



evolve

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TIPS OF THE MONTH

A
BROTHER
is a **FRIEND**
given by **NATURE.**

~ Jean Baptiste Legouve



We must remember that one determined person can make a significant difference, and that a small group of determined people can change the course of history.

~ Sonia Johnson

Words may show a man's wit, but actions his meaning.

~ Benjamin Franklin

We promise according to our hopes, and perform according to our fears

~ Francois duc de la Rochefoucauld

WASHING METHODS

AATCC 135 (EUROPEAN STANDARD)

- 1- 4 Hrs. Conditioning at 21 C with 65% humidity.
 - 2- 24 * 24 inches Sq. Cutting
 - 3- Edges Over Locked
 - 4- Total Wt. = 1.8 Kgs. (with Loose fabric)
 - 5- Detergent (Wobe) = 66 gms (Run for 5 min.)
 - 6- Add Fabric
Normal Cycle: 12 min.
Dedicated Cycle : 8 min.
Permanent Spressed Cycle : 10 min.
 - 7- Tumble
 - 8- Every Cycle repeats for 3 times i.e., wash + tumble (Count 1 time)
- Again Conditioning
Than check the following:
1-Dimensional Stability
2-Wash Fastness

ISO BSEN 6330 (AMERICAN STANDARD)

- 1- 4 Hrs. Conditioning at 21 C with 65% humidity.
 - 2- 24 * 24 inches Sq. Cutting
 - 3- Edges Over Locked
 - 4- Total Wt. = 2.0 Kgs. (with Loose fabric)
 - 5- Detergent ECE (No Phosphate) = 66 gms (Run for 5 min.)
 - 6- Add Fabric
Normal Cycle: 12 min.
Dedicated Cycle : 8 min.
Permanent Spressed Cycle : 10 min.
 - 7- Tumble
 - 8- Every Cycle repeats for 3 times i.e., wash + tumble (Count 1 time)
- Again Conditioning
Than check the following:
1-Dimensional Stability
2-Wash Fastness

ISO 1 WASH (FORMERLY HAND WASH- ING TEST S.S 2680:1961)

- 1- 10 cm * 4 cm of fabric cut out. (Specimen Sample)
- 2- Two pieces of undyed fabric measuring 5cm * 4 cm taken
- 3- Specimen sample placed b/w two fabrics and all the three pieces are held together by stitching round the edges , leaving 5 cm * 4 cm exposed.
- 4- The composition of 1 of the colorless materials enclosing the specimen will be the same as the dyed sample and the other will be as indicated below:

If the first piece is The second piece will be

Cotton	Wool
Wool	Cotton
Silk	Wool
Linen	Wool
Viscose	Wool
Cellulose Acetate	Viscose
Polyamide	Wool or Viscose
Polyester	Wool or Cotton
Acrylic	Wool or Cotton

A solution is made containing 5 gm per liter of the soap conforming with the following specifications:

Free Alkali Calculated as Na ₂ CO ₃	0.3 % max.
Free Alkali Calculated as NaOH	0 . 1 % max.
Total Fatty matter	8 5 % max.
Titre of mixed fatty acids contained in the soap	30 C max.

- 5- Composite Specimen treated in machine at 40 C for 30 min, using sufficient of the soap solution to give a liquor ratio of 50:1
- 6- Composite samples rinsed twice in cold distilled water
- 7- Than rinsed for 10 min in cold running tap water
- 8- After squeezing, the stitching is removed on the two long sides and one short side leaving the dyed specimen and undyed specimen sewn together only one short side.
- 9- The pieces are opened and dried in air at a temp. not above 60 C
- 10- The change in color of the uncovered portion of the specimen is assessed with grey scale No.1 and the staining of the undyed material with grey scale

ISO 2 WASH

(FORMERLY S.D.C TEST NO.2)

- 1- 10 cm * 4 cm of fabric cut out. (Specimen Sample)
- 2- Two pieces of undyed fabric measuring 5cm * 4 cm taken
- 3- Specimen sample placed b/w two fabrics and all the three pieces are held together by stitching round the edges , leaving 5 cm * 4 cm exposed.
- 4- The composition of 1 of the colorless materials enclosing the specimen will be the same as the dyed sample and the other will be as indicated below:

If the first piece is	The second piece will be
Cotton	Wool
Wool	Cotton
Silk	Wool
Linen	Wool
Viscose	Wool
Cellulose Acetate	Viscose
Polyamide	Wool or Viscose
Polyester	Wool or Cotton
Acrylic	Wool or Cotton

A solution is made containing 5 gm per liter of the soap conforming with the following specifications:

Free Alkali Calculated as Na ₂ CO ₃	0.3 % max.
Free Alkali Calculated as NaOH	0 . 1 % max.
Total Fatty matter	8 5 % max.
Titre of mixed fatty acids contained in the soap	3 0 C max.

- 5- Composite Specimen treated in machine at 50 C for 45 min, using sufficient of the soap solution to give a liquor ratio of 50:1
- 6- Composite samples rinsed twice in cold distilled water
- 7- Than rinsed for 10 min in cold running tap water
- 8- After squeezing, the stitching is removed on the two long sides and one short side leaving the dyed specimen and undyed specimen sewn together only one short side.
- 9- The pieces are opened and dried in air at a temp. not above 60 C
- 10- The change in color of the uncovered portion of the specimen is assessed with grey scale No.1 and the staining of the undyed material with grey scale 2.

ISO 3 WASH

(FORMERLY MECHANICAL WASHING TEST A)

- 1- 10 cm * 4 cm of fabric cut out. (Specimen Sample)
- 2- Two pieces of undyed fabric measuring 5cm * 4 cm taken
- 3- Specimen sample placed b/w two fabrics and all the three pieces are held together by stitching round the edges , leaving 5 cm * 4 cm exposed.
- 4- The composition of 1 of the colorless materials enclosing the specimen will be the same as the dyed sample and the other will be as indicated below:

If the first piece is	The second piece will be
Cotton	Wool
Wool	Cotton
Silk	Wool
Linen	Wool
Viscose	Wool
Cellulose Acetate	Viscose
Polyamide	Wool or Viscose
Polyester	Wool or Cotton
Acrylic	Wool or Cotton

A solution is made containing 5 gm per liter of the soap conforming with the following specifications:

Free Alkali Calculated as Na ₂ CO ₃	0.3 % max.
Free Alkali Calculated as NaOH	0 . 1 % max.
Total Fatty matter	8 5 % max.
Titre of mixed fatty acids contained in the soap	3 0 C max.

To the soap sol. 2 gm / ltr. Of anhydrous sodium carbonate added.

- 5- Composite Specimen treated in machine at 60 C for 30 min, using sufficient of the soap solution to give a liquor ratio of 50:1
- 6- Composite samples rinsed twice in cold distilled water
- 7- Than rinsed for 10 min in cold running tap water
- 8- After squeezing, the stitching is removed on the two long sides and one short side leaving the dyed specimen and undyed specimen sewn together only one short side.
- 9- The pieces are opened and dried in air at a temp. not above 60 C
- 10- The change in color of the uncovered portion of the specimen is assessed with grey scale No.1 and the staining of the undyed material with grey scale 2.

ISO 4 WASH

(FORMERLY MECHANICAL WASHING TEST B)

- 1- 10 cm * 4 cm of fabric cut out. (Specimen Sample)
- 2- Two pieces of undyed fabric measuring 5cm * 4 cm taken
- 3- Specimen sample placed b/w two fabrics and all the three pieces are held together by stitching round the edges , leaving 5 cm * 4 cm exposed.
- 4- The composition of 1 of the colorless materials enclosing the specimen will be the same as the dyed sample and the other will be as indicated below:

If the first piece is The second piece will be

Cotton	Viscose
Linen	Viscose
Viscose	Cotton
Cellulose Acetate	Viscose
Polyamide	Viscose or Cotton
Polyester	Viscose or Cotton
Acrylic	Viscose or Cotton

A solution is made containing 5 gm per liter of the soap conforming with the following specifications:

Free Alkali Calculated as Na ₂ CO ₃	0.3 % max.
Free Alkali Calculated as NaOH % max.	0 . 1
Total Fatty matter % max.	8 5
Titre of mixed fatty acids contained in the soap max.	3 0 C

To the soap sol. 2 gm / ltr. Of anhydrous sodium carbonate & ten balls added.

- 5- Composite Specimen treated in machine at 95 C for 30 min, using sufficient of the soap solution to give a liquor ratio of 50:1
- 6- Composite samples rinsed twice in cold distilled water
- 7- Than rinsed for 10 min in cold running tap water
- 8- After squeezing, the stitching is removed on the two long sides and one short side leaving the dyed specimen and undyed specimen sewn together only one short side.
- 9- The pieces are opened and dried in air at a temp. not above 60 C
- 10- The change in color of the uncovered portion of the specimen is assessed with grey scale No.1 and the staining of the undyed material with grey scale 2.

ISO 5 WASH

(FORMERLY S.D.C TEST NO.4 (S.S 2685 : 1961)

- 1- 10 cm * 4 cm of fabric cut out. (Specimen Sample)
- 2- Two pieces of undyed fabric measuring 5cm * 4 cm taken
- 3- Specimen sample placed b/w two fabrics and all the three pieces are held together by stitching round the edges , leaving 5 cm * 4 cm exposed.
- 4- The composition of 1 of the colorless materials enclosing the specimen will be the same as the dyed sample and the other will be as indicated below:

If the first piece is The second piece will be

Cotton	Viscose
Linen	Viscose
Viscose	Cotton
Cellulose Acetate (Tri Acetate Only)	Viscose ---
Polyamide	Viscose or Cotton
Polyester	Viscose or Cotton
Acrylic	Viscose or Cotton

A solution is made containing 5 gm per liter of the soap conforming with the following specifications:

Free Alkali Calculated as Na ₂ CO ₃	0.3 % max.
Free Alkali Calculated as NaOH % max.	0 . 1
Total Fatty matter % max.	8 5
Titre of mixed fatty acids contained in the soap max.	3 0 C

To the soap sol. 2 gm / ltr. Of anhydrous sodium carbonate added.

- 5- Composite Specimen treated in machine at 95 C for 4 hrs., using sufficient of the soap solution to give a liquor ratio of 50:1
- 6- Composite samples rinsed twice in cold distilled water
- 7- Than rinsed for 10 min in cold running tap water
- 8- After squeezing, the stitching is removed on the two long sides and one short side leaving the dyed specimen and undyed specimen sewn together only one short side.
- 9- The pieces are opened and dried in air at a temp. not above 60 C
- 10- The change in color of the uncovered portion of the specimen is assessed with grey scale No.1 and the staining of the undyed material with grey scale 2.



BINDERS

Binders are long chains of macromolecules capables to form a film. The binder has a three-dimensional structure which binds pigment and fiber or substrate.

These links are formed during the crosslinking with dry heat where a change in pH favors self-crosslinking, in a case or the reaction with external fixing agents in others.

To calculate the amount of binder needed for an amount of pigment given, it should consider the following; small quantities of pigment (1gr/Kg) require at least a minimum binder layer of 5 microns thick, this means it must be used a minimum of 60 g / kg of a 48% solids binder.

In general the amount of binder depending on the pigment is calculated as follows.

$$A \text{ gr/Kg of pigment} = 60 + \left(\frac{3A}{2} \right) \text{ gr 48\% solids binder}$$

$$\text{Eg.: } 80 = 60 + \left(\frac{3 \times 80}{2} \right) = 180 \text{ grs. of binder}$$


Binding agents / general

Binding agents

• Linking effect with the pigments on the textile substrate.

- all of them are dispersions
- some of them are co-polymers
 - Acrylates $\text{CH}_2=\text{CH}-\text{COO}-\text{CH}_3$
 - Butadiene $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$
 - Polyurethanes $\text{R}-\text{NH}-\text{COO}-\text{R}'$
- properties of the binder film:
 - It is formed during drying
 - soft/tack
 - hard/dry
 - some are cross-linking

BINDING AGENTS influence of the structure

Basic component	TG (°C)	TACK	HARDNESS	WATER ABSORPTION
$\text{CH}_2=\text{CH}-\text{COO}-\text{CH}_3$ Methyl acrylate	+ 5	-	average	moderate
$\text{CH}_2=\text{CH}-\text{COO}-\text{C}_2\text{H}_5$ Ethyl acrylate	- 27	+	soft	low
$\text{CH}_2=\text{CH}-\text{COO}-\text{C}_4\text{H}_9$ N-butyl acrylate	- 57	++	very soft	very low
$\text{CH}_2=\text{CH}-$  Styrene	+ 95	--	very hard	very low
$\text{CH}_2=\text{CH}-\text{C} \equiv \text{N}$ Acrylonitrile	+ 105	--	very hard	low
$\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$ Butadiene	- 86 (emuls.)	++	very soft	very low

binding agents / self-crosslinkable

2 types of binding agents

- not self-crosslinkable
- self-crosslinkable

Definition of self-crosslinkable

- P reactive groups in three crosslinked dimensions

Main influence on self-crosslinking

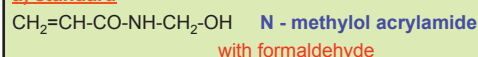
- Cross-linking temperature
- Cross-linking dwell-time
- Catalyzing / pH
- Type and number of reactive groups

Effects of the cross-linking

- It increases the permanence
- It increases fastnesses
- It increases the temperature stability

Binding agents, reactives components for self-crosslinking

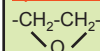
a) standard



Reactions:

- Secondary amine groups
- N-methylol groups / N-methylol ether groups
- Amide groups
- Melamine groups
- Dicyandiamide groups
- Associated groups

b) alternative



- Epoxy components (e.g. epichlorohydrin)
formaldehyde-free

Reactions:

- Hydroxyl groups, carboxylic groups
- Amine groups, reacc. Methylene groups

CRESA CRYL 126 (binder)

Features

48% solids.
Self-crosslinkable acrylic polymer.
Tg-18°C.
Excellent shear stability.
Formaldehyde & APEO free.
Excellent redispersibility

Properties

Excellent fastness properties and soft feel.
Good runnability.
It does not turn yellow.
Minimal effect on the consumption of thickener.
It does not tend to block the screens during prolonged stops.

2015

Happy New Year



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