standard was proposed by the General Administration of Quality Supervision, Inspection and Quarantine, The People’s Republic of China.

This Standard is issued by the China Fibre Inspection Bureau.

The principal bodies responsible for drafting this Standard are as follows: the China Fibre Inspection Bureau, the Plantation Industry Management Division under the authority of the Ministry of Agriculture, the China Cotton Association, and the China Cotton Textile Association.

The main drafters of this Standard are Xu Shuibo, Yang Zhaoliang, He Yongzheng, Yu Xiaoxin, Xiong Zongwei, Wang Dantao, Liu Xiaofeng, Kang Yuguo, Cheng Longdi, Tang Shurong and Jiang Feng.

The old versions of this Standard are: GB 1103-1972 and GB 1103-1999.

Introduction

In September 2003, the State Council approved the “Reform Plan for the Cotton Quality Control Inspection System” (referred to as the “Plan,” hereinafter). In December of the same year, the National Development and Reform Commission, together with the General Administration of Quality Supervision, the Inspection and Quarantine Body, the Ministry of Finance, the Federation of Supply and Marketing Cooperatives, and the Agricultural Development Bank co-issued the “Notification of the Issue and Distribution of Reform Plan for the Cotton Quality Control Inspection System” (Ref. Fagai Jingmao [2003] No. 2225).

It was determined in the “Plan” approved by the State Council that the professional fibre inspection organization would implement an instrumental notarized inspection of each large bale of cotton produced by cotton processing enterprises. It was also requested to accurately study and formulate the chart for the Chinese cotton colour grades, and also formulate the Standard for the Instrumental Inspection of Cotton Quality. The said chart and standard would be used on a trial period and verified in the experimental units at the beginning of the cotton year 2004, and would be improved, promulgated and implemented on the bases of the trial period and extensive expansion of verification tests.

Based on the above, the China Fibre Inspection Bureau took the lead in the establishment of a drafting team for the National Standard of Instrumental Inspection, which then formulated the “Standard of Instrumental Inspection of Cotton Quality (Draft).” And in the cotton year 2004, verification was carried out in the experimental units subject to the Cotton Quality Control Inspection System reforms. Focusing on the problems and the related situations exposed in the verification process, the related authorities co-formulated and promulgated “Technical Requirements for Instrumental Notarized Inspection of Cotton Quality (Trial)” (referred to as “Technical Requirements of Instrumental Inspection,” hereinafter). As from the cotton year 2005, the Requirements were on trial enforcement as part of the Cotton Quality Control Inspection System reforms, and the scope of verification and the coverage have been expanded.

Therefore, the current circulation of cotton complies with two cotton quality standards. One standard is GB 1103-1999 “Cotton — Upland Cotton” (referred to as “GB1103,” hereinafter), the scope of which covers the small bales of cotton processed and produced according to the requirements of the current system. The other standard is “Technical Requirements for Instrumental Notarized Inspection of Cotton Quality (Trial)”, the scope of which covers the large bales of cotton processed and

produced according to the requirements of the new system. In relative terms there are two inspection methods for the quality of the baled cotton after processing. One inspection method is based on the standard GB1103 that mainly relies on a sensory method for testing, namely visual and hand-pulling estimations, which are supplemented by conventional instruments. The other inspection method is based on the Technical Requirements of the Instrumental Inspection, which adopts the inspection method of using the high-volume rapid cotton testing instrument (simply referred to as “HVI”), which involves inspecting each bale of cotton and issuing a certificate for each bale.

The simultaneous implementation of the existing standard GB1103 and the Technical Requirements of Instrumental Inspection has exposed the lack of unity and the existence of discontinuity problems between these two quality evaluation systems. The problems are mainly presented in different aspects, e.g. the HVI-inspected cotton colour grade is inconsistent with the sensory-inspected cotton colour grade; the HVI-inspected upper-half mean length is inconsistent with the sensory-inspected hand-pulling length, etc.. Therefore, certain difficulties are brought to the transactions in the cotton market and the pricing in cotton trade. In view of this, the authorities concerned asked for a revision of the cotton standard GB1103 as soon as possible. They requested that the revised standard should be applicable to both sensory inspection and instrumental inspection. It should meet the current real conditions in China, and should also reflect the reform direction of the cotton standard that takes instrumental inspection as the main basis. The revised cotton standard shall be the only standard applicable to the circulation of cotton, to different links of cotton circulation, and to different bale types that meet the requirements. It is in this light that the Standard has been revised.

Cotton — Upland Cotton

1 Scope

This Standard specifies the quality requirements, classification criteria, inspection methods, inspection rules, certificates, packaging and labels, and the requirements for storage and transportation of upland cotton.

This Standard is applies to upland cotton being produced, purchased, processed, sold, stored and utilized.

2 Normative References

The clauses contained in the following references, which are cited in this Standard, shall become the clauses of this Standard. All subsequent amendments to (excluding corrected contents) or revised versions of the dated references shall not apply to the Standard. However, any parties that reach an agreement in accordance with this Standard shall be encouraged to study the possibility of adopting the latest version of the following references. Where the references are not dated, their latest versions are applicable to this Standard.

GB/T 6102.1 Test method for regain percentage in raw cotton — Oven drying method

GB/T 6102.2 Test method for regain percentage in raw cotton — Electrical regain testing

GB/T 6498 Test method for “Micronaire value” of cotton fibre

GB/T 6499 Test method for impurity percentage in raw cotton

GB/T 8170 Rounding up/down rules for numerical values

GB/T 13786 Artificial daylight illumination for cotton classing rooms

GB/T 19617 Test method for length of cotton — Hand-pulling measurement

GB/T 20392 Test method for physical properties of cotton fibres using High Volume Instruments

3 Terms and Definitions

The following terms and definitions are applicable to this Standard.

3.1 cotton modal grade

During the batch-by-batch inspection, above 80% are of this grade, and the rest are only of the adjacent grades.

3.2 gross weight

The sum weight of cotton and its packaging.

3.3 net weight

The weight after deducting the weight of the packaging from the gross weight.

3.4 conventional weight

The weight of the standard impurity percentage converted from the net weight according to the actual impurity percentage in the cotton.

3.5 conditioned weight

The weight of the conventional regain percentage converted from the conventional weight according to the actual regain percentage in the cotton.

3.6 conventional lint percentage of seed cotton

The percentage of the conventional weight of lint cotton ginned from seed cotton in the corresponding seed cotton weight.

3.7 conditioned lint percentage of seed cotton

The percentage of the conditioned weight of lint cotton ginned from seed cotton in the corresponding seed cotton weight.

3.8 foreign fibre

The non-cotton fibre and non-original-colour cotton fibre mixed in cotton, such as chemical fibre, hair, silk, linen, plastic film, plastic string, dyed thread (string, cloth), etc.

3.9 the content of foreign fibre in a baled cotton

The content of foreign fibre in a baled cotton refers to the ratio of the weight of foreign fibre selected from a sample to the weight of the selected sample, expressed in gram/ton (g/t).

3.10 dangerous foreign matters

The hard foreign matters and soft foreign matters mixed in cotton, such as metals, brick gravels, foreign fibres, etc.

3.11 cotton colour grade

Colour grade determined according to the cotton colour features. This is the corresponding grade of cotton indicated on the Chart of Cotton Colour Grades according to the test values of the reflectance degree (Rd) and Hunter's +b of sample cotton.

4. Quality Requirements

4.1 Grading

According to the maturation, colour features and ginning quality, cotton is divided into 7 grades, from Grade 1 to Grade 7. Grade 3 is considered the standard

grade.

4.1.1 Gradating Conditions

Please refer to Table 1 for the details on gradating conditions.

Table 1 Gradating Conditions

Grade	Seed Cotton	Roller-Ginned Cotton			Saw-Ginned Cotton		
		Maturation	Colour features	Ginning quality	Maturation	Colour features	Preparation
Grade 1	Early-, medium-stage excellent white cotton, with fat and large cotton petals. The cotton has a small amount of fairly white cotton and light yellow tipped, yellow lined cotton petals. It has very few foreign matters.	Good	Clean white or milky white, with good silky lustre, slightly tinged.	Very few yellow roots and foreign matters.	Good	Clean white or milky white, with good silky lustre, slightly tinged.	Very few broken filaments, neps and foreign matters.
Grade 2	Early-, medium-stage good white cotton, with large cotton petals. The cotton has a small amount of rain-rusted cotton and individual half-stiff cotton petals. It has few foreign matters.	Normal	Clean white or milky white, with silky lustre, and a only small amount tinged.	Few yellow roots, foreign matters	Normal	Clean white or milky white, with silky lustre, and slightly tinged.	A few broken filaments, neps, foreign matters.
Grade 3	Early-, medium-stage fairly good white cotton, and final-stage good white cotton, with cotton petals in large and small sizes. The cotton has a small amount of	Fair	White or milky white, slight dim yellow in evidence, with little silky lustre, and a larger amount	Slightly more yellow roots, foreign matters	Fair	White or milky white, with little silky lustre, and a small amount tinged.	Fewer broken filaments, neps and foreign matters.

	rain-rusted cotton and individual half-stiff cotton petals. It has slightly more foreign matters.		tinged and yellow stained.				
Grade 4	Early-, medium-stage worse white cotton, and final-stage white cotton, with small cotton petals. The cotton has a small amount of stiff cotton petals or slightly frosted, light grey cotton. It has more foreign matters.	Slightly bad	White, being slightly grey or yellow, with a small amount of polluted cotton.	More yellow roots, foreign matters	Slightly bad	White and slightly in dim yellow, light-grey, yellow stained	Slightly more broken filaments, neps and foreign matters.
Grade 5	Final-stage worse white cotton and early-, medium-stage stiff petal cotton. It has many foreign matters.	Worse	Greyish white with dim yellow, with a larger amount of polluted cotton, and with terrible nap.	Many yellow roots, foreign matters	Worse	Greyish white in dim yellow, with polluted cotton and terrible nap.	More broken filaments, neps and foreign matters.
Grade 6	Different kinds of stiff petal cotton, and partly final-stage minor-white cotton. It has a lot of foreign matters.	Poor	Greyish yellow, slightly greyish white, with different kinds of polluted cotton and much terrible nap.	A lot of foreign matters	Poor	Greyish white in dim yellow, with more polluted cotton, terrible nap.	Many broken filaments, neps and foreign matters.
Grade 7	Different kinds of stiff petal cotton, polluted	Very poor	Greyish dark coloured,	A lot of foreign matters	Very poor	Greyish white, with much	Lots of broken filaments,

	cotton and partly rotten peach cotton. It has a lot of foreign matters.		with different kinds of polluted cotton and a lot of terrible nap.			polluted cotton, terrible nap.	neps and foreign matters.
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4.1.2 Referential Indices of Grading Conditions

Please refer to Table 2 for the details of referential indices of grading conditions.

Table 2 Referential Indices for Grading Conditions

Grade	Maturation Coefficient (\geq)	Fibre Strength cN/tex (\geq)	Preparation				
			Roller-Ginned Cotton		Saw-Ginned Cotton		
			Yellow Root Content % (\leq)	Outlet Seam Content % (\leq)	Defect Particles/100g (\leq)	Outlet Seam Content % (\leq)	Cotton Content of Sterile Seed %
Grade 1	1.6	30	0.3	0.4	1,000	0.4	20 ~ 30
Grade 2	1.5	28	0.3	0.4	1,200	0.4	20 ~ 30
Grade 3	1.4	28	0.5	0.6	1,500	0.6	20 ~ 30
Grade 4	1.2	26	0.5	0.6	2,000	0.6	20 ~ 30
Grade 5	1.0	26	0.5	0.6	3,000	0.6	20 ~ 30

Comments:

- The defect particles include 7 kinds: cracked seeds, sterile seeds, broken filaments, soft seed skin, rigid petals, fibred seed crumbs and neps.
- The preparation indices are also the quality requirements for lint cotton.
- The fibre strength is at the distance of 3.2 mm, and High Volume Instrument Calibration Criteria (HVICC) are taken as the calibration criteria.

4.1.3 The Real Cotton Grading Standard can be formulated based on the grading conditions and the referential indices for grading conditions. The grading conditions are based on the “four separations” of seed cotton (separated picking, separated sun drying, separated storage and separated selling).

4.1.4 Real Cotton Grading Standard

4.1.4.1 The Real Cotton Grading Standard is divided into a basic standard and an imitation standard.

4.1.4.2 Under normal ginning conditions, lint cotton ginned from seed cotton of

the same grade would produce the basic standard of roller-ginned cotton and saw-ginned cotton of the same grade.

Comments: Those meeting the requirements of the referential preparation indices in Table 2 are regarded as normal ginning conditions.

4.1.4.3 The basic standard is divided into a preserved copy, duplicated copy, and a calibrated copy. The preserved copy is a reference of the basic standard to be renewed every year; the duplicated copy is a reference of the imitated Real Cotton Grading Standard; and the calibrated copy is for the use of reparation and proofreading when imitating the circumstances of damage and alteration, etc. of the standard.

4.1.4.4 The imitation standard of roller-ginned cotton and saw-ginned cotton presents the imitation according to the degrees of grades stated in the duplicated copy of the basic standard.

4.1.4.5 The imitation standard of roller-ginned cotton and saw-ginned cotton is a reference for assessing the grade of cotton. All the standards for different grades of real cotton are the base line standards.

4.1.4.6 According to the degrees of grades stated in the duplicated copy of the basic standard, the cotton producers of different provinces, autonomous regions and municipalities make referential cotton samples of yellow cotton, grey cotton and shelled cotton. The highest grade cannot be higher than Grade 4.

4.1.4.7 The basic standard and the imitation standard should be renewed every year. The stability of the degree of each grade should be kept.

4.1.4.8 The validity period of the basic standard and the imitation standard is one year (from 1 Sep. of the year to 31 Aug. of the next year).

4.2 Length

4.2.1 For length, 1 mm is taken as a distance between grades. The grading is as follows:

- 25 mm, including 25.9 mm and below;
- 26 mm, including 26.0 ~ 26.9mm;
- 27 mm, including 27.0 ~ 27.9mm;
- 28 mm, including 28.0 ~ 28.9mm;
- 29 mm, including 29.0 ~ 29.9mm;
- 30 mm, including 30.0 ~ 30.9mm;
- 31 mm, including 31.0 ~ 31.9mm;
- 32 mm, including 32 mm and above.

4.2.2 Length Requirements

4.2.2.1 28 mm is regarded as the standard grade length.

4.2.2.2 The lengths of Grade 6 and Grade 7 cotton are both counted and recorded as

25.0 mm.

4.2.3 Hand-Pulling Real Cotton Length Standard

Hand-Pulling Real Cotton Length Standard is based on the resulting fixed value of the upper-half mean length of the HVI-tested cotton.

4.3 Micronaire Values

4.3.1 Micronaire values are divided into three grades: Grades A, B and C. Grade B is divided into two levels: Levels B1 and B2. Grade C is divided into two levels: Levels C1 and C2. Grade B is the standard grade for the Micronaire value.

4.3.2 Please refer to Table 3 for the details of Micronaire values of different grades and levels.

Table 3 Table of Micronaire Values of Different Grades and Levels

Grading	Levels	Range
Grade A	A	3.7 ~ 4.2
Grade B	B1	3.5 ~ 3.6
	B2	4.3 ~ 4.9
Grade C	C1	3.4 and below
	C2	5.0 and above

4.4 Regain Percentage

The conditioned regain percentage of cotton is 8.5%. The highest limit of regain percentage of cotton is 10.0%.

4.5 Impurity Percentage

The standard impurity percentage of roller-ginned cotton is 3.0%, and of saw-ginned cotton is 2.5%.

4.6 Fibre Strength

Please refer to Table 4 for the details of the fibre strength of different levels.

Table 4 Table of fibre strength of different levels

Range of Fibre strength cN/tex	Levels
< 24.0	Very poor
24.0 ~ 25.9	Poor
26.0 ~ 28.9	Medium
29.0 ~ 30.9	Strong
≥ 31.0	Very strong

Remarks: The fibre strength is at the distance of 3.2 mm, and HVICC are taken as the calibration criteria.

4.7 Length Uniformity

Please refer to Table 5 for the details of length uniformity of different levels.

Table 5 Table of Length Uniformity of Different Levels

Range of Length Uniformity %	Levels
< 77.0	Very low
77.0 ~ 79.9	Low
80.0 ~ 82.9	Medium
83.0 ~ 85.9	High
≥ 86.0	Very high

4.8 Dangerous Foreign Matters

4.8.1 Requirements of cotton under picking, selling, purchase and processing

4.8.1.1 Dangerous foreign matters are strictly prohibited from being mixed into the cotton under picking, selling, purchase and processing.

4.8.1.2 For the cotton under picking and selling, non-cotton sacks that can easily produce foreign fibres are prohibited from being used. Coloured or non-cotton thread or strings are prohibited from tying up the sacks.

4.8.1.3 For the cotton under purchase and processing, if metals, brick gravels, foreign fibres and other dangerous foreign matters are found mixed in the cotton, they must be completely removed; otherwise, the purchase and processing of cotton are prohibited.

4.8.2 Contents of foreign fibres in baled cotton of different levels and the corresponding codes.

Please refer to Table 6 for the details of the contents of foreign fibres in baled cotton of different levels and the corresponding codes.

Table 6 Table of Contents of Foreign Fibres in Baled Cotton of Different Levels and the Corresponding Codes

Range of Contents	< 0.10	0.10 ~ 0.39	0.40 ~ 0.80	> 0.80
Degree	Nil	Low	Medium	High
Codes	N	L	M	H

4.9 Colour Features

4.9.1 Reflectance Degree and Hunter's +b

Reflectance degree and Hunter's +b are applied to reflect the cotton colour

features.

4.9.2 Cotton Colour Grade

According to the colour features, cotton is divided into 3 types (white cotton, tinged cotton and yellow stained cotton) and 13 cotton colour grades.

Cotton colour grade is expressed by a two-digit number. The first digit refers to the grade, and the second digit refers to the cotton type.

White cotton is divided into six cotton colour grades, and their codes are 11, 21, 31, 41, 51 and 61;

Tinged cotton is divided into four cotton colour grades, and their codes are 12, 22, 32, and 42;

Yellow stained cotton is divided into three cotton colour grades, and their codes are 13, 23 and 33;

31 is the cotton colour grade of the standard grade.

4.9.3 Chart of Cotton Colour Grades

The distribution and range of cotton colour grades are indicated in the chart of cotton colour grades in Figure 1.

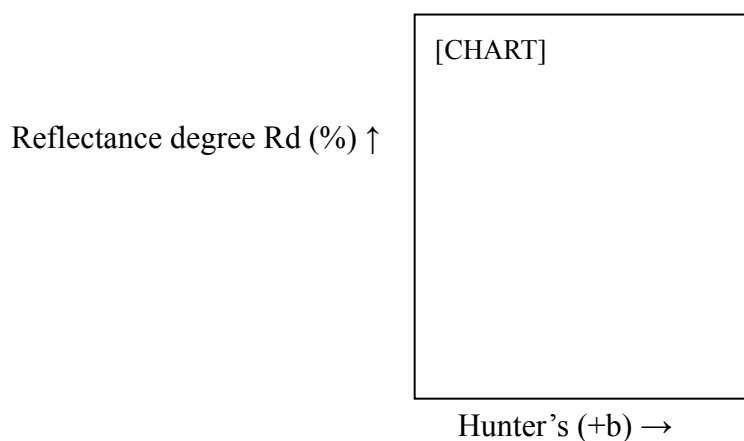


Figure 1 Chart of Cotton Colour Grades

4.9.4 Determination of cotton Colour Grades

For the test results of the reflectance degree and Hunter's +b of the cotton sample surface, the corresponding cotton colour grade shown on the chart of cotton colour grades is just the colour grade of the cotton sample.

5 Sampling

5.1 Principles of Sampling

5.1.1 The samples should possess representativeness.

5.1.2 The sampling is divided into seed cotton sampling and baled cotton sampling.

5.2 Seed cotton sampling

5.2.1 The sample for every 500 kg of seed cotton (for cotton of less than 500 kg, it is counted as 500 kg) under purchase shall not be less than 1.5 kg.

5.2.2 When taking samples from large stacks of seed cotton, a stack shall be counted as a unit. As for the sampling weight, 10 kg should be taken as a sample for a large stack of 10t and below; 20 kg should be taken as a sample for a large stack of above 10t and up to 50t; and 25 kg should be taken as a sample for a large stack of above 50t.

5.2.3 The sampling of seed cotton under purchase adopts a multiple-spot random sampling method.

5.2.4 The sampling of large stacks of seed cotton adopts a different-direction, multiple-spot, and multiple-layer random sampling method. The sampling should not be carried out at a depth lower than 30 cm.

5.3 Baled Cotton Sampling

Baled cotton sampling is divided into batch-by-batch inspection and sampling, and bale-by-bale inspection and sampling.

5.3.1 Batch-by-batch Inspection and Sampling

5.3.1.1 Baled cotton sampling: 1 bale should be sampled from every 10 bales (if the quantity is less than 10 bales, it is counted as 10 bales). After each sample bale of cotton is unsealed at the top opening and the cotton on the top layer is removed, a cotton sample of about 30g in a complete piece is taken. A batch sample is then formed. After the batch sample is taken, a regain percentage inspection sample of about 100g is taken from 10 ~ 15 cm from the outer layer of the cotton bale, and is placed in a sealed sample tube. A batch sample for regain percentage inspection is then formed. Sampling at the top layer of a bale is strictly prohibited.

5.3.1.2 Sampling on cotton chute: The cotton processing unit can take samples from the cotton chute. In the baling process of a whole batch of cotton, sampling is carried out once every 10 bales (if the quantity is less than 10 bales, it is counted as 10 bales). In each random sampling process, a sample of about 300g is taken for inspection of its grade, length, Micronaire value and impurity percentage, a sample of about 100g is taken for inspection of its regain percentage, and about 2 kg is taken as a sample. All the samples are combined to form a batch sample for foreign fibre content inspection of the batch of cotton.

5.3.2 Bale-by-bale Inspection and Sampling

5.3.2.1 Bale-by-bale inspection and sampling only applies to the cotton bale at the weight of (227 ± 10) kg.

5.3.2.2 Use the dedicated sampling device to cut out a sample at the length of

260mm, width of 105 mm or 124mm, and weight of no less than 125g, respectively from the central part of the two lateral sides of each cotton bale.

5.3.2.3 During the sampling, each cut sample is evenly divided into two halves layer by layer. The half corresponding to the outer side of the cotton bale in one of the two cut samples and the half corresponding to the inner side of the cotton bale in the other cut sample are combined to form a sample for inspection use. The remaining two halves are combined to form a back-up sample. The original cut shape and size of the cotton sample should remain unchanged. This means that the sample should be kept rectangular and in a neat form.

5.3.2.4 The sample for inspection use is for the inspection of grade and impurity content, as well as for the inspection of length, length uniformity, fibre strength, Micronaire value, reflectance degree, Hunter's +b and cotton colour grade.

5.3.2.5 Foreign fibre sampling. When the cotton processing unit is undergoing processing of cotton bales out of the same large stack of seed cotton on the same day and on the same production line, about 2 kg are randomly sampled from every 10 bales on the cotton chute. All the samples are combined to form a batch sample for foreign fibre content inspection of the corresponding cotton bale.

5.3.3 In a cotton transaction in batches, quantitative or qualitative inspection of foreign fibre in a baled cotton is requested to be carried out. Negotiations can be carried out with the related transaction party to determine the concrete sampling methods and the number of samples.

6 Inspection Methods

6.1 Quality Inspection

6.1.1 Grade Inspection

6.1.1.1 Grade inspection is determined by both the Real Cotton Grading Standard and the grading conditions.

6.1.1.2 Grade inspection should be performed in a cotton grading room. The grading room should meet the GB/T 13786 standard or receive sunlight from a north-facing window.

6.1.1.3 Sample-and-sample grade inspection: During the inspection, hold the cotton sample, press it flat, and hold it tight, making the density of the cotton sample close to the density specified in the Real Cotton Grading Standard. The cotton sample is placed by the side of the Real Cotton Grading Standard to cross-check and determine its grade. The inspection results should be recorded sample by sample.

6.1.1.4 During batch-by-batch inspection, the percentage of each grade in a batch sample should be calculated (the calculated results should be rounded to one decimal

place). If there exists a cotton modal grade, the cotton modal grade should be determined. A certificate is issued based on the inspection results of the percentage of the cotton modal grade and the percentage of different adjacent grades. If there exists no cotton modal grade, the certificate is issued based on the percentage of each grade.

6.1.1.5 During bale-by-bale inspection, grade inspection results should be issued for each bale.

6.1.2 Length Inspection

6.1.2.1 The length inspection of cotton is divided into hand-pulling measurement inspection and HVI inspection, but taking HVI inspection as the criterion.

6.1.2.2 The Hand-Pulling Real Cotton Length Standard is a reference for the calibration of the hand-pulling measured length. When adopting hand-pulling measurement for inspection, the Hand-Pulling Real Cotton Length Standard should always be adopted for calibration.

6.1.2.3 During batch-by-batch inspection, length inspection should adopt hand-pulling measurement inspection or HVI sample-by-sample inspection, which are implemented according to GB/T 19617 or GB/T 20392 respectively. Calculate the arithmetic mean length of each sample in a batch sample as well as the percentage of each length grade. The corresponding length grade of the mean length is just the length grade of this batch of cotton.

6.1.2.4 During bale-by-bale inspection, length inspection should adopt HVI inspection, and should be implemented according to GB/T 20392. The inspection results of the length and length grade should be given to each bale.

6.1.2.5 The length inspection results should be rounded to one decimal place.

6.1.3 Micronaire Value Inspection

6.1.3.1 During batch-by-batch inspection, Micronaire value inspection is carried out according to GB/T 6498 or GB/T 20392. When the inspection is carried out according to GB/T 6498, 30% of the random samples are taken as the test sample of the Micronaire value, and the Micronaire value should be tested sample by sample. When the inspection is carried out according to GB/T 20392, the Micronaire value should be tested sample by sample. The Micronaire grade and level are determined based on the Micronaire value of each test sample. Calculate the percentage of each Micronaire grade in a batch sample. The Micronaire grade of the greatest percentage is regarded as the modal Micronaire grade for this batch of cotton. Calculate the percentage of each level and the Micronaire mean of each level in a batch sample. Certificates are issued according to the inspection results of the modal Micronaire grade, the percentage of each grade and each level, and the Micronaire mean of each level.

6.1.3.2 During bale-by-bale inspection, the Micronaire value inspection is carried out by HVI and according to GB/T 20392. The inspection results of the Micronaire value as well as the corresponding Micronaire grade and level should be given to each bale.

6.1.3.3 The inspection results of the Micronaire value should be rounded to one decimal place.

6.1.4 Foreign Fibre Content Inspection

6.1.4.1 Foreign Fibre content inspection is only applicable to baled cotton. Manual picking should be adopted.

6.1.4.2 The cotton processing unit takes a batch sample for foreign fibre content inspection from the cotton chute. The acquired result is regarded as the inspection result of foreign fibre content of the corresponding cotton bale in this batch sample.

6.1.4.3 The inspection result of foreign fibre content should be rounded to one decimal place.

6.1.5 Fibre Strength Inspection

6.1.5.1 Fibre strength inspection is carried out according to GB/T 20392.

6.1.5.2 During batch-by-batch inspection, the percentage of each level and the mean of each level in a batch sample are calculated. A certificate is issued based on the inspection results of the percentage of each level and the mean of each level.

6.1.5.3 During bale-by-bale inspection, the inspection results of fibre strength and level should be given to each bale.

6.1.5.4 The inspection results of fibre strength should be rounded to one decimal place.

6.1.6 Length Uniformity Inspection

6.1.6.1 Length uniformity inspection is carried out according to GB/T 20392.

6.1.6.2 During batch-by-batch inspection, the percentage of each level and the mean of each level in a batch sample are calculated. A certificate is issued based on the inspection results of the percentage of each level and the mean of each level.

6.1.6.3 During bale-by-bale inspection, the inspection results of length uniformity and level should be given to each bale.

6.1.6.4 The inspection results of length uniformity should be rounded to one decimal place.

6.1.7 Inspection of Reflectance Rate, Hunter's +b and Cotton colour Grade

6.1.7.1 Inspection of reflectance rate, Hunter's +b and cotton colour grade is only applicable to bale-by-bale inspection, and should be carried out according to GB/T 20392. Inspection results should be given to each sample.

6.1.7.2 The inspection results of reflectance rate and Hunter's +b should be rounded to one decimal place.

6.2 Weight Inspection

6.2.1 Impurity Percentage Inspection

6.2.1.1 For the cotton under purchase, mechanical inspection or estimated inspection can be carried out. The estimated result should be compared with the inspection result obtained according to GB/T 6499. Should there be any dispute over an estimated result, the inspection result obtained according to GB/T 6499 is taken as the criterion.

6.2.1.2 During batch-by-batch inspection, the inspection of the content of foreign fibre in a baled cotton is carried out according to GB/T 6499.

6.2.1.3 During bale-by-bale inspection, the cotton bale under processing out of the same large stack of seed cotton on the same day and on the same production line is taken as one unit for impurity percentage inspection, and the inspection result is regarded as the impurity percentage of each bale of cotton in this unit. Impurity percentage inspection is carried out according to GB/T 6499.

6.2.1.4 The inspection results of impurity percentage should be rounded to one decimal place.

6.2.2 Regain Percentage Inspection

6.2.2.1 After a batch sample for regain percentage inspection is taken, it should be inspected immediately or sealed for later inspection. When sealed for later inspection, the said inspection must be completed within 24 hours. Regain percentage inspection can be carried out according to GB/T 6102.1 or GB/T 6102.2, but must take the oven drying method as the criterion.

6.2.2.2 When using the online automatic regain percentage testing device for inspection of the baled cotton, the device determines the regain percentage of each bale of cotton, and the oven drying method is taken as the criterion.

6.2.2.3 The inspection results of regain percentage should be rounded to two decimal places.

6.2.3 Conditioned Weight Inspection of Lint Cotton Converted from Seed Cotton.

6.2.3.1 Each test sample weighs 1 kg. The seed cotton test sample is to be processed by ginning trial rolling mill. It is requested that there is no cracked seed and no oil stained cotton, and the ginning quality should meet the requirements of the referential indices of ginning quality specified in Table 2. Weigh the ginned lint cotton, and the weight should be as accurate as 1g.

6.2.3.2 Calculate the conventional lint percentage of seed cotton according to equations (1) and (2), and round the result to be 0.1%:

$$G_n = G \times \frac{100 - Z}{100 - Z_0} \dots\dots\dots (1)$$

$$L_n = \frac{G_n}{G_0} \times 100 \dots\dots\dots (2)$$

In the equations:

- G_n — conventional weight of lint cotton ginned from seed cotton test sample, g;
- G — weight of lint cotton ginned from seed cotton test sample, g;
- Z — actual impurity percentage of ginned lint cotton, %;
- Z₀ — standard impurity percentage of lint cotton, %;
- L₀ — conventional lint percentage of seed cotton, %;
- G₀ — weight of seed cotton test sample, g.

6.2.3.3 When there is more than one test sample, the arithmetic mean of the conventional lint percentage of each test sample is taken as the mean conventional lint percentage of seed cotton. The calculated result is rounded to be 0.1%.

6.2.3.4 Calculate the conditioned lint percentage of seed cotton according to equation (3), and round the result to be 0.1%:

$$L_0 = \frac{G}{G_0} \times \frac{(100 - Z) \times (100 + R_0)}{(100 - Z_0) \times (100 + R)} \times 100 \dots\dots\dots (3)$$

In the equation:

- L₀ — conditioned lint percentage of seed cotton, %;
- R₀ — conditioned regain percentage (8.5) of cotton, %;
- R — actual regain percentage of ginned lint cotton, %

6.2.3.5 When there is more than one test sample, the arithmetic mean of the conditioned lint percentage of seed cotton of each test sample is taken as the mean conditioned lint percentage of seed cotton. The calculated result is rounded to be 0.1%.

6.2.3.6 Calculate the conditioned weight of lint cotton converted from seed cotton according to equation (4), and round the result to 0.1 kg:

$$W_L = L \times W_0 \dots\dots\dots (4)$$

In the equation:

- L₀ — conditioned weight of lint cotton converted from seed cotton, kg;
- W₀ — weight of seed cotton, kg;
- L — corresponding conditioned lint percentage of seed cotton, %. This means that it is L₀ when there is one test sample, and it is the mean conditioned lint percentage of each test sample when there is more than one test sample.

6.2.4 Conditioned Weight Inspection of Baled Cotton.

6.2.4.1 The baled cotton being batch-by-batch inspected is to be weighed and indicated with gross weight by the cotton processing unit bale by bale. The baled cotton being bale-by-bale inspected is to be automatically weighed and indicated with the gross weight by the cotton processing unit bale by bale. After delivery from the factory, a batch is taken as the unit for the conditioned weight inspection. The accuracy of the weighing apparatus for weighing the gross weight should not be lower than 1%. Try to make it close to the maximum range of the weighing apparatus when weighing.

6.2.4.2 Depending on the size of the batch volume, 2~5 representative cotton bales are taken out from a batch. Unseal the bale and weigh the packaging. Calculate the mean weight of the packaging of different cotton bales, and round the weight to be 0.01 kg.

6.2.4.3 Calculate the net weight of each batch of cotton according to equation (5), and round the weight to be 0.001t:

$$W_2 = (W_1 - N \times M) / 1000 \dots\dots\dots(5)$$

In the equation:

- W₂ — net weight of a batch of cotton, t;
- W₀ — gross weight of a batch of cotton, kg;
- N — number of cotton bales in a batch of cotton;
- M — mean weight of the packaging for each cotton bale, kg.

6.2.4.4 Calculate the conventional weight of each batch of cotton according to equation (6), and round the weight to 0.001t:

$$W_3 = W_2 \times \frac{100 - Z}{100 - Z_0} \dots\dots\dots(6)$$

In the equation:

- W₃ — conditioned weight of a batch of cotton, t;
- Z — mean impurity percentage of a batch of cotton, %.

6.2.4.5 Calculate the conditioned weight of each batch of cotton according to equation (7), and round the weight to 0.001t:

$$W = W_2 \times \frac{(100 - Z) \times (100 + R_0)}{100} \dots\dots\dots(7)$$

$$(100-Z_0) \times (100 + R)$$

In the equation:

W — conditioned weight of a batch of cotton, t;

—
R — mean regain percentage of a batch of cotton, %.

6.2.5 The rounding of all numerical values should be carried out according to the standard of GB/T 8170.

7 Inspection Rules

7.1 Inspection Items

7.1.1 The inspection items for seed cotton under purchase are: grade, length, regain percentage, impurity percentage, conditioned lint percentage of seed cotton, and conditioned weight of lint cotton converted from seed cotton.

7.1.2 The inspection items of baled cotton are divided into batch-by-batch inspection items and bale-by-bale inspection items.

7.1.2.1 The batch-by-batch inspection items include: grade, length, Micronaire value, foreign fibre, regain percentage, impurity percentage, and conditioned weight. If the inspection is made by HVI, the inspections items of length uniformity and fibre strength should be increased.

7.1.2.2 The bale-by-bale inspection items include: grade, length, Micronaire value, foreign fibre, regain percentage, impurity percentage, gross weight, length uniformity, fibre strength, reflectance degree, Hunter's +b and cotton colour grade.

7.2 Inspection Order

7.2.1 Inspection of seed cotton under purchase: For seed cotton of changed bale, the inspection items are dangerous foreign matter, weight of seed cotton, sampling, weight of test sample, trial ginning and the weight of ginned lint cotton, as well as the inspection of regain percentage and impurity percentage of the samples respectively taken from the ginned lint cotton, and also the inspection of grade and length of the rest of the samples.

7.2.2 Batch-by-batch inspection of baled cotton: First of all, impurity percentage inspection samples should be taken from a batch sample to perform impurity percentage inspection, and the loss or falling of foreign matter should be avoided. As for the rest of the samples, after the grade inspection, samples are respectively taken to carry out length and Micronaire value inspection, or HIV is used to perform the inspection of length, Micronaire value, length uniformity, fibre strength,

reflectance degree, Hunter's +b and cotton colour grade.

7.3 Rules for Batch Formation of Baled Cotton

7.3.1 Batch-by-batch inspection

7.3.1.1 For baled cotton of the same type and the same cotton ginning way, the cotton processing unit should form a batch. It should also be of the same cotton modal grade, length grade and modal Micronaire grade. Any bale with any item not being uniform should be picked out.

7.3.1.2 A separate certificate is issued for each baled cotton as combined certification is not appropriate. If some odd bales of cotton need to have certificates combined, they should be of the same type, cotton ginning way, cotton modal grade, length grade and modal Micronaire grade, the difference of regain percentage should not exceed 1%, and the difference of impurity percentage should not exceed 0.5%. After combination of certificates, the regain percentage and impurity percentage should be calculated based on the weighted mean.

7.3.2 Bale-by-bale inspection

After the processing of the baled cotton being bale-by-bale inspected, the cotton should be stacked in the correct order. After the inspection results are acquired, the cotton processing unit can form batches for sale based on the inspection results and the needs of the buying party.

8. Certificates

8.1 A Cotton Inspection Certificate is a Cotton Quality Certificate only. The baled cotton being batch-by-batch inspected and the baled cotton being bale-by-bale inspected should produce their respective Cotton Inspection Certificates.

8.2 Batch-by-Batch Inspection

8.2.1 The cotton notarized and inspected by a professional fibre inspection body shall take the inspection certificate issued by the professional fibre inspection body as a Cotton Quality Certificate. The cotton not being inspected by a professional fibre inspection body shall take the ex-factory inspection certificate provided by the supplying party as a Cotton Quality Certificate. If the demanding party raises an objection against the inspection result provided by the supplying party, the demanding party can apply for inspection from a professional fibre inspection body, and the inspection certificate issued by the body is regarded as the criterion.

8.2.2 The ex-factory inspection certificate provided by the supplying party after batch-by-batch inspection should be clearly specified with these contents: product name, batch number, number of bales, place of origin, processing unit, inspection items and inspection results (cotton modal grade and the percentage of different

adjacent grades, length grade and the percentage of different length grades, modal Micronaire value and the percentage of different grades and different levels, mean Micronaire value of different levels, foreign fibre content, regain percentage, impurity percentage, gross weight, conditioned weight), inspection unit, inspector, date of issue of the certificate, certificate number, validity period of certificate and comments (cotton with combined certificates has to be specified in the comments).

8.2.3 The Cotton Inspection Certificate issued by a professional fibre inspection body after batch-by-batch inspection should be clearly indicated with the these contents: product name, inspection reference, batch number, number of bales, place of origin, processing unit, inspection items and inspection results (cotton modal grade and the percentage of different adjacent grades, percentage of different grades without the provision of cotton modal grade, length grade, percentage of different length grades and mean length, modal Micronaire value and the percentage of different grades and different levels and the mean Micronaire value of different levels, qualitative inspection results of foreign fibre content, regain percentage, impurity percentage, gross weight, conditioned weight), inspection unit, inspector, date of issue of the certificate, certificate number, validity period of certificate and comments. If HVI inspection is adopted, the inspection items and results that should be added to the contents of certification include length uniformity, percentage of fibre strength of different levels and mean of different levels.

8.3 Bale-by-Bale Inspection

A notarized inspection certificate is to be issued by a professional fibre inspection body bale by bale. The certificate should be clearly specified with these contents: bar code of cotton bale and its specified contents (product name, place of origin, processing unit, serial number of bale, regain percentage provided by the processing unit, gross weight and foreign fibre content, etc.), inspection items and results (grade, length value and length grade, Micronaire value and the corresponding Micronaire grade and level, qualitative inspection results of foreign fibre content, length uniformity and level, fibre strength and level, reflectance degree, Hunter's +b, cotton colour grade and impurity percentage), inspection unit, date of issue of the certificate, certificate number, validity period of certificate and comments.

8.4 The validity period of a Cotton Inspection Certificate is one year from the date of issue of the certificate. The cotton having exceeded the validity period should be re-inspected. A certificate should be issued based on the re-inspection results.

9 Packaging and Labels

9.1 Packaging

During the packaging of cotton, packaging must be carried out in a thorough manner. For the bales of the same type, the weight of each bale should be the same. Do not mix the bales with cotton linter, recycled sterile seed cotton, oil stained cotton, odd cotton and dangerous foreign matter.

9.2 Cotton Quality Indicator

9.2.1 The baled cotton being batch-by-batch inspected should be attached with a cotton quality indicator.

9.2.2 The cotton quality indicator should be shown with the cotton type, cotton modal grade, length grade and modal Micronaire grade in the correct order.

9.2.3 Type code: Yellow cotton is indicated by the letter “Y,” grey cotton is indicated by the letter “G,” and no indicator is given for white cotton;

Grade code: Grade 1 to Grade 7 are indicated by “1” “7”;

Length grade code: 25 mm to 32 mm are indicated by “25” “32”;

Micronaire grade code: Grades A, B and C are indicated by “A,” “B” and “C.”

Roller-ginned cotton and saw-ginned cotton codes: Roller-ginned cotton is indicated by adding a horizontal line “ ” under the quality indicator, and no indicator is given for saw-ginned cotton.

For example, the quality indicator for Grade 2 saw-ginned white cotton at the length of 29 mm and the modal Micronaire grade of Grade A is: 229A;

The quality indicator for Grade 4 saw-ginned yellow cotton at the length of 27 mm and the modal Micronaire grade of Grade B is: Y427B;

The quality indicator for Grade 4 roller-ginned white cotton at the length of 30 mm and the modal Micronaire grade of Grade B is: 430B;

The quality indicator for Grade 5 saw-ginned white cotton at the length of 29 mm and the modal Micronaire grade of Grade C is: 529C;

The quality indicator for Grade 5 roller-ginned grey cotton at the length of 28 mm and the modal Micronaire grade of Grade C is: G528C;

The quality indicator for Grade 6 saw-ginned grey cotton at the length of 25 mm and the modal Micronaire grade of Grade C is: G625C.

9.3 Labels

9.3.1 Batch-by-batch inspection

9.3.1.1 For the cotton bale packaged by cotton cloth, there should be a black label printed at the two ends of the cotton bale. The contents label should state: place of origin (province, autonomous region, municipality and county), cotton processing unit, cotton quality indicator, batch number, bale number, gross weight, code of foreign fibre content, and production date.

9.3.1.2 For a cotton bale packaged using plastic material, there should be a label

fixed at the two ends of the cotton bale by non-dry glue or other means. The contents of the label are indicated in Subsection 9.3.1.1.

9.3.2 Bale-by-bale inspection

9.3.2.1 A bar code is adopted for the label of cotton bale.

9.3.2.2 For the cotton bale packaged by cotton cloth, there should be a black label printed at the two ends of the cotton bale. The contents label should state: place of origin (province, autonomous region, municipality and county), cotton processing unit, bale number (serial number of processing, which cannot be duplicated), gross weight, code of foreign fibre content, and production date.

9.3.2.3 The bar code for the cotton bale packaged by cotton cloth should be fixed at the two ends of cotton bale.

9.3.2.4 For the cotton bale packaged by plastic material, a label with a bar code should be fixed at the two ends of the cotton bale. The contents of the label are indicated in Subsection 9.3.2.2.

10 Storage and Transportation

10.1 Baled cotton should be stored in ventilated conditions where there is little moisture. Care should be taken to prevent the cotton from going mouldy and setting fire.

10.2 During the transportation of cotton, care should be taken to ensure the cotton does not set on fire, is not soaked in water, exposed to the rain or polluted.

10.3 The transportation of cotton should meet the conditions specified on the Cargo Certificate, which should also be carried during the transportation. For the cotton being batch-by-batch inspected, principally a batch of cotton cannot be transported separately. If separate transportation is needed under special circumstances, complete documents should be carried during the transportation, including the certificate or the photocopy of the certificate, size slip or photocopy of size slip, and delivery order. In case of transportation of several batch grades in the same truck (vessel), different batches and grades should be placed in separated cabins and separated layers during the transportation.

10.4 At the transit spot, the supplying and demanding parties shall have no right to change the quality indicator or forge the inspection certificate.