



Washing and dry cleaning of PROBAN[®] treated domestic and institutional articles

A) LAUNDERING

WASHER/EXTRACTORS

1.1 LOADING FACTOR:

The normal loading factor of 55g/l (3 lb/ft³) is satisfactory for cotton articles, but white and colored articles should not be washed together in the same load.

1.2 WASHING PROCESS (MEDIUM SOILING)

Generally, a two wash process will be satisfactory for medium soiled work, consisting of a break wash, or first wash, to remove particulate and surface soiling and a second wash, at a higher temperature and alkalinity, to remove more resistant soiling and to achieve thermal disinfection.

It is strongly recommended that soft water is used in all wash and rinse processes.

1 First Wash:

Fill - Cold or warm, fresh or recovered water, medium dip level.

Temperature - After mixing, hold at 40°C (105°F) for 3-4 minutes, then raise to 60°C (140°F).

Detergent - Use manufacturers' recommendations. See section 4.1 Additional Laundering Advice.

Alkali-(guideline) - 1.2 g/l (80-90gpg)

Time - 5-7 minutes after mixing and temperature have been achieved

Drain - 1 minute

2 Second Wash:

Fill - Cold, warm or hot, fresh or recovered water, low dip level.

Temperature - 71-75°C (160-167°F)

Detergent - Use manufacturers recommendations. See section 4.1 Additional Laundering Advice.

Alkali-(guideline) - 1.8 g/l (130gpg)

Time - 6-8 minutes after mixing and temperature achieved.

Drain - 1 minute.

Interspin

On completion of the wash cycle, a 1 minute Interspin is recommended before rinse programmes.

Rinsing/Extraction

First and second rinse cycles: Fill Cold or warm, fresh soft water, high dip level.

Time - 2 minutes from achieving dip level.

Drain - 1 minute.

Interspin - 1 minute.

Additional rinses if required:

Fill - Cold or warm, fresh soft water, high dip level.

Time - 2 minutes from achieving dip level.

Drain - 1 minute.

Interspin 1 minute.

Extraction

Extraction time of 8-10 minutes following final rinse cycle.

2.1 WASHING (HEAVY SOILING)

Where heavily soiled work is to be processed, a third wash may be required. In this situation, the process should be:

1. Break Wash:

Fill - Cold or warm, fresh or recovered water, medium dip level.

Temperature – 40°C (105°F).

Detergent - Use manufacturers recommendations. See section 4.1 Additional Laundering Advice.

Alkali - 1.4 g/l (100gpg)

Time - 5 minutes after mixing and temperature achieved.

Drain - 1 minute.

2. First Wash:

Fill - Cold or warm, fresh or recovered water, medium dip level.

Temperature – 60°C (140°F).

Detergent - Use manufacturers' recommendations. See section 4.1 Additional Laundering Advice.

Alkali - (guideline) - 1.8g/l (13Ogpg)

Time - 6-8 minutes after mixing and temperature achieved.

Drain - 1 minute.

3. **Second Wash:**

Fill - Cold or warm, fresh or recovered water. Medium dip level.

Temperature - 71-75°C (160-167°F).

Detergent - (guideline) - 0.25kg (0.5lb) synthetic built detergent containing carboxymethyl cellulose (CMC). Manufacturers' recommendations may be used, see section 4.1 Additional Laundering Advice.

Alkali - (guideline) - 0.3-0.45kg (0.75lb) sodium metasilicate to achieve alkalinity in the region of 2.0g/l (145gpg).

Time - 8-10 minutes.

Drain - 1 minute.

Interspin

On completion of the washing cycle, a 1 minute Interspin is recommended before rinse programmes.

Rinsing/Extraction

First and second rinses

Fill - Cold or warm, fresh soft water, high dip level.

Time- 2 minutes from achieving dip level.

Drain - 1 minute.

Interspin - 1 minute

Additional rinses, if required:

Fill - Cold or warm, fresh soft water, high dip level.

Time - 2 minutes from achieving dip level.

Drain - 1 minute.

Interspin - 1 minute.

Extraction

Extraction time of between 8-10 minutes following final rinse.

3.1 CONTINUOUS BATCH WASHERS (CBWs)

Processes for CBW systems will be as directed by the machine format and cycle/transfer times.

If sodium hypochlorite is used for the bleaching of non flame retardant fabrics, residual amounts of sodium hypochlorite should be removed throughout the system by the use of an anti-chlor agent before washing flame retardant fabrics on the same CBW system

1. LOADING FACTOR:

The normal loading factor for a CBW is satisfactory for cotton articles. It is important that for both 36kg and 50kg CBWs that the specified load weights are adhered to.

2. PRE-WASH SECTION

Temperature - 38°C (100°F).

Detergent - Use manufacturers' recommendations. See section 4.1 Additional Laundering Advice.

Alkali (guideline) - 0.5 - 0.9 g/l (65 - - 110gpg).

Time - (dictated by CBW format and cycle time) usually 4-7 minutes.

3. HOT WASH SECTION

Temperature - 50°C rising to 80°C (120°-176°F).

Detergent - Use manufacturers' recommendations. See section 4.1 Additional Laundering Advice.

Alkalinity - (guideline) 0.9 – 1.5g/l (65-110gpg).

Time - (dictated by CBW format and cycle times) usually 12-15 minutes.

4 RINSE SECTION

Temperature - 50°C falling to 20°C (120°-68°F)

Time - (time dictated by CBW format and cycle times) usually 12-15 minutes.

4.1 ADDITIONAL LAUNDERING ADVICE

1. It is strongly recommended that all wash processing should be carried out in softened water using synthetic detergents (see manufacturers' recommendations).
2. The use of soap in water containing hardness salts may result in the deposition of insoluble lime soaps on the work. These deposits are flammable and therefore provide an

additional fuel loading which may adversely affect the flame retardant performance of the fabric.

3. If the deposition of hard water salts occurs, removal can be fully or at least partially achieved through acid souring with acetic acid followed by neutralisation with sodium carbonate.

PROBAN® treated fabrics have good stability to acid souring. Acid sour treatments, through the removal of surface deposits, provide an improvement in the flame retardant performance of in service articles.

4. If water of hardness greater than 3⁰ Clark (45 ppm calcium carbonate) is used, it is recommended that any sodium metasilicate in the washing formulation is replaced by sodium carbonate and carboxymethyl cellulose (CMC) to prevent re-deposition of dirt.

The use of sodium metasilicate in washing formulations in combination with water of hardness greater than 3⁰ Clark (45 ppm calcium carbonate) can cause the formation of insoluble calcium and magnesium silicates, which may adversely affect the flame retardant performance of the fabric.

5. SODIUM HYPOCHLORITE (chlorine) bleach **MUST NOT BE USED** as it will destroy the flame retardant properties.

6. Perborate containing detergents can be used. However, detergents containing a high concentration of sodium perborate should only be used for washing or bleaching at temperatures not exceeding 75°C. When detergent formulations contain a bleach activator it is advisable that a temperature of 60°C should not be exceeded.

High temperature washing with high sodium perborate concentrations can adversely affect the flame retardant performance of the fabric if multiple washes are carried out under these conditions.

For stain removal purposes the occasional use of cold, dilute hydrogen peroxide is permissible, providing that bleaching is **NOT** carried out in every laundering cycle.

Care should be taken to exclude the presence of metal ions, which can catalyse strong oxidising agents such as hydrogen peroxide.

7. Do not use starch or other additives, or masking of the flame retardant properties may occur.

B) WASHING INFORMATION REFERENCES

1. Additional washing information describing processes suitable for sterilisation and disinfection can be obtained in PDS "Sterilisation and Disinfection of **PROBAN®** Treated Articles".
2. Information covering suitable detergents and conditions for domestic washing can be obtained in PDS "Domestic Washing of **PROBAN®** Treated Articles".
3. Additional information on the laundering of flame retardant fabrics can be obtained in the National Health Service Safety Information Bulletin No. 26 SIB(86)14.

C) DRY CLEANING

PROBAN cotton garments may be dry cleaned using any of the normally used dry cleaning solvents without impairing the flame retardant properties. Standard precautions in the prevention of cross staining relating to the cleaning of mixed colors and batches of variable shade depth should be adhered to.

A typical cycle might be:

1. 10 minutes filtration wash in solvent.
2. 3 minutes hydro-extraction.
3. 20 minutes drying at 60°C (140°F).
4. 2 minutes, deodorizing at ambient temperatures.

It has been found that the repeated dry cleaning of **PROBAN®** treated garments may not remove all the water soluble impurities, e.g. perspiration salts, and occasional aqueous laundering is recommended to remove these.

This laundering and washing information has been prepared by RHODIA Consumer Specialties Ltd. in consultation with the Fabric Care Research Association.

Should any further information be required please contact our

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