Cloth
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Enriching lives through innovation

Un’esperienza di successo
Protecting the natural beauty of wool

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Sustainability
Innovation
Collaboration

HUNTSMAN Textile Effects

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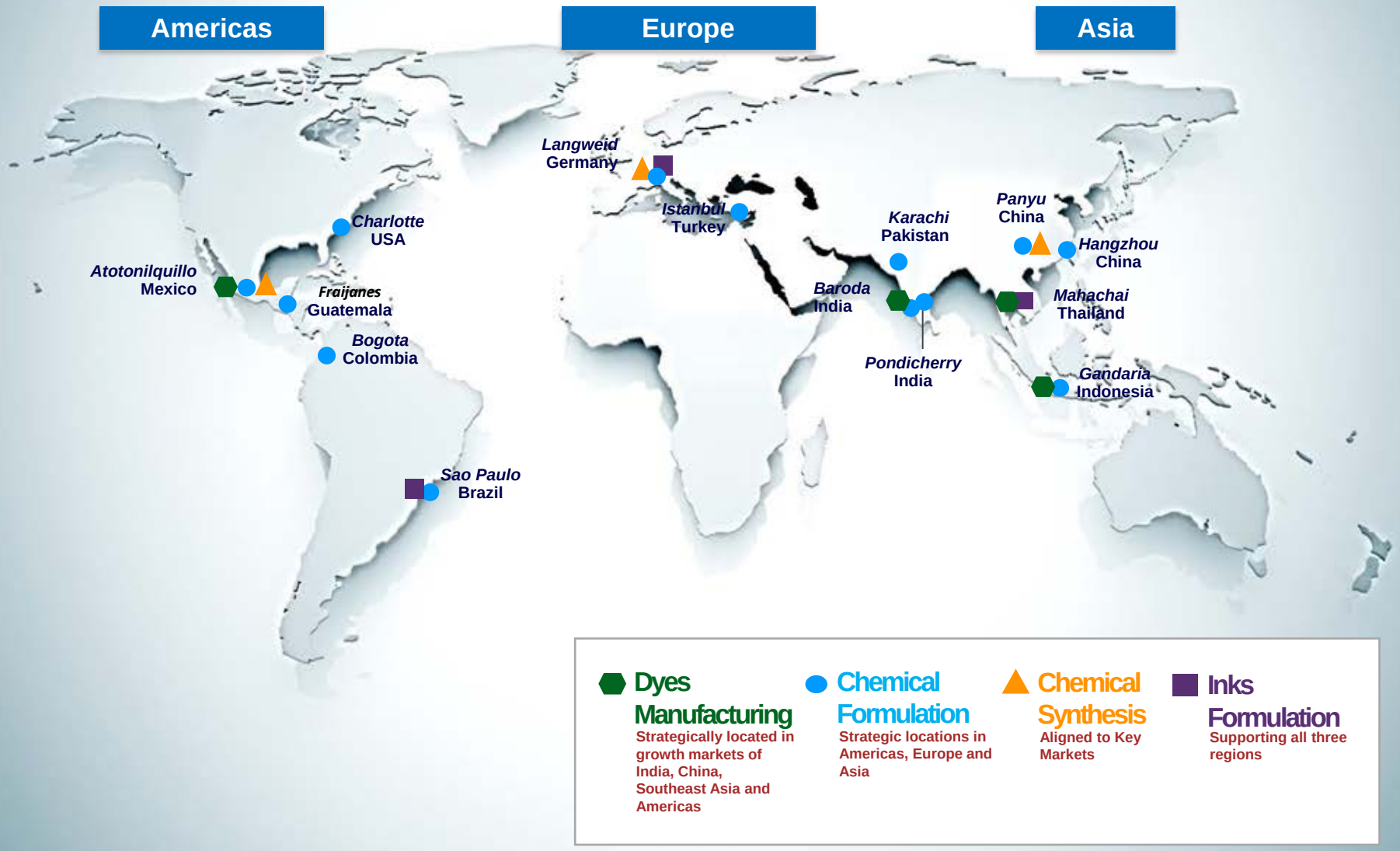
- Leading global textile chemicals, dyes and inks business
- Sales of approximately 0.8billion $ into more than 90 countries
- 6 primary manufacturing facilities worldwide in 6 countries (China, Germany, India, Indonesia, Mexico and Thailand)
- Best in class innovation
- Pioneering a sustainable textile industry

Global manufacturing footprint



INNOVATION

- > 50% of projects are related to Environmental Sustainability
- More than 1,000 patents
- 25% of products are less than 5 years old
- 5% of annual sales revenue is spent on innovation/product compliance
- 4 R&D Centers:
  - Basel - Switzerland
  - Langweid - Germany
  - Mumbai - India
  - Panyu - China

Commitment to wool

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longer than a century…..

Innovation Milestones Dyes

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1904	ERIOCHROM®	- Chrome dyes
1919	NEOLAN®	- 1:1 metal complex dyes
1951	IRGALAN®	- 1:2 metal complex dyes
1962	LANACRON® S	- mono-sulpho 1:2 mc dyes
1966	LANASOL®	- wool reactive dyes
1983	LANASET®	- wool dyeing at isoelectric point
1987	NEOLAN® P	- modified 1:1 mc dyes
1997	LANASOL® CE	- to replace Chrome dyes
2001	NEOLAN® P OPTIFLOW	- special granular form
2007	LANASOL® Deep Black CE-R	- strongest Black in the market
2008	withdrawal of Chrome dyes	

2009…. LANASOL range enlarging

Sustainability Innovation Collaboration

Innovation Milestones Auxiliaries

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1939	MITIN® FF	durable moth and beetle proofing
1966	ALBEGAL® B	for LANASOL® reactive wool dyes
1978	MIRALAN® HTW	wool protecting agent for PES/WO
1983	ALBEGAL® SET	leveler for LANASET® system
1988	ALBEGAL® PLUS	for NEOLAN® P system
1990	UV-FAST® W	UV absorber for wool
2000	ALBEGAL® CE	leveler for LANASOL® CE dyes
2002	ALBATEX®	AB45 & AB55 – buffer systems
2007	ALBATEX® PS-35	pH slider (acid donor)

2009…. Focus on Wool Care

Latest developments for Wool protection

Traditional LANASOL® dyeing process

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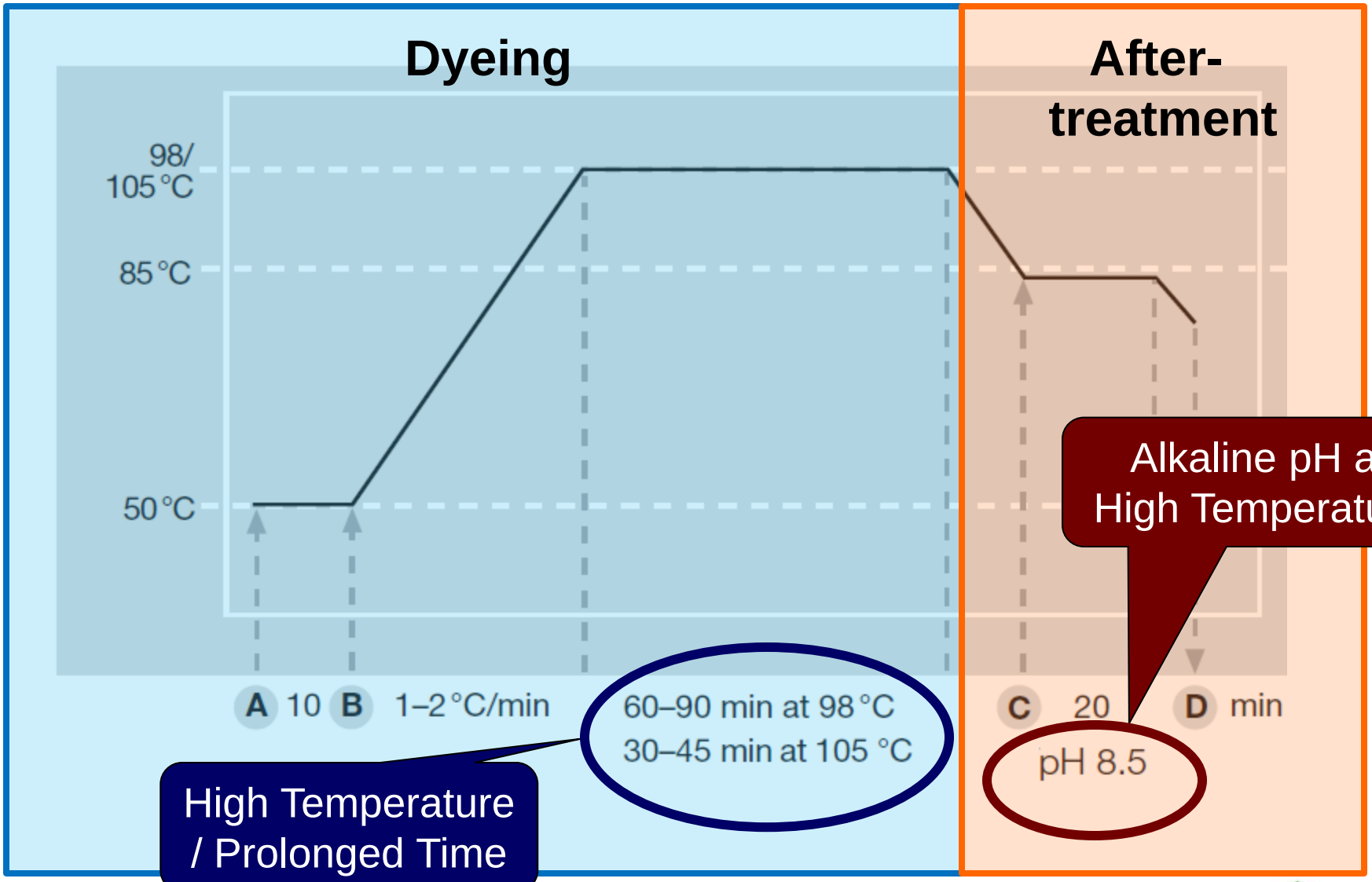

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MIRALAN® LTD

LANASOL® Low Temperature Dyeing process

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MIRALAN® LTD – Wool care

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- First and only low temperature dyeing auxiliary for LANASOL® dyes
- Combines perfect fiber and surface levelness with the feature of low temperature dyeing
- Guarantees best exhaustion and fixation of LANASOL® dyes at 85-90°C
- Low temperature dyeing process with MIRALAN® LTD to minimize wool fiber damage

Permits dyeing at 85-90°C with LANASOL® and LANASOL® CE

MIRALAN® LTD – Wool care

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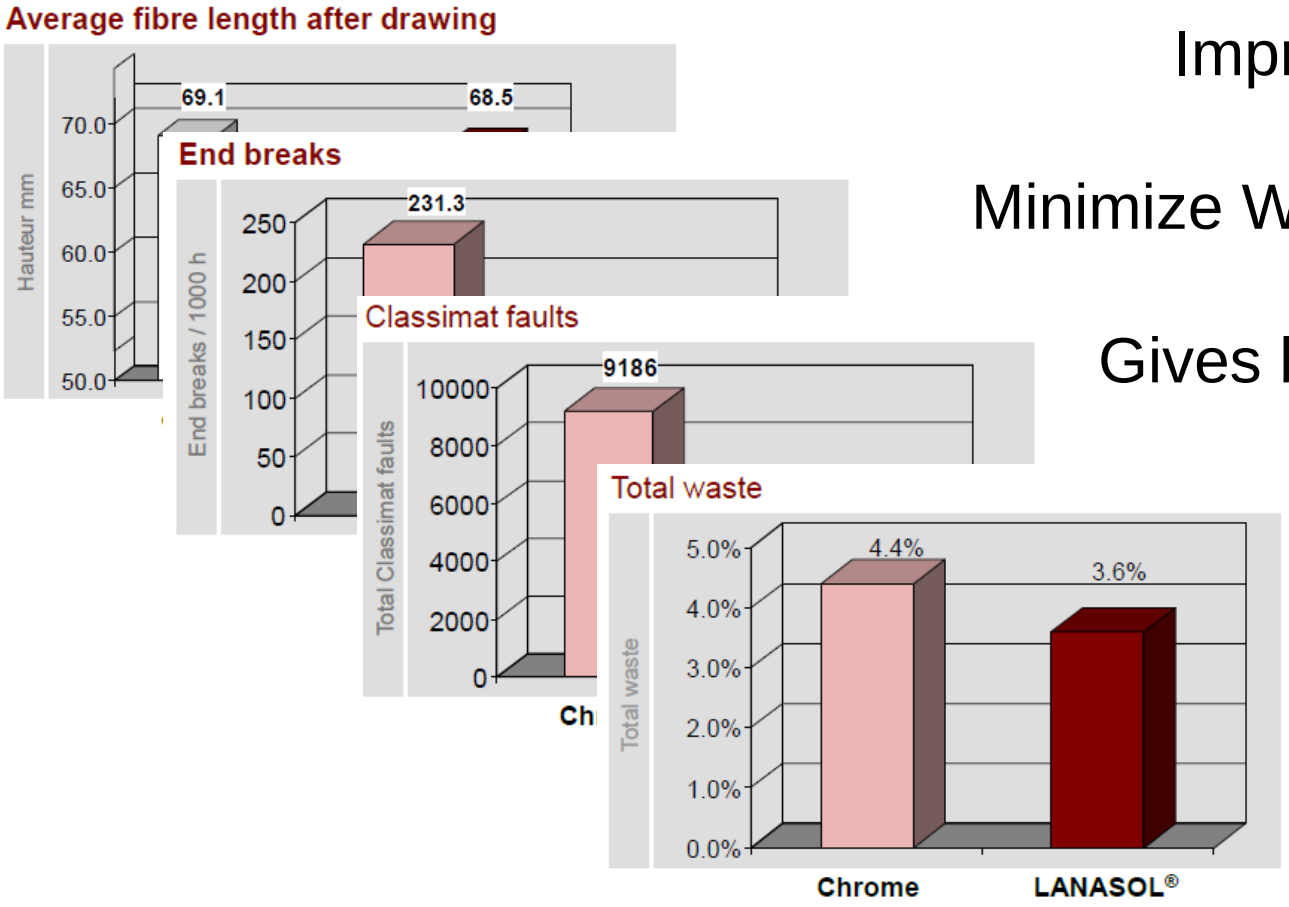

Improves productivity

Minimize Wool fiber damage

Gives better spinnability

Preservation of Wool quality

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ERIOPON® LAN

Neutral After-treatment of **LANASOL®** dyes

Sustainability
Innovation
Collaboration

ERIOPON® LAN – Wool care

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- Gentle and neutral after-treatment process
- Washing-off at lower pH with similar or even improved wet fastness properties
- Better and consistent wet rubbing fastness, particularly for deep and black shades
- Resulting in improved wool quality (reduced wool damage)
  - the gentle after-treatment process helps provide a softer fabric handle
  - improved combing and spinning processing with higher yields

Supports the wash-off of unfixed LANASOL® dyes under neutral conditions

ERIOPON® LAN – Wool care

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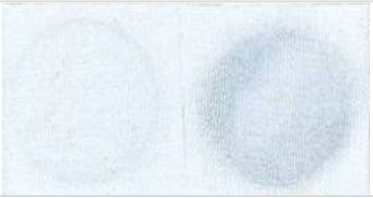
Method: ISO 105-X12

Deep black shade dyed with:

	Rubbing dry		Rubbing wet
Chrome dyes	**3**		**3/4**
LANASOL® After-treated 20 min. at pH 8.5	**3/4**		**3**
LANASOL® After-treated with **ERIOPON® LAN** at pH 7.3	**4**		**4**

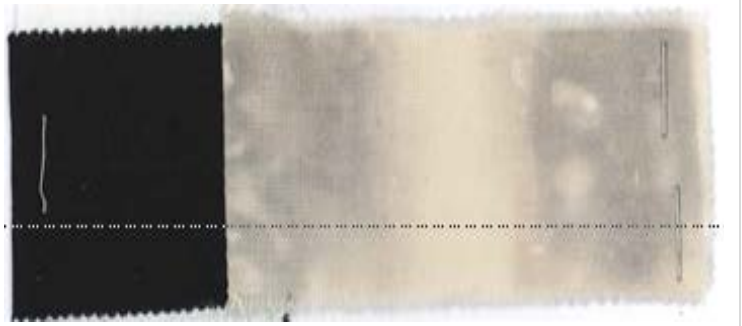
Improvement in rubbing fastness obtained
ERIOPON® LAN at lower pH

ERIOPON® LAN – Wool care

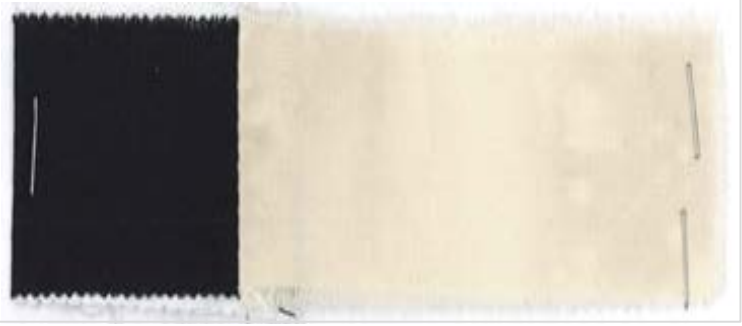
Method: ISO 105-X07

Cross dyeing with Acetic Acid

After-treatment at pH 7.5 for 20 min. at 85°C



After-treatment at pH 7.5 for 20 min. at 85°C with **ERIOPON® LAN**



ERIOPON® LAN provides excellent cross-dyeing performance even at lower pH

ERIOPON® LAN – Wool care

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Reduction in wool damage

Blind dyeing without dyestuff to demonstrate negative influence of high pH on wool

		Yellow Index*
Conventional after-treatment pH 8.5		**31.7**
After-treatment at pH 7.5 with **ERIOPON® LAN**		**29.2**

**Higher yellowing is an indication of higher wool damage*

The new gentle process along with **ERIOPON® LAN** supports improved Wool quality

MIRALAN® LTD & ERIOPON® LAN application

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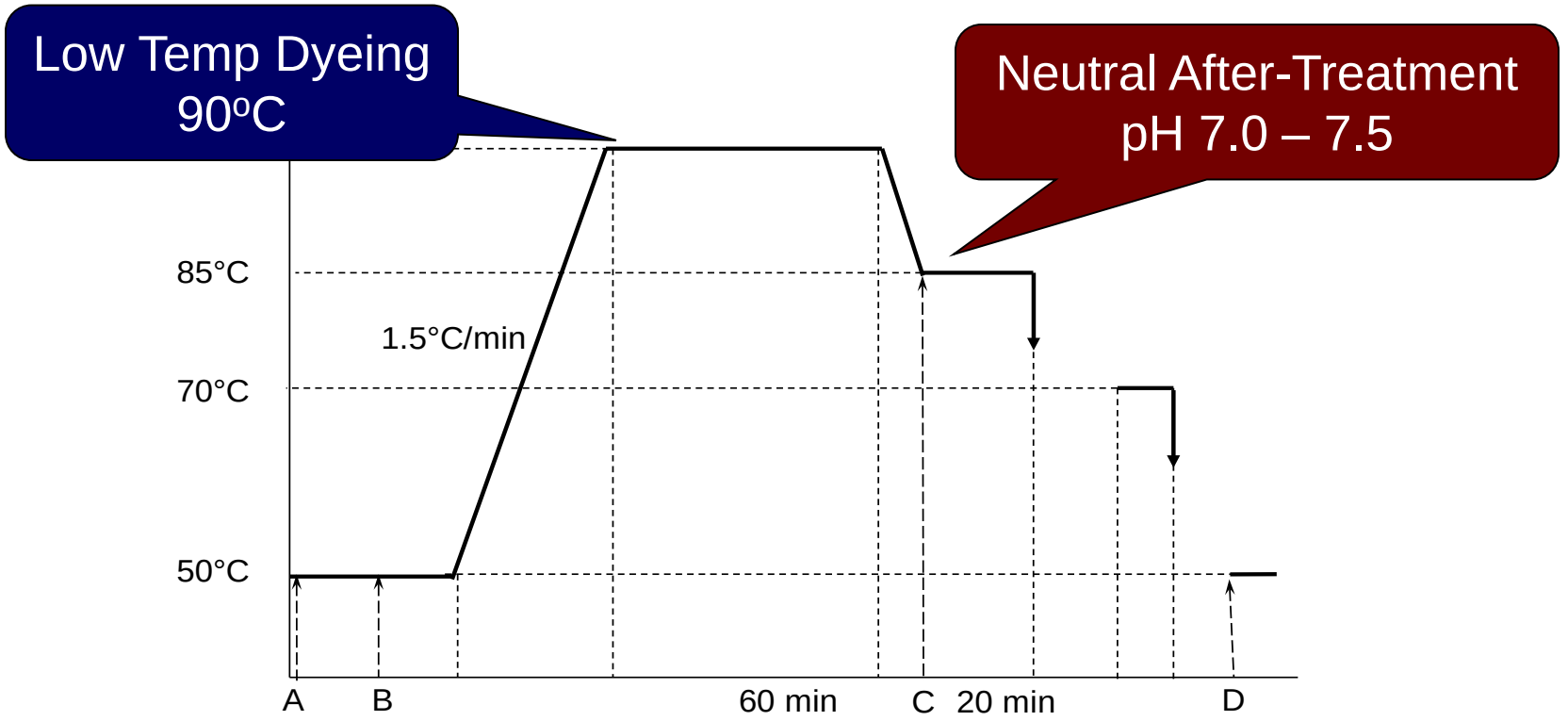

A: 0.5 g/l ALBAFLOW® UNI-01
2.0 g/l MIRALAN® Q-01
1-2. % **MIRALAN® LTD**
x % Acetic / Formic acid

B: y % LANASOL® dyes

C: z % soda ash
1- 3 % **ERIOPON® LAN**

D: 0.5 % Formic acid 85%

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A Sustainable Step Change in the Dyeing of Wool