animalia

Norwegian Wool Standard

Valid as of 1 September 2022

QUALITY TYPE A: WHITE CROSSBRED WOOL, FULL YEAR GROWTH, FIBRE LENGTH > 10 CM

Quality class	Fibre length	Fineness	Bulk	Crimp	Kemp	Medulla	Yield	Vegetable matter	Colour	Pigment	Cotting	Character
A1	≥ 100 mm	MFD ≤ 34 µ. Max pr fleece: 39 µ	≥ 24 cm3/g	Distinct	≤ 0,3 %	≤ 3,0 %	≥ 70 %	≤ 0,4 %	8 < (y-z) < 13	0	Minimal	Typical white crossbred wool

QUALITY TYPE B: WHITE CROSSBRED WOOL, FIBRE LENGTH > 4 CM

Quality class	Fibre length	Fineness	Bulk	Crimp	Kemp	Medulla	Yield	Vegetable matter	Colour	Pigment	Cotting	Character
B1	≥ 40 mm	MFD ≤ 33,0 µ. Max pr fleece: 38 µ	≥ 24 cm3/g	Distinct	≤ 0,3 %	≤ 3,0 %	≥ 67 %	≤ 0,3 %	8 < (y-z) < 13	0	Minimal	Typical white crossbred wool
B2	≥ 40 mm	Max pr fleece: 80 µ	---	---	≤ 2,0 %	≤ 10,0 %	≥ 65 %	≤ 0,7 %	8 < (y-z) < 14	0	Slight cotting accepted	Norwegian spæl and atypical wool accepted

QUALITY TYPE C: WHITE CROSSBRED WOOL, FIBRE LENGTH > 7 CM (C1 AND C2) AND PIGMENTED CROSSBRED WOOL (C1S AND C2S)

Quality class	Fibre length	Fineness	Bulk	Crimp	Kemp	Medulla	Yield	Vegetable matter	Colour	Pigment	Cotting	Character
C1	≥ 70 mm	MFD ≤ 33,0 µ. Max pr fleece: 38 µ	≥ 24 cm3/g	Distinct	≤ 0,3 %	≤ 3,0 %	≥ 75 %	≤ 0,3 %	8 < (y-z) < 13	0	Minimal	Typical white crossbred wool
C2	≥ 70 mm	Max pr fleece: 80 µ			≤ 2,0 %	≤ 10,0 %	≥ 70 %	≤ 0,7 %	8 < (y-z) < 14	0	Slight cotting accepted	Atypical wool accepted
C1S	≥ 40 mm	MFD ≤ 34,0 µ. Max pr fleece: 39 µ	≥ 24 cm3/g	Distinct	≤ 0,3 %	≤ 3,0 %	≥ 67 %	≤ 0,3 %		Yes	Minimal	Typical pigmented crossbred wool
C2S					Accept-ed	Accepted	≥ 64 %	Accepted		Yes	Accepted. Heavily cotted wool is rejected.	Varied. Norwegian spæl and atypical wool accepted

QUALITY TYPE F: WOOL OF NORWEGIAN SPÆL OR PELT SHEEP

Quality class	Fibre length undercoat/outer wool	Fineness undercoat/outer wool	Bulk	Lustre	Kemp	Medulla	Yield	Vegetable matter	Colour	Pigment	Cotting	Character
F1	≥ 40 mm / ≥ 120 mm	≤ 25,0 µ / ≤ 60 µ	≤ 21 cm3/g	Observable	≤ 0,3 %	≤ 3,0 %	≥ 76 %	≤ 0,4 %	8 < (y-z) < 13	0	Minimal	Typical white spæl wool
F2	≥ 40 mm / ≥ 120 mm	Not specified / ≤ 90 µ			≤ 2,0 %	≤ 10,0 %	≥ 75 %	≤ 0,7 %	8 < (y-z) < 14	0	Slight cotting accepted	Atypical white wool accepted
F1S	≥ 40 mm / ≥ 120 mm	≤ 25,0 µ / ≤ 60 µ	≤ 21 cm3/g	Observable	≤ 0,3 %	≤ 3,0 %	≥ 76 %	≤ 0,4 %		Yes	Minimal	Typical pigmented spæl wool
F1P	--- / ≥ 60 mm	No undercoat wool / ≤ 60 µ		Observable	≤ 0,3 %	≤ 3,0 %	≥ 73 %	≤ 0,4 %		Yes	Minimal	Norwegian pelt sheep type

QUALITY TYPE G AND V: COTTED AND VERY COARSE WOOL – WOOL CONTAINING VEGETABLE MATTER

Quality class	Kemp	Medulla	Yield	Vegetable matter	Colour	Pigment	Cotting	Character
G	Accepted	Accepted	≥ 70 %	≤ 2,5 %	8 < (y-z) < 14	0	Accepted, up to heavy cotting	Varied
V	Accepted	Accepted	≥ 70 %	Accepted	8 < (y-z) < 14	0	Slight	Varied

QUALITY TYPE H: ODDMENTS (BELLY, THIGH AND TAIL WOOL)

Quality class	Fibre length	Fineness	Kemp	Medulla	Yield	Vegetable matter	Urine-stained wool	Colour	Pigment	Cotting	Character
H1	Mean ≥ 70 mm	MFD ≤ 40,0 µ. Max pr fleece: 90 µ	≤ 2,0 %	≤ 10,0 %	≥ 70 %	≤ 0,7 %	Minimal	8 < (y-z) < 14	0	Slight	Autumn/full-year growth
H2		MFD ≤ 40,0 µ. Max pr fleece: 90 µ	≤ 2,0 %	≤ 10,0 %	≥ 64 %	≤ 0,7 %	Minimal	8 < (y-z) < 14	0	Slight	Spring growth
H3		MFD ≤ 40,0 µ. Max pr fleece: 90 µ	≤ 2,0 %	≤ 15,0 %	≥ 64 %	≤ 0,7 %	Accepted		0	Slight	Varied

Crossbred wool

A1 is white crossbred wool, full year growth, fibre length > 10 cm
The mean fibre diameter pr fleece should be finer than 34 microns (µ), and all fibres should be finer than 39 µ. Only insignificant amounts of medulla are accepted. Kemp is not accepted in the fleece. Class A1 is soft, crimpy wool with high bulk. The fibres should be of uniform fineness and length. Only insignificant amounts of vegetable matter and cotting, and moderate amounts of grease and dirt are accepted. Good whiteness after scouring is required. Full year growth wool longer than 7 cm, but shorter than 12 cm can be graded as C1 if the quality warrants it. Wool that does not meet the specifications for class one, is graded as class C2 or another appropriate class.

B1 is white crossbred fleece wool, with fibres longer than 4 cm
The mean fibre diameter pr fleece should be finer than 33 microns (µ), and all fibres should be finer than 38 µ. Only insignificant amounts of medulla are accepted. Kemp is not accepted in the fleece. Class A1 is soft, crimpy wool with high bulk. The fibres should be of uniform fineness and length. Only insignificant amounts of vegetable matter and cotting, and moderate amounts of grease and dirt are accepted. Good whiteness after scouring is required. Wool that does not meet the specifications for class one, is graded as class B2 or another appropriate class.

B2 is white crossbred fleece wool or white fleece wool from Norwegian spæl sheep or hybrid sheep, with fibres longer than 4 cm
Fleece that does not meet the quality standards for class one is graded as B2. The mean fibre diameter pr fleece should be finer than 40 microns (µ), and all fibres should be finer than 80 µ.
A certain amount of medulla and kemp is acceptable. Some vegetable matter and slight cotting are accepted. Somewhat more grease and dirt is tolerated than for first class wool. Required whiteness after scouring is lower than for first class wool. Rejected wool of spring character (H2) can be graded as B2 if all other criteria for this class are met other than being fleece wool.

C1 is white crossbred fleece wool, with fibres longer than 7 cm
The mean fibre diameter pr fleece should be finer than 33 microns (µ), and all fibres should be finer than 38 µ. Only insignificant amounts of medulla are accepted. Kemp is not accepted in the fleece. Class A1 is soft, crimpy wool with high bulk. The fibres should be of uniform fineness and length. Only insignificant amounts of vegetable matter and cotting, and moderate amounts of grease and dirt are accepted. Good whiteness after scouring is required. Wool that does not meet the specifications for class one, is graded as class C2 or another appropriate class.

C2 is white crossbred fleece wool or white fleece wool from hybrid sheep, with fibres longer than 7 cm
Fleece that does not meet the quality standards for class one is graded as C2. The mean fibre diameter pr fleece should be finer than 40 microns (µ), and all fibres should be finer than 80 µ.
A certain amount of medulla and kemp is acceptable. Some vegetable matter and slight cotting are accepted. Somewhat more grease and dirt is tolerated than for first class wool. Required whiteness after scouring is lower than for first class wool. White fleece wool from hybdrid sheep of crossbred character is graded as C2.

C1S is pigmented crossbred fleece wool, with fibres longer than 4 cm
The mean fibre diameter pr fleece should be finer than 34 microns (µ), and all fibres should be finer than 39 µ. Only insignificant amounts of medulla are accepted. Kemp is not accepted in the fleece. Class A1 is soft, crimpy wool with high bulk. The fibres should be of uniform fineness and length. Only insignificant amounts of vegetable matter and cotting, and moderate amounts of grease and dirt are accepted. Wool that does not meet the specifications for class one, is graded as class C2S.

C2S is pigmented crossbred fleece wool or pigmented fleece wool from Norwegian spæl or pelt sheep or pigmented wool from hybrids. There are no requirements in terms of fibre length
All pigmented wool that does not meet the specifications for class one is graded as C2S. Also included in class C2S: Pigmented fleece wool mixed with belly, thigh and tail wool, pigmented oddments, pigmented clearly and even heavily cotted wool, pigmented wool with more than just some vegetable matter, pigmented urine-stained wool and pigmented wool with fibres shorter than 40 mm. Coarse wool, medulla and kemp are accepted.

Wool of Norwegian spæl sheep

F1 is white characteristic fleece wool of Norwegian spæl sheep, with fibres longer than 12 cm (outer wool) and 4 cm (undercoat wool)
The fibres of the outer wool should be at least 120 mm long and finer than 60 µ. The fibres of the undercoat wool should be at least 40 mm long and finer than 25 µ. Only insignificant amounts of medulla are accepted, as well as relatively few and fine kemp fibres and very few «type 3» fibres. The outer wool should be long, soft and lustrous, and the undercoat wool should be much shorter and finer. Undercoat wool fibres should be ⅓ - ½ of the length of outer wool fibres. Only insignificant amounts of vegetable matter and cotting, and small amounts of grease and dirt are accepted. Good whiteness after scouring is required. Wool that does not meet the specifications for class one, is graded as class F2 or another appropriate class.

F2 is white fleece wool of Norwegian spæl sheep or hybrids, with fibres longer than 12 cm (outer wool) and 4 cm (undercoat wool)
Required fibre length is 120 mm for outer wool and 40 mm for undercoat wool. All fibres should be finer than 90 µ. Some medullated, kemp and «type 3» fibres are accepted. Some vegetable matter and slight cotting is accepted, as well as somewhat more grease and dirt than in class one. Required whiteness after scouring is lower than for first class wool. White fleece wool from hybdrid sheep of spæl character is graded as F2.

F1S is pigmented characteristic fleece wool of Norwegian spæl sheep, with fibres longer than 12 cm (outer wool) and 4 cm (undercoat wool)
The fibres of the outer wool should be at least 120 mm long and finer than 60 µ. The fibres of the undercoat wool should be at least 40 mm long and finer than 25 µ. Only insignificant amounts of medulla are accepted, as well as relatively few and fine kemp fibres and very few «type 3» fibres. The outer wool should be long, soft and lustrous, and the undercoat wool should be much shorter and finer. Undercoat wool fibres should be ⅓ - ½ of the length of outer wool fibres. Only insignificant amounts of vegetable matter and cotting, and small amounts of grease and dirt are accepted. Wool that does not meet the specifications for class one, is graded as class C2S.

Wool of Norwegian pelt sheep

F1P is characteristic fleece wool of Norwegian pelt sheep, with fibres longer than 6 cm
The fibres of the outer wool should be at least 60 mm long and finer than 60 µ. Only insignificant amounts of medulla are accepted, as well as relatively few and fine kemp fibres and very few «type 3» fibres. The wool should be soft, lustrous and curly. Only insignificant amounts of vegetable matter and cotting, and small amounts of grease and dirt are accepted. «White pelt-sheep wool» is also accepted. This includes wool from completely light-coloured, purebred pelt sheep, Leicester Sheep or white crossbred pelt sheep whose wool has typical pelt sheep characteristics (good curl and lustre). Wool that does not meet the specifications for class one, is graded as class C2S.

Cotted white wool, very coarse wool, and white wool with considerable amounts of medulla or vegetable matter

G is white, clearly or even heavily cotted wool
As a rule of thumb, you should be able to stick your finger through the fleece. Extreme amounts of coarse, medullated and kemp fibres are accepted (more than permitted for the C2 class). Some vegetable matter is accepted.

V is white wool with more than just some vegetable matter
Only slight cotting is accepted. If the wool contains considerable amounts of vegetable matter and is heavily cotted: it is better to place V-grade wool in the G class than vice versa.

White oddments (belly, thigh and tail wool)

H1 is white oddments from half-year autumn shearing or full-year growth, with fibres longer than 7 cm
This class also includes white fleece wool longer than 7 cm and mixed with oddments. The mean fibre length should be above 70 mm and all fibres should be finer than 90 µ. Some medullated and kemp fibres are accepted, as well as small amounts of vegetable matter and slight cotting. Only an insignificant amount of urine-stained wool is accepted.

H2 is white oddments from half-year spring shearing
There are no requirements in terms of fibre length. This class also includes white fleece wool shorter than 40 mm and white spring wool mixed with oddments. All fibres should be finer than 90 µ. Some medullated and kemp fibres are accepted, as well as small amounts of vegetable matter and slight cotting. Only an insignificant amount of urine-stained wool is accepted. H2-wool longer than 40 mm can be graded as B2 as long as it meets all specifications for that class.

H3 is originally white wool that is stained by urine and/or heavily soiled
Medulla and kemp are accepted, as well as small amounts of vegetable matter and slight cotting. Urine-stained wool can also be graded as class C2S.

Comments for Norwegian Wool Standard

- To measure the crossbred wool length, the pile of wool is stretched and measured up to where most of the fibres ends. Wool not fulfilling the demands of length in its natural class, is to be placed in the class where the length and the type of the wool is accepted.
- Wool shorter than 40 mm is to be placed in either class H2 or C2S.
- Uncharacteristic wool and wool from hybrids is to be placed in a class where the wool fits the description best. Mixed wool is to be placed in the lowest class.
- Wool discoloured by urine and/or heavily soiled is to be placed in either class H3 or C2S.
- Canary yellow wool or green wool (microorganisms) is to be placed in classes for pigmented wool.

Not acceptable wool according to the Norwegian standard:
- Extremely soiled wool
- Mouldy / rotten wool
- Moth infested wool
- Excessively cotted wool
- Wool discoloured by marking paint
- Wool containing excessive quantities of vegetable matter
- Wool discoloured by urine / heavily soiled wool containing high quantities of vegetable matter
- Felted wool discoloured by urine
- Felted wool containing high quantities of vegetable matter.

Explenations

µ: micron (1/1000 mm)
Pigment: Colour naturally inside the fibre (Classes ending with S or P)
Yield: What is left after scouring (%)
Atypical wool: Uncharacteristic wool and/or wool from hybrids not fitting the description of class one.
Vegetable matter: Rubbish from the wood, hay, straw, seeds, chips and others from vegetable origin.
«Type 3» fibres: thick, stiff hairs in the fleece of Norwegian spæl sheep. These are longer than the undercoat wool, but shorter than the outer wool. Also called short outer wool hairs. They are a considerable quality defect in spæl sheep.

Metods of analysis

Methods of analysis that are beeing used in the objective quality control.
Vegetable matter: IWTO 19
Yield: IWTO scoured yield at 16 % regain, determined using IWTO 19
Mid. fibre diam/medullation/ kemp: OFDA (IWTO 47)
Colour: IWTO 56 D65 (Y-Z)
Bulk: NZS8716:1994.
Length: Method developed by NZWTA and adopted by WTAE

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