

for

Premium

Quality

Wool

Implications of Contamination (non-VM)

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Contaminants in Wool

- grease, dirt, suint etc.
- pesticides
- brands etc.
- vegetable matter (VM)
- non-VM
 - potential fibrous faults
 - man-made origin
 - preventable





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Types of Non-VM Contaminants

- fibrillating plastics
- film plastics
- textile fibres
- hairs / feathers
- solid objects
 - plastic
 - metal
 - wood



Cost of Contamination

- isolated disasters
 - large pieces

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- fault in end-product (fabric)
 - inspection
 - removal
- total cost
 - approx. \$M6 per year (10c/kg)
- other fibres
 - cotton also has problems

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Modes of Contamination

• within-bale

- on-farm source
- from woolpacks
 - farm (dividers)
 - testing
 - handling
- during processing
 processors



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Within- Bale Contamination

Incidence

 amounts of within-bale contaminants most commonly found in wool fabrics

Faults per Tonne of Fabric

for Premium	Fault	Woollen weaver (Aust)	Woollen weaver (OS)	Worsted weaver (Aust)	Worsted weaver (OS)	Worsted weaver (OS)	Worsted weaver* (OS)
Quality	PP twine	0.22	3.8	1.32	0.26	0.37	0.03
Wool	PP bag	0.88	13.0	0.11	0.12	0.32	0.02
	VM	-	-	1.54	4.82	1.23	1.83

* using wool which was sorted for faults before processing

P. Auer & L. Osborne Source: Abbott, G.M. et al (1996)

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Contamination from Woolpacks

- types of woolpacks
 - jute
 - HDPE
 - nylon
 - hidden contamination
 - AS/NZ 4546:1999
- causes of contamination
 - accidents
 - testing
 - offcuts



Pack Specification

- AS/NZS 4546:1999
- AS/NZS 4547.1 to .4
- performance and testing requirements

		Nylon	HDPE	Test Method
for	Breaking Force [N(min)]	Warp-way 2450 Weft-way 2450	Warp-way 1760 Weft-way 1570	AS 2001.2.3 Method A
	Extensibility of fabric at 500N [%(max)]	10	n/a	As above
uality	Tearing force (both directions)	400	400	AS 2001.2.10
Wool	Seam strength [N(min)]	1200	880	AS 2001.2.20 (A)
2.0	Fibrillation [Grade(min)]	n/a	3	AS/NZS 4547.1
10	Adhesion of wool to the anti-slip coating	no adhesion	no adhesion	AS/NZS 4547.2
1. A. S.	Surface frictional properties (N)	≥ 3 .5	$\geq 3.5 \leq 5.5$	AS/NZS 4547.3
The second	Handling resistance (N(min))	n/a	700	AS/NZS 4547.4

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Non-Fibrillation Index (HDPE)



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P. Auer & L. Osborne Source: AS/NZS 4547.1:1999





Incidence •

- before processing
- after processing
- relative to VM

for	woolpack Faults per Tonne of Fabric						
remium Quality	Fault	Woollen weaver (Aust)	Woollen weaver (OS)	Worsted weaver (Aust)	Worsted weaver (OS)	Worsted weaver (OS)	Worsted weaver* (OS)
Wool	HDPE faults	0.85	0.15	1.54	1.47	0.29	0.11
	Output (tonnes)	364	164	621	507	605	2299

* using wool which was sorted for faults before processing

P. Auer & L. Osborne Source: Abbott, G.M. et al (1996)

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Avoidance of Contamination

- on-farm surveillance
- clip accreditation
- trace-back schemes
- better woolpacks

 nylon multi-filament packs
- better handling
 - pressing
 - sampling
 - dumping

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Detection / Removal

Sirosorter

- discontinued work
- Siroclear
 - detects yarn faults during winding
- UV Fluorescence
 - describe concept and results
 - discontinued work



References

Top-Tech '96

- Abbott, G.M. and Blanchonette, I. (1996) Wool Packaging, Contamination and all that Stuff, page 116.
- Abbott, G.M., Blanchonette, I. and Heintze, G.N., (1996) Packaging and Contamination, page 362.

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