HUNTSMAN

Enriching lives through innovation

LANASOL® Black NSC

No shade change in fabric finishing

Sustainability
Innovation
Collaboration

Chrome replacement activities

HUNTSMAN
Enriching lives through innovation

1997 LANASOL® CE trichromy

2000 LANASOL® Black CE

2004 LANASOL® Black CE-PV

2007 LANASOL® Deep Black CE-R

2008 withdrawal ERIOCHROME dyes

2010 LANASOL® Deep Black CE-2B

Huntsman Textile Effects
Pioneers of chrome replacements for nearly 20 years

LANASOL® Blacks

HUNTSMAN
Enriching lives through innovation

- **LANASOL® Black CE**
  First generation of LANASOL® Black. Shade and metamerism similar to C.I. Mordant Black 11. Economic standard black.

- **LANASOL® Black CE-PV**
  Ideal for replacing C.I. Mordant Black 9. Similar shade, metamerism and fastness as chrome dyes. Good color consistency under artificial light. Less economic compared to LANASOL® Black CE

- **LANASOL® Deep Black CE-R**
  Economical very deep black with orange hue. Unmatched shade depth. Highest wet fastness even for potting and cross dyeing.

- **LANASOL® Deep Black CE-2B**
  Economical very deep black with a bluish hue. Similar strength but a different hue than LANASOL® Deep Black CE-R. Highest wet fastness even for potting and cross dyeing

Why do we need a new LANASOL® Black ?

HUNTSMAN
Enriching lives through innovation

- With our 4 different LANASOL® Blacks we cover shade, metamerism and fastness of Chrome Blacks.
- A major issue however is still the **reddish** shade change in wool finishing (in decatizing).
- Chrome Black PV shows much less shade change (bluish) and is more stable in finishing.

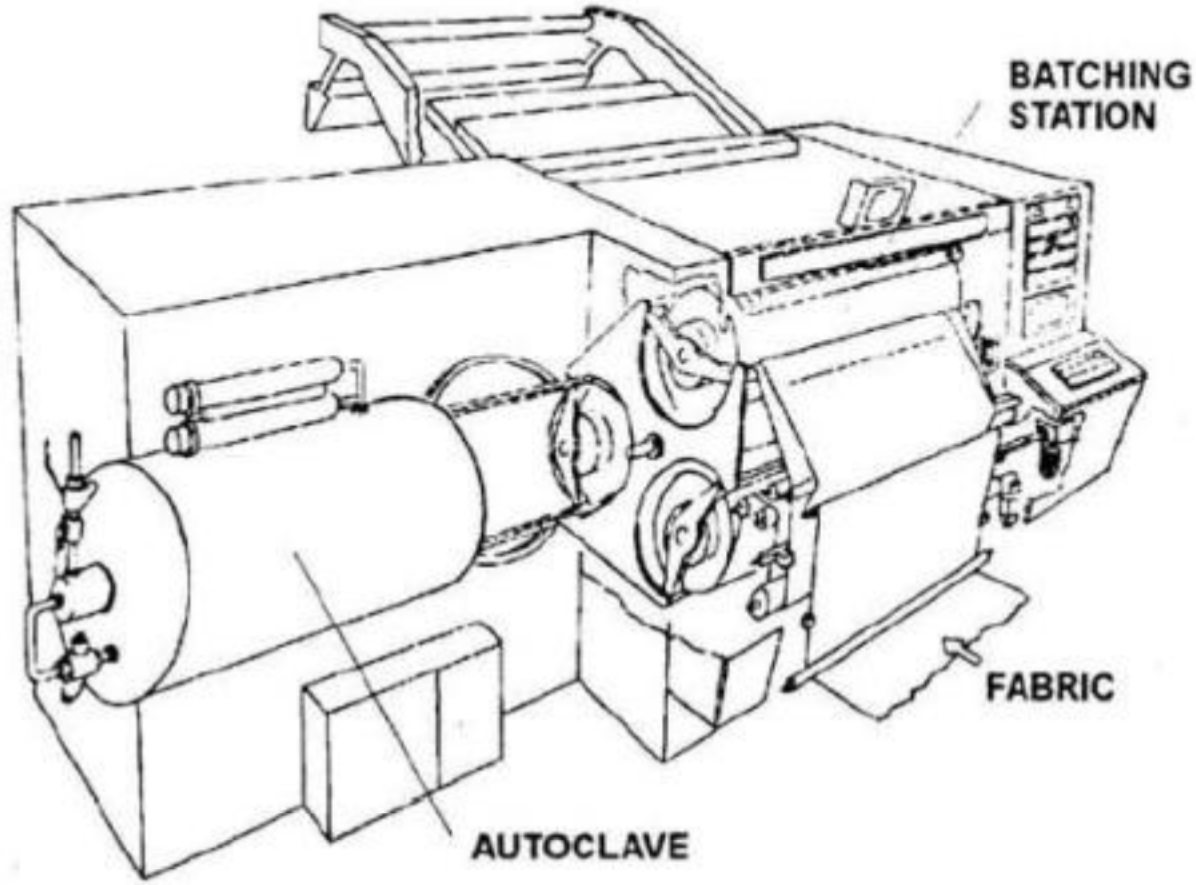
Kier decatizing (KD) (pressure decatizing)

HUNTSMAN
Enriching lives through innovation

- Pressure decatizing is a finishing process, which permanently sets the thickness and relaxed dimensions of a fabrics.
- It also permanently increases surface smoothness and can change fabric softness / suppleness.
- In a KD process the wool fabric is treated in an autoclave (pressurized vessel) with steam at a pressure greater than the atmospheric pressure.
- The fabric is interleaved with a wrapper and wound on a hollow perforated cylinder.
- After purging with steam to remove air, the fabric is heated with the steam at temperatures between 100℃ and 130℃ for several minutes.

Pressure decatizing (machinery)

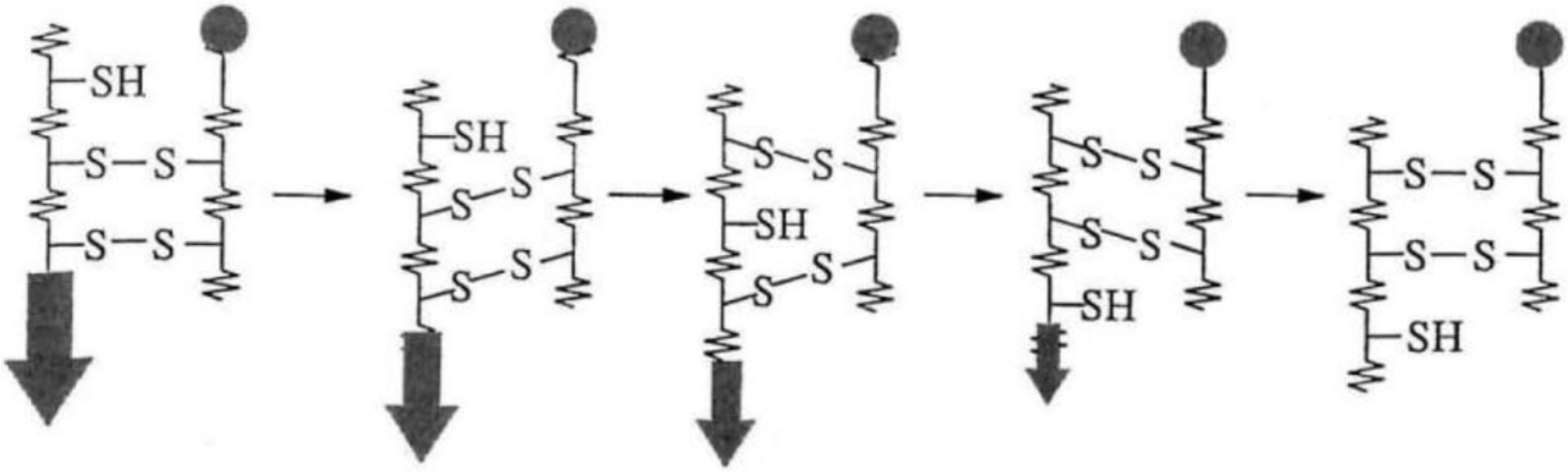
HUNTSMAN
Enriching lives through innovation



Pressure decatizing (chemistry background)

HUNTSMAN
Enriching lives through innovation

Permanent set takes place because of the rearrangement of disulphide bond crosslinks that stabilize the protein matrix (breakage of existing bonds and formation of new bonds).

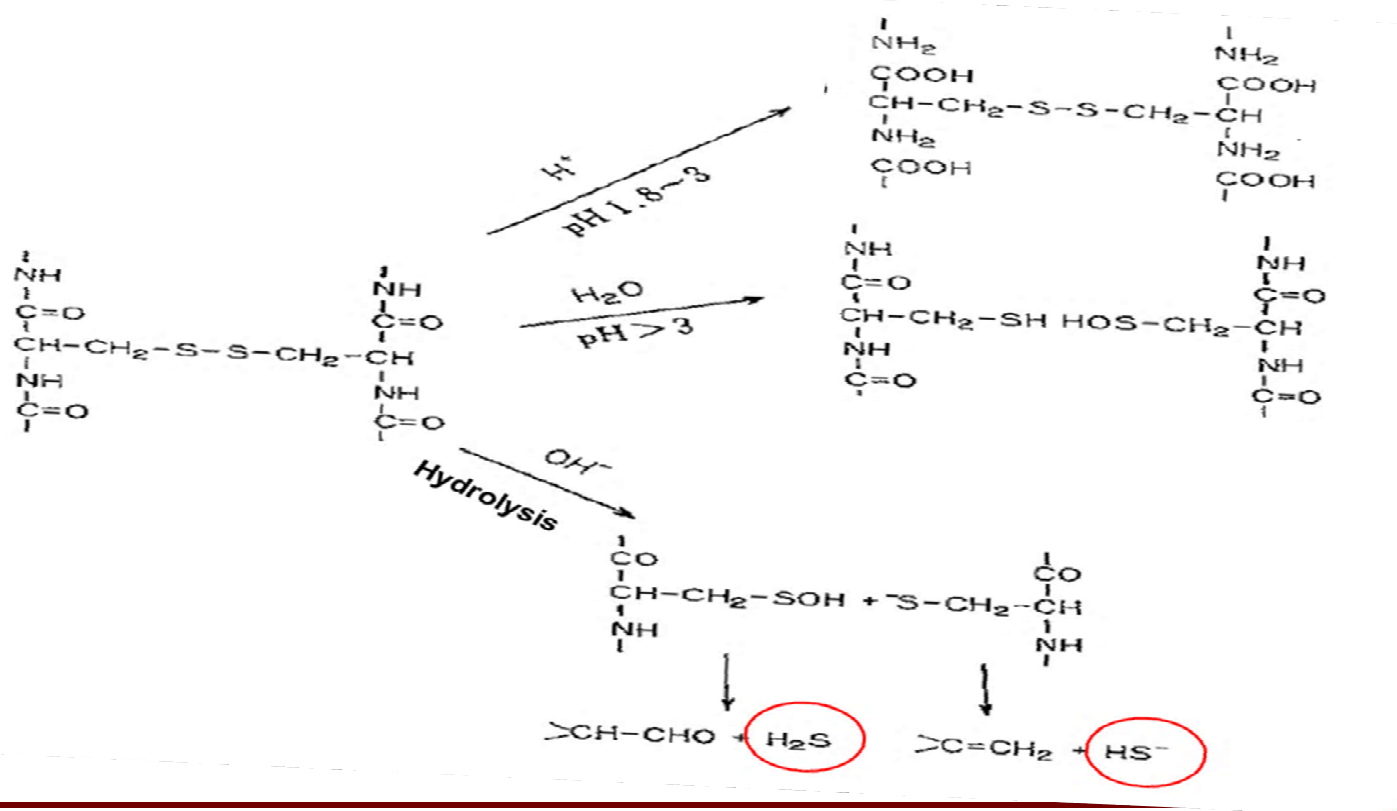


A negative side effect is the creation of reductive decomposition products, which can modify dyes and are responsible for shade changes.

Pressure decatizing (chemistry background)

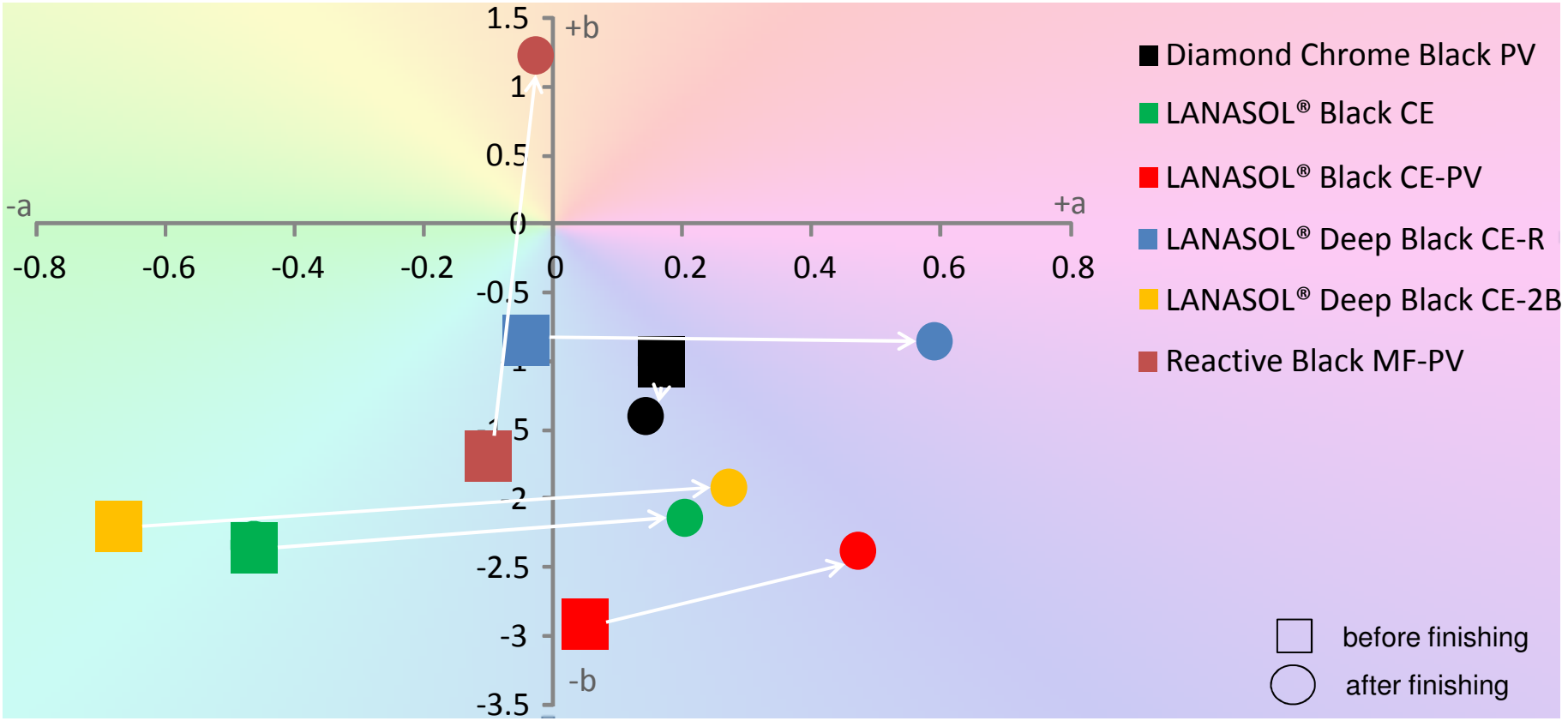
HUNTSMAN
Enriching lives through innovation

High temperature, humidity and pressure can cause some hydrolysis of the **cystine linkage** in wool. The resulting hydrogen sulfide (H_2S) is responsible for a partial reduction of dyes, which is the reason for shade changes.



Shade change in wool finishing (most important wool blacks)

HUNTSMAN
Enriching lives through innovation



- Chrome Black becomes slightly bluish.
- All LANASOL® Blacks move to red.
- Reactive Black MF-PV becomes very yellowish.

New LANASOL® Black

HUNTSMAN
Enriching lives through innovation

Target for research:

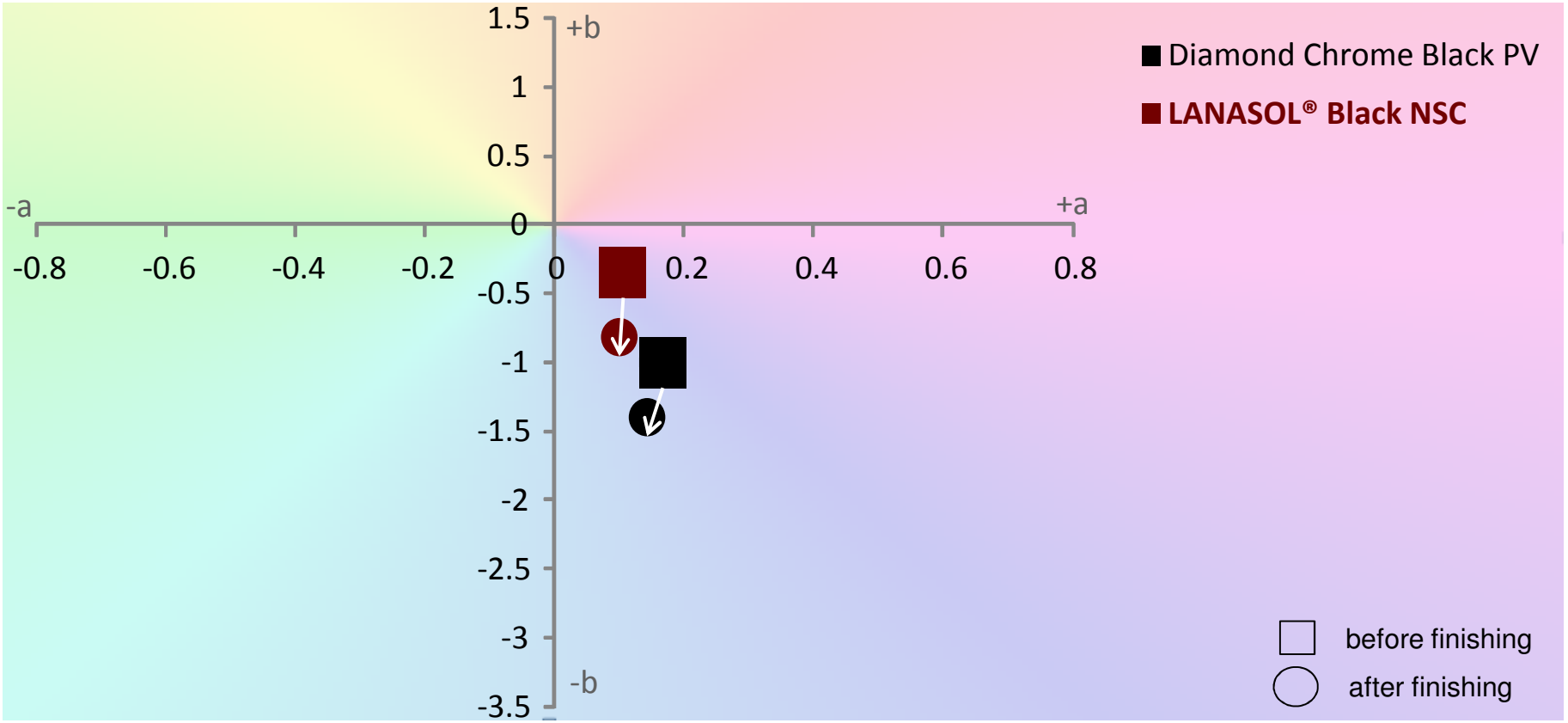
- A new dye for deep black shades, comparable to C.I Mordant Black 9.
- Low shade change in finishing, similar to chrome Blacks.
- Similar cost level like C.I Mordant Black 9 and other reactive wool Blacks from Huntsman

Additional benefits:

- LANASOL® Blacks have very high image as best chrome replacements, well-known by brands and supported by IWTO
- Technical support and expertise by Huntsman guarantees a smooth and trouble free daily production

NEW LANASOL® Black NSC (shade change in wool finishing)

HUNTSMAN
Enriching lives through innovation



LANASOL® Black NSC is a neutral Black, similar to Diamond Chrome Black PV
In finishing it changes only slightly, similar to Diamond Chrome Black PV

Granular formulation

HUNTSMAN
Enriching lives through innovation

- **Easy handling in the color kitchen**
  - Less dust
  - Faster, easier and more exact weighing
  - No residue left on the shovel
  - Fast and easy cleaning of equipment

Key benefits

HUNTSMAN
Enriching lives through innovation

- Most convenient LANASOL® Black to move away from chrome dyes
- Same behavior in wool finishing processes like chrome blacks: **no more issues with shade changes**
- Same fastness levels as chrome dyes
- Economic product with very high color strength
- Most advanced granular formulation:
  - Easy and exact weighing
  - Ideal for automated dosing systems
  - No dusting

LANASOL® Black NSC

No

Shade

Change