

Preparation for Blending

Mr Don McWhirter
MacWool Ltd

Blending of Greasy Wool

- Extremely important in early stage processing
- Primary purpose is to produce an even and uniform top

Pre-delivery/Preparation for Blending

- Purchase documents
- Order specification
- Test certificates

Wool Delivery

- Delivery to mill
- Identification of the blend components
- The physical blending of wool

Topmaker and Comber

- The topmaker establishes the batch to be scoured and combed
- The comber converts the greasy wool to top

therefore it could be that:

- The (mill) client is the topmaker and the comber, or
- The exporter is the topmaker and the (mill) client the comber

By contract

- Commission scouring
- Commission scouring and combing

integrated operation:

- In-house scouring & combing

Topmaker purchases

- Straight types / all fleece or all skirtings
- Different types for blending to make a particular top
- Pre-shipment greasy blends

Comber purchases

- Mill types for stock
- Different types for a contracted top
- Types to make Mill Standard tops

Financial implications

- Indent
- Firm sale
- Stock

Ordering or Delivery Specifications

- Primarily greasy wool terms
- Mixture of greasy wool and wool top terms
- Primarily top related

Main specification characteristics

- Average Mean Fibre Diameter (MFD) for whole delivery
- Allowable micron range (e.g. +/- 0.5 mic) or the max`m micron for any one lot
- Average max`m vegetable matter (VM) content for the delivery
- Allowable max`m VM content for any one lot

Plus-

- Average greasy mm staple length (SL)
- Min`m & max`m SL for any one lot
- Average greasy staple strength (NKT)
- Min`m NKT for any one lot

Plus-

- the kind of wool required i.e. fleece / style, pieces, bellies
- Allowable (classing) certificates i.e. include / exclude bulk class lots, interlots, OML`s etc

More recent additions include

- theoretical TEAM predicted Hauteur (predicted top length, mmH)
- theoretical TEAM predicted Coefficient of Variation of Hauteur (cvH)
- theoretical TEAM predicted Romaine (noil)
- position of break, Middle, relating to staple strength

the delivery-

- all fleece
- fleece and pieces
- pieces and bellies

Simple delivery example :

- 110 bales
- 100 bales of fleece & 10 bales of pieces

then

- blend ratio / 10 bales fleece : 1 bale of pieces

Example – greasy wool specification

type 62 (best topmaking style fleece wool)

21.0 micron average (range +/- 0.5 mic)

1.5% VM, 2.0% max`m any one lot (AOL)

85 mm gsy staple length (min`m 75,max`m 95, AOL

35 nkt staple strength (min`m 30 AOL)

50% position of break,Middle, (max`m 65% AOL)

65% schlum dry comb yield,AOL

no unscourable colour

Greasy and Top

similar to type 62

21.5 mic gsy average (+/- 0.5 mic)

1.0% VM average (max`m 1.5% AOL)

75 mm greasy staple length min`m AOL

72 mmH (top fibre length) min`m

45% cvH max`m

Greasy and Predicted Top

similar to type 62

21.5 mic gsy average (+/- 0.5)

1.0% VM average (max`m 1.5% AOL)

85 mm gsy staple length average (min`m 75,max`m 95 AOL)

35 nkt staple strength average (min`m 28 nkt AOL)

55% position of break,Middle, (max`m 65%AOL)

72 mmH predicted TEAM top length (min`m 68 AOL)

45% predicted TEAM cvH (max`m 48% AOL)

Primarily Top Related

21.5 / 75 (i.e. 21.5 mic in top, / 75 mmH
min`m)

45% cvH max`m

dark& coloured fibre < 3 per 100 gm of top

expected romaine 8% max`m

good fleece 1.0% VM max`m

Primarily Top Related

19.5 / 60 (i.e. 19.5 mic top / 60 mmH min`m)

52% cvH max`m

expected romaine 12% max`m

dark & coloured fibre < 20 per 100 gm top

60% pieces / 40% bellies allowed, 4.0 % max`m
allowed

CERTIFICATION

- AWTA test certificates
- issued according to IWTO Standards
- a normal inclusion in most Sale Contracts and delivery documents

Pre and Post Sale Certificates

pre-sale :

- core test for fibre diameter, yield and micron
- staple test for staple length, staple strength and position of break

post-sale :

- Objectively Matched Lot (OML)
- IWTO Combined Certificate



AUSTRALIAN WOOL TESTING AUTHORITY LTD

Reg'd. Office: 70 Robertson Street, Kensington, Victoria 3051 P.O. Box 240, North Melbourne 3051 Tel: (03) 9371 4100 Fax: (03) 9371 4191

IWTO TEST CERTIFICATE

OFFICIAL COPY

3-08345902-P8 *CLASSED GROWER LOT

TEST METHODS IWTO-19,12

PAGE 1

BARWON & YARRA VALLEY WOOL BROKERS GEELONG

4 BALES

*GT/S

*AAALMS

REF. 5660 *GT/S

*AAALMS

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
1	163	2	161	3	196	2	194
2	172	2	170	4	192	2	190

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS	723 KG	TARE	8 KG	NETT	715 KG
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GROSS	723 KG	TARE	8 KG	NETT	715 KG
-------	--------	------	------	------	--------

TEST RESULTS:

- WOOL BASE - 2 SUBSAMPLES 55.78 %
- MEAN FIBRE DIAMETER - 4 SPECIMENS 27.2 MICRONS
- COEFFICIENT OF VARIATION OF DIAMETER 26.5 %
- VEGETABLE MATTER BASE INCLUDING **** & HARD HEADS-TWIGS 1.2 %

CALCULATED COMMERCIAL YIELDS & CLEAN MASSES:

- IWTO SCHLUM DRY T&N YIELD (1.0%TFM) 64.1 % 458 KG
- IWTO SCOURED YIELD at 17% REGAIN 68.2 % 488 KG
- JAPANESE CLEAN SCOURED YIELD 65.7 % 470 KG
- AUSTRALIAN CARBONISING YIELD 61.9 % 443 KG

ADDITIONAL INFORMATION:

- MEAN FIBRE CURVATURE 63 DEG/MM
- COMFORT FACTOR 70.4 %
- VEGETABLE MATTER COMPOSITION (B) 0.2 (S) 1.0 (H) 0.0
- *DARK & MEDULLATED FIBRE RISK NA

CHARGE: \$ 45.83 GST @ 10% : \$ 4.58 TOTAL CHARGE: \$ 50.41

SPECIMEN ONLY

CONTINUED ON NEXT PAGE
 TEST CONDUCTED AT MELBOURNE LABORATORY
 BALES SAMPLED AT GEELONG ON 23.08.2007
 AWTA LTD SERVICE TIME 1.4 DAYS
 ISSUED ON 24.08.2007, PRINTED ON 24.08.2007

09.0632 09 19845 0510

34794068

34766285

BYVG 2

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For and on behalf of Australian Wool Testing Authority Ltd.

MICHAEL A. JACKSON B.Sc. (Hons)
 MANAGING DIRECTOR

DR. GEORG R. BELL-HARZ Dip.App.Sc., M.Sc., Ph.D.
 GENERAL MANAGER - LABORATORY OPERATIONS



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IWTO STAPLE TEST CERTIFICATE

ORIGINAL

3-08345931-L7

TEST METHODS IWTO-7,30

PAGE 1

BARWON & YARRA VALLEY WOOL BROKERS GEELONG

4 BALES

*GT/S

*AAALMS

REF. 5660 *GT/S

*AAALMS

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
1	163	2	161	3	196	2	194
2	172	2	170	4	192	2	190

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS 723 KG TARE 8 KG NETT 715 KG

GROSS 723 KG TARE 8 KG NETT 715 KG

TEST RESULTS:

- MEAN STAPLE LENGTH - 63 STAPLES 77 MM
- COEFFICIENT OF VARIATION OF STAPLE LENGTH 20 %
- MEAN STAPLE STRENGTH - 61 STAPLES 36 NEWTONS/KTEX
- DISTRIBUTION OF POSITION OF BREAK:
 - BROKE IN THE TIP REGION 25 %
 - BROKE IN THE MIDDLE REGION 54 %
 - BROKE IN THE BASE REGION 21 %

SPECIMEN ONLY

ADDITIONAL INFORMATION:

CHARGE: \$ 24.21 GST @ 10% : \$ 2.42 TOTAL CHARGE: \$ 26.63

NO FURTHER PAGES
TEST CONDUCTED AT MELBOURNE LABORATORY

09.063209 91746 0103 55.78 1.20 308345902 34859643 34766285

ISSUED ON 24.08.2007, PRINTED ON 24.08.2007

BYVG

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IWTO TEST CERTIFICATE

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3-08305110-I6 *INTERLOT

TEST METHODS IWTO-19,12

PAGE 1

QUALITY WOOL

GEELONG

4 BALES

*WIRRAMINNA

*OGPCS

REF. M05A 002401 VARIOUS

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
89	179	2	177	289	119	2	117

I0168431

*EDJUDINA

*DBLSTN

TOTAL BALE WEIGHTS:

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
4	173	2	171	42	164	2	162

TEST HOUSE GROSS 635 KG TARE 8 KG NETT 627 KG

GROSS 635 KG TARE 8 KG NETT 627 KG

TEST RESULTS:

1. WOOL BASE - 3 SUBSAMPLES 42.85 %
2. MEAN FIBRE DIAMETER - 4 SPECIMENS 20.5 MICRONS
3. COEFFICIENT OF VARIATION OF DIAMETER 24.4 %
4. VEGETABLE MATTER BASE 2.0 %
INCLUDING **** % HARD HEADS-TWIGS

CALCULATED COMMERCIAL YIELDS & CLEAN MASSES:

5. IWTO SCHLUM DRY T&N YIELD (1.0%TFM) 48.2 % 302 KG
6. IWTO SCOURED YIELD at 17% REGAIN 53.7 % 337 KG
7. JAPANESE CLEAN SCOURED YIELD 50.5 % 317 KG
8. AUSTRALIAN CARBONISING YIELD 46.5 % 292 KG

ADDITIONAL INFORMATION:

9. MEAN FIBRE CURVATURE 56 DEG/MM
10. COMFORT FACTOR 96.6 %
11. VEGETABLE MATTER COMPOSITION
(B) 0.6 (S) 1.4 (H) 0.0
12. *DARK & MEDULLATED FIBRE RISK NA

CHARGE: \$ 70.25 GST @ 10% : \$ 7.02 TOTAL CHARGE: \$ 77.27

SPECIMEN ONLY

CONTINUED ON NEXT PAGE
 TEST CONDUCTED AT MELBOURNE LABORATORY
 BALES SAMPLED AT GEELONG ON 27.06.2007
 AWTA LTD SERVICE TIME 1.3 DAYS
 ISSUED ON 28.06.2007, PRINTED ON 24.08.2007

09.0714 09 33063 0590

34782077

34742291

GOLF 1

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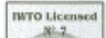
For and on behalf of Australian Wool Testing Authority Ltd

MICHAEL A. JACKSON B.Sc.(Hons)
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IWTO TEST CERTIFICATE

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3-08345208-B0 *BULK CLASSED LOT

TEST METHODS IWTO-19,12

PAGE 1

N K McCLELLAND

MELBOURNE

3 BALES

*NMX

*XSTN

REF. 2300 *NMX

*XSTN

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
1	115	2	113	3	86	2	84
2	104	2	102				

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS 305 KG TARE 6 KG NETT 299 KG

GROSS 305 KG TARE 6 KG NETT 299 KG

TEST RESULTS:

- WOOL BASE - 3 SUBSAMPLES 58.93 %
- MEAN FIBRE DIAMETER - 4 SPECIMENS 27.2 MICRONS
- COEFFICIENT OF VARIATION OF DIAMETER 32.4 %
- VEGETABLE MATTER BASE INCLUDING **** % HARD HEADS-TWIGS 0.2 %

CALCULATED COMMERCIAL YIELDS & CLEAN MASSES:

- IWTO SCHLUM DRY T&N YIELD (1.0%TFM) 68.5 % 205 KG
- IWTO SCoured YIELD at 17% REGAIN 70.8 % 212 KG
- JAPANESE CLEAN SCoured YIELD 69.4 % 208 KG
- AUSTRALIAN CARBONISING YIELD 65.5 % 196 KG

ADDITIONAL INFORMATION:

- MEAN FIBRE CURVATURE 56 DEG/MM
- COMFORT FACTOR 70.4 %
- VEGETABLE MATTER COMPOSITION (B) 0.1 (S) 0.1 (H) 0.0
- *DARK & MEDULLATED FIBRE RISK NA

CHARGE: \$ 42.54 GST @ 10% : \$ 4.25 TOTAL CHARGE: \$ 46.79

SPECIMEN ONLY

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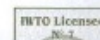
TEST CONDUCTED AT MELBOURNE LABORATORY
BALES SAMPLED AT MELBOURNE ON 21.08.2007
AWTA LTD SERVICE TIME 3.1 DAYS
ISSUED ON 24.08.2007, PRINTED ON 24.08.2007

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For and on behalf of Australian Wool Testing Authority Ltd

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IWTO TEST CERTIFICATE

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3-08346289-M9

TEST METHODS IWTO-19,12,31

PAGE 1

~~TECHNOOL TRADING PTY LTD~~

MELBOURNE

11 BALES

*BELMEDI/M

*MPCS

REF. M T64832 OBJECTIVELY MATCHED LOT

3-08296664-P3

*DMFR ND

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
2	198	2	196	19	194	2	192
10	201	2	199	24	150	2	148

TOTAL BALE WEIGHTS:

GROSS 743 TARE 8 NETT 735

TEST HOUSE GROSS 1 875 KG TARE 22 KG NETT 1 853 KG

*BELONGABANK

*MPCS

TEST RESULTS:

3-08304681-P7

*DMFR 2

1. WOOL BASE - 8 SUBSAMPLES 48.73 %

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
4	147	2	145	12	142	2	140
11	153	2	151				

2. MEAN FIBRE DIAMETER - 12 SPECIMENS 18.4 MICRONS

GROSS 442 TARE 6 NETT 436

3. COEFFICIENT OF VARIATION OF DIAMETER 22.2 %

*NYTON PARK

*AAPCS

4. VEGETABLE MATTER BASE 3.0 %

3-08335421-P1

*DMFR ND

INCLUDING **** % HARD HEADS-TWIGS

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
15	188	2	186	32	164	2	162
31	162	2	160	33	176	2	174

CALCULATED COMMERCIAL YIELDS & CLEAN MASSES:

GROSS 690 TARE 8 NETT 682

5. IWTO SCHLUM DRY T&N YIELD (1.0%TFM) 54.9 % 1 018 KG

6. IWTO SCoured YIELD at 17% REGAIN 61.9 % 1 147 KG

7. JAPANESE CLEAN SCoured YIELD 57.4 % 1 063 KG

8. AUSTRALIAN CARBONISING YIELD 53.6 % 994 KG

ADDITIONAL INFORMATION:

9. VEGETABLE MATTER COMPOSITION
(B) 0.2 (S) 2.8 (H) 0.0

SPECIMEN ONLY

CHARGE: \$ 10.30 GST @ 10% : \$ 1.03 TOTAL CHARGE: \$ 11.33

CONTINUED ON NEXT PAGE

NOTE - YIELDS = CLEAN WEIGHTS AS % OF NETT ROUNDED TO 1 DECIMAL

08.0215 0201 34774314 34766524 ISSUED ON 24.08.2007, PRINTED ON 24.08.2007 1

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GENERAL MANAGER - LABORATORY OPERATIONS



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150901



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IWTO STAPLE TEST CERTIFICATE

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3-08346290-M7

TEST METHODS IWTO-7,30

PAGE 1

TECHWOOL TRADING PTY LTD

MELBOURNE

11 BALES

*BELMEDI/M

*MPCS

3-08296759-L1

REF. M T64832 OBJECTIVELY MATCHED LOT

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
2	198	2	196	19	194	2	192
10	201	2	199	24	150	2	148

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS 1 875 KG TARE 22 KG NETT 1 853 KG

GROSS	743	TARE	8	NETT	735
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TEST RESULTS:

*BELONGABANK

*MPCS

3-08304759-L1

1. MEAN STAPLE LENGTH - 192 STAPLES 65 MM

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
4	147	2	145	12	142	2	140
11	153	2	151				

2. COEFFICIENT OF VARIATION OF STAPLE LENGTH 23 %

GROSS	442	TARE	6	NETT	436
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3. MEAN STAPLE STRENGTH -151 STAPLES 35 NEWTONS/KTEX

*NYTON PARK

*AAPCS

3-08335469-L0

4. DISTRIBUTION OF POSITION OF BREAK:

BALE NO.	GROSS	*TARE	NETT	BALE NO.	GROSS	*TARE	NETT
15	188	2	186	32	164	2	162
31	162	2	160	33	176	2	174

BROKE IN THE TIP REGION 10 %

GROSS	690	TARE	8	NETT	682
-------	-----	------	---	------	-----

BROKE IN THE MIDDLE REGION 53 %

BROKE IN THE BASE REGION 37 %

ADDITIONAL INFORMATION:

CHARGE: \$ 0.00 GST @ 10% : \$ 0.00 TOTAL CHARGE: \$ 0.00

SPECIMEN ONLY

NO FURTHER PAGES

08.0215 0271 .00 .00 0 34769049 34766524 ISSUED ON 24.08.2007, PRINTED ON 24.08.2007 TECM 2

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DR. GEORGE R. BEILHARZ Dip.App.Sc., M.Sc., Ph.D. GENERAL MANAGER - LABORATORY OPERATIONS



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IWTO COMBINED CERTIFICATE

OFFICIAL COPY

3-08337805-J3

TEST METHOD IWTO-31

PAGE 1

REF.	HW150 - HW150A	76 BALES	TEST NUMBER	BALES	NETT	YIELD	VM	LSCAN	AIRFLOW	*DMFR
			2-07874311-P5	2	392	69.7	0.7	16.8		NA
			*PINEVIEW/GOOLMA							
			2-07878881-P3	9	1724	66.0	1.5	16.6		ND
			*ELK-ING							
			2-07879265-P8	4	803	69.7	0.4	16.3		ND
			*GANGEMI HOLDINGS							
			2-07879389-P6	6	957	69.6	1.9	16.7		NA
			*RAF/PINEVIEW							
			2-07879982-B8	3	467	74.2	0.6	16.1		NA
			*NETWORK							
			2-07880313-P3	1	201	65.3	2.6	16.5		ND
			*NPB/MUDGE							
			2-07881024-P5	2	292	68.9	1.4	16.8		ND
			*LTD/YASS							
			2-07884309-B7	4	502	70.1	1.3	16.8		NA
			*NETWORK							
			3-08315910-P7	4	663	79.1	2.2	16.3		ND
			*SSS/NEW ENGLAND							
			3-08316038-P6	5	902	68.9	0.7	16.5		NA
			*PCF							
			3-08317655-P6	5	766	62.1	0.1	16.7		ND
			*WARRAMBEEN							
			3-08317906-P3	4	734	68.1	1.0	16.7		NA
			*CAROLEN							
			3-08318772-P8	5	882	65.1	1.1	16.8		NA
			*MM/HTY							
			3-08319031-P8	6	1144	62.3	0.6	16.1		NA
			*YADIN/TS/ARARAT							
			3-08325624-P2	1	125	67.7	1.1	16.0		ND
			*RIVERDALE/AK&MM							
			3-08330715-P1	4	599	69.1	1.6	16.8		ND
			*KOCMAH-LEA/E							
			3-08330878-P7	5	828	54.3	1.0	15.6		ND
			*BGB/LANDBOROUGH							
			3-08331221-P9	6	997	72.9	0.5	16.8		ND
			*C/ CAMELFORD							
			*AAAFM							

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS 13 134 KG TARE 152 KG NETT 12 978 KG
SAMPLES REMOVED AFTER WEIGHING 4 KG

TEST RESULTS:

- WOOL BASE - 39 SUBSAMPLES 55.75 %
 - MEAN FIBRE DIAMETER - 72 SPECIMENS 16.5 MICRONS
 - COEFFICIENT OF VARIATION OF DIAMETER 20.8 %
 - VEGETABLE MATTER BASE INCLUDING **** % HARD HEADS-TWIGS 1.1 %
- CALCULATED COMMERCIAL YIELDS & CLEAN MASSES:
- IWTO SCOURED YIELD at 16% REGAIN 67.4 % 8 752 KG

SPECIMEN ONLY

ADDITIONAL INFORMATION:

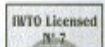
CHARGE: \$ 27.55 GST @ 10% : \$ 2.75 TOTAL CHARGE: \$ 30.30

NOTE - YIELDS = CLEAN WEIGHTS AS % OF NETT ROUNDED TO 1 DECIMAL

CONTINUED ON NEXT PAGE

VM BASE RANGES FROM

0.1 TO 2.6 %



CERTIFIED QUALITY MANAGEMENT SYSTEM



AUSTRALIAN WOOL TESTING AUTHORITY LTD

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3-08337806-J1

TEST METHOD IWTO-31

PAGE 1

76 BALES

REF. **(H150 - H1150)**

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS 13 134 KG TARE 152 KG NETT 12 978 KG
 SAMPLES REMOVED AFTER WEIGHING 4 KG

TEST RESULTS:

- MEAN STAPLE LENGTH 76 MM
- COEFFICIENT OF VARIATION OF STAPLE LENGTH 17 %
- MEAN STAPLE STRENGTH 34 NEWTONS/KTEX
- DISTRIBUTION OF POSITION OF BREAK:
 - BROKE IN THE TIP REGION 19 %
 - BROKE IN THE MIDDLE REGION 53 %
 - BROKE IN THE BASE REGION 28 %

ADDITIONAL INFORMATION:

CHARGE: \$ 27.55 GST @ 10% : \$ 2.75 TOTAL CHARGE: \$ 30.30

SPECIMEN ONLY

TEST NUMBER	BALES	NETT	LNG	CV/L	STR	TIP	MID	BASE
2-07874656-L3	2	392	75	14	24	42	58	0
*PINEVIEW/GOOLMA *AAA M								
2-07879656-L8	6	957	74	15	31	20	80	0
*RAP/PINEVIEW *AAAMWNR								
2-07880360-L4	4	803	85	15	24	6	79	15
*GANGEMI HOLDINGS *AAAM								
2-07880450-L3	1	201	83	13	29	16	42	42
*NPB/MUDGE *AAM								
2-07881249-L8	2	292	76	13	31	0	11	89
*LTD/YASS *SUP AAAM								
2-07881269-L6	9	1724	76	12	31	9	75	16
*ELK-INC *AAAM								
2-07881918-L8	3	467	86	24	26	63	30	7
*NETWORK *AAAM								
2-07885312-L0	4	502	81	16	34	31	52	17
*NETWORK *SUP AAA								
3-08316119-L4	5	902	75	17	44	7	43	50
*FCF *AAAM WNRS								
3-08316431-L3	4	663	67	13	43	52	45	3
*SSS/NEW ENGLAND *SUPAAAA								
3-08317950-L1	5	766	86	17	21	2	30	68
*WARRAMBEEN *AAAM								
3-08318399-L0	4	734	67	13	39	8	41	51
*CAROLEN *AAAMWNS								
3-08318794-L2	5	882	75	16	45	36	59	5
*MM/HTY *AAAWNS								
3-08319149-L8	6	1144	79	14	35	33	64	3
*YADIN/TS/ARARAT *SUPAAAA								
3-08319418-L7	5	828	75	15	28	0	39	61
*BGB/LANDBOROUGH *AAAM								
3-08326036-L8	1	125	65	14	39	3	41	56
*RIVERDALE/AK&MM *AAAFM								
3-08330841-L5	4	599	83	11	28	0	5	95
*KOOMAH-LEA/E *AAASUP								
3-08331222-L7	6	997	71	17	37	20	56	24
*C/ CAMELFORD *AAAFM								

A SAMPLE OF 4KG HAS BEEN REMOVED FROM ABOVE LOT WHICH IS INCLUDED IN THE TOTAL SAMPLE OF 4KG

NO FURTHER PAGES

STAPLE LENGTH RANGES FROM 65 TO 86 MM



CERTIFIED QUALITY MANAGEMENT SYSTEM



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3-08341113-J6

TEST METHOD IWTO-31

PAGE 1

REF.	WW314	219 BALES	TEST NUMBER	BALES	NETT	YIELD	VM	LSCAN	AIRFLOW	*DMFR
			3-08337976-M2	28	5199	65.2	1.3	21.0		ND
			OBJECTIVELY MATCHED LOT							
			3-08337978-M8	30	5626	73.6	0.6	20.9		ND
			OBJECTIVELY MATCHED LOT							
			3-08337980-M4	29	5521	73.3	0.4	20.9		ND
			OBJECTIVELY MATCHED LOT							
			3-08337982-M0	23	4383	61.4	1.6	21.0		ND
			OBJECTIVELY MATCHED LOT							
			3-08337984-M6	25	4600	70.6	0.4	20.8		ND
			OBJECTIVELY MATCHED LOT							
			A SAMPLE OF 3KG HAS BEEN REMOVED FROM ABOVE LOT WHICH IS INCLUDED IN THE TOTAL SAMPLE OF 3KG							
			3-08337986-M1	22	3610	58.0	1.8	21.0		ND
			OBJECTIVELY MATCHED LOT							
			3-08337988-M7	27	5090	71.5	1.5	21.0		ND
			OBJECTIVELY MATCHED LOT							
			3-08337990-M3	30	5650	64.9	0.7	20.9		ND
			OBJECTIVELY MATCHED LOT							
			3-08337992-M9	5	863	76.7	0.7	20.8		ND
			OBJECTIVELY MATCHED LOT							

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS 40 983 KG TARE 438 KG NETT 40 542 KG
SAMPLES REMOVED AFTER WEIGHING 3 KG

TEST RESULTS:

- WOOL BASE - 56 SUBSAMPLES 56.32 %
- MEAN FIBRE DIAMETER - 112 SPECIMENS 20.9 MICRONS
- COEFFICIENT OF VARIATION OF DIAMETER 22.4 %
- VEGETABLE MATTER BASE INCLUDING **** % HARD HEADS-TWIGS 1.0 %
- IWTO SCOURED YIELD at 16% REGAIN 68.0 % 27 576 KG

CALCULATED COMMERCIAL YIELDS & CLEAN MASSES:

ADDITIONAL INFORMATION:

6. VEGETABLE MATTER COMPOSITION (B) 0.4 (S) 0.6 (H) 0.0

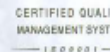
CHARGE: \$ 17.38 GST @ 10% : \$ 1.73 TOTAL CHARGE: \$ 19.11

NOTE - YIELDS = CLEAN WEIGHTS AS % OF NETT ROUNDED TO 1 DECIMAL

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08.0131 0220 34811560 34763502

VM BASE RANGES FROM 0.4 TO 1.8 %
LASERSCAN MEAN RANGES FROM 20.8 TO 21.0 MICRONS
ISSUED ON 21.08.2007, PRINTED ON 29.08.2007



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The ORIGINAL and any OFFICIAL COPY of this Certificate are issued in accordance with the stated Test Method(s) and any directly associated Regulations. By authorising the application of the AWTA Ltd Seal, we hereby certify that the test results are within the precision limits of the Test Method declared. As far as is permissible by law, no other warranty is expressed or implied. On request, AWTA Ltd will make available sampling, weighing and/or testing details to any bona fide bearer or transferee of this Certificate. Photocopies and other reproductions are NOT recognised as Certificates. THIS CERTIFICATE SHALL BE RENDERED VOID IF AMENDED OR ALTERED.

*DECLARED: AWTA Ltd does not certify or provide any warranty whatsoever in regard to declared information.

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For and on behalf of Australian Wool Testing Authority Ltd

[Signature]
MICHAEL A. JACKSON B.Sc. (Hons)
MANAGING DIRECTOR

[Signature]
DR. GEORG R. BEILHARZ Dip.App.Sc., M.Sc., Ph.D.
GENERAL MANAGER - LABORATORY OPERATIONS



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TEST METHOD IWFO-31

PAGE 1

219 BALES

REF. WW314

TOTAL BALE WEIGHTS:

TEST HOUSE GROSS 40 983 KG TARE 438 KG NETT 40 542 KG
SAMPLES REMOVED AFTER WEIGHING 3 KG

TEST RESULTS:

- 1. MEAN STAPLE LENGTH 90 MM
- 2. COEFFICIENT OF VARIATION OF STAPLE LENGTH 18 %
- 3. MEAN STAPLE STRENGTH 32 NEWTONS/KTEX
- 4. DISTRIBUTION OF POSITION OF BREAK:
 - BROKE IN THE TIP REGION 19 %
 - BROKE IN THE MIDDLE REGION 55 %
 - BROKE IN THE BASE REGION 26 %

TEST NUMBER	BALES	NETT	LNG	CV/L	STR	TIP	MID	BASE
3-08337977-M0	28	5199	88	16	29	8	41	51
OBJECTIVELY MATCHED LOT								
3-08337979-M6	30	5626	86	16	35	46	52	2
OBJECTIVELY MATCHED LOT								
3-08337981-M2	29	5521	89	18	38	13	76	11
OBJECTIVELY MATCHED LOT								
#3-08337983-M8	23	4383	87	18	29	16	59	25
OBJECTIVELY MATCHED LOT								
#3-08337985-M3	25	4600	92	18	28	16	21	63
OBJECTIVELY MATCHED LOT								
A SAMPLE OF 3KG HAS BEEN REMOVED FROM ABOVE LOT WHICH IS INCLUDED IN THE TOTAL SAMPLE OF 3KG								
3-08337987-M9	22	3610	84	21	28	53	33	14
OBJECTIVELY MATCHED LOT								
3-08337989-M5	27	5090	101	18	34	6	76	18
OBJECTIVELY MATCHED LOT								
3-08337991-M1	30	5650	89	16	29	3	71	26
OBJECTIVELY MATCHED LOT								
3-08337993-M7	5	863	106	17	31	15	63	22
OBJECTIVELY MATCHED LOT								

ADDITIONAL INFORMATION:

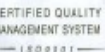
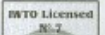
CHARGE: \$ 17.38 GST @ 10% : \$ 1.73 TOTAL CHARGE: \$ 19.11

NOTE - # = The staples tested were drawn from grab samples after appraisal

NO FURTHER PAGES

STAPLE LENGTH RANGES FROM 84 TO 106 MM
STAPLE STRENGTH RANGES FROM 28 TO 38 N/KTEX
ISSUED ON 21.08.2007, PRINTED ON 29.08.2007

08.0131 0210 .00 .00 0 34805631 34763502



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0191/7/05

For and on behalf of Australian Wool Testing Authority Ltd

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

DR. GEORG R. BEILHARZ Dip.App.Sc., M.Sc., Ph.D.
GENERAL MANAGER - LABORATORY OPERATIONS



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Single sale lot / test certificate

- Grower Classed Lot (certificate letter P)
- Interlot (certificate letter I)
- Bulk Classed Lot (certificate letter B)

Objectively Matched Lot (certificate letter M)

- post-sale combination of single lots into one lot
- agreed range for yield,vm and micron

Objectively Matched Lots (OML`s)

- no individual sale lot information available
- displays the average results
- no set range for the combination of staple length & staple strength

CERTIFICATION
and
PREPARATION for BLENDING

TEAM 2, TEAM 3, PREDICTION

TEAM 1 / 1981 - 1984

TEAM 2 / 1986

- 545 consignments, 20 mills, 12 countries
- formula to predict :

Hauteur

Coefficient of Variation of Hauteur

Romaine

TEAM 3 / 2001 - 2004

- 647 consignments, 159,000 bales, 34 mills

for Hauteur

TEAM 2:

$0.52L+0.47S+0.95D-0.19M^*-0.45V-3.5$

TEAM 3 :

$0.43L+0.35S+1.38D-0.15M$
 $-0.45V-0.59CVD-0.32CVL+21.8$

for CV Hauteur

TEAM 2:

$0.12L - 0.41S - 0.35D + 0.2M^* + 49.3$

TEAM 3:

$0.30L - 0.37S - 0.88D + 0.17M + 0.38CVL + 35.6$

for Romaine

TEAM 2:

$-0.11L-0.14S-0.35D+0.94D+27.7$

TEAM 3:

$-0.13L-0.18S-0.63D+0.78V+38.6$

for Hauteur

TEAM 3 : (formula) + 21.8

example : MILL - flc / av + 3mm in top

adjustment factor + 3 = 24.8

MILL Fleece formula becomes-

(TEAM 3 formula) + 24.8

for Hauteur

TEAM 3: (formula) +21.8

example : MILL – pieces / average – 3mm in top

Adjustment factor -3 = 18.8

MILL pieces formula becomes –
(TEAM formula) + 18.8

Team 3

example : 21.0 mic / 22% CVD
87 mm SL / 16% CVL
36 nkt SS / 45% PoB,M
1.0% VM

TEAM 3 = 75.5 mmH / 43.6 cvH / 8.4% romaine

change nkt from 36 to 32 / PoBM 45% to 65%

TEAM 3 = 71.1 mmH / 48.5 cvH / 9.1% romaine

-
- construction of greasy wool specifications and orders
 - prediction of top and noil values in combing
 - preparation for blending

example delivery :

21.0 mic/1.0%vm

TEAM 3=75mmH / 45%cvH / 8% romaine

Computer aided blending model :

- Develop the data base from the delivery documents
- Create mini-batches from the delivery(i.e. 5 to 8 bales each)
- Each mini-batch to have similar predictive values
- Each progressively blended and scoured

- to produce a uniform top from an even blend

SUMMARY

Preparation for Blending methods can include :

- Identification of the kind of wool in the delivery for control in blending
- Use of the core test information
- Use of the staple test information
- In-house prediction techniques developed over time from the use of certain wools in certain proportions to produce a top of known specifications
- Use of the TEAM formulae

CREATE an EVEN BLEND to PRODUCE a UNIFORM TOP