

WESTPOINT
HOSPITALITY

LAUNDRY GUIDE

Bedding

martex[®]

Textile solutions for a better guest experience

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Introduction

This document is meant to be a general guideline. Different laundries have different equipment, processes, and chemical systems. On-premise laundries often use residential type equipment or heavy-duty industrial versions of residential equipment, such as front loading washing machines and tumble dryers. The heavy duty equipment generally use higher temperatures and process larger volumes than residential laundry equipment. Commercial washers can process 25-170 pounds of linens and washing temperatures can be between 160-180 F for disinfection/sanitation. Commercial tumble dryers operate between 80-180F. Some on-premise laundries do not iron and some use heated roll ironers or compact versions which can operate at ironer surface temperatures up to 420 F. Commercial laundries often use high volume equipment such as heated roll ironers with one, two, or even three roll ironers which can operate up to 420 F ironer surface temperatures per ironer.

Therefore, individual laundries must determine the best practices for their own facility. **When considering best practices for laundering 100% cotton and cotton/polyester blend bedding products, they must consider that bedding products must be laundered with care.** The purpose of this document is help laundries and hospitality property operators understand the critical care issues to achieve maximum performance and durability of bedding products.

1. Detergent Selection

A nonionic surfactant with good emulsifying properties should be a part of the detergent system. Nonionic surfactants wet and clean fibers more readily than other classes of surfactants and are compatible with other products in the wash bath. They remove and suspend soil and also have some anti-microbial properties. The use of sufficient detergent for the removal of soils, especially oils and fats, is essential to prevent re-depositing of soil and irreversible graying or dulling of the sheets. Many commercial laundries use what's called a "built" detergent which means they contain additives such as alkali to adjust pH to 8-9 for maximum cleaning.

2. Washing

New bedding products must be washed before use and separate from other bedding to ensure that any fugitive dyes and chemicals from manufacturing are removed.

On-premise and other smaller laundries sometimes sort and separate heavily soiled items so those items will receive stringent soil removal process prior to the normal washing process. Large commercial laundries generally do not sort prior to washing and tend to set up a harsher washing process to handle the bulk of conditions. During folding and inspection soiled or stained items will be sorted for reprocessing.

Oils and fats are common soils which are difficult to remove in laundering. They are most readily emulsified and dispersed with detergent. Other difficult to remove stains include make-up, caffeine, wine and blood. These stains may require chlorine or non-chlorine bleach in addition to detergent for stain removal.

Modern detergents are effective in a range of temperatures from 90 F to 160 F. Most USA laundries prefer to use higher temperature systems in the 140-160 F range. Higher temperature systems aid in softening oils and fats for removal and assists in thermal disinfection/sanitization. The Center for Disease Control (CDC) has published recommendations for healthcare laundries to use 160 F for 25 minutes and 50-150 PPM chlorine minimums for disinfection and sanitation. The CDC recognizes that newer laundry chemical systems are available using lower temperatures and they generally have less adverse effects on shrinkage and colors, though lower temperature systems generally require different or more concentrated chemicals.

In general, washing conditions vary and depend on time, temperature, and type and concentration of washing chemicals.

3. Bleach

Chlorine bleach is routinely used in commercial laundries in a range of 50-150 PPM to both sanitize the fabric and decolorize stains. Chlorine bleach has several disadvantages if not used correctly. It can have adverse effects on dyed or printed colors which appear as simple stains to the bleach. Chlorine can also be retained in fabric, and retained chlorine can damage and yellow fabric during drying, ironing, and storage. Chlorine is also corrosive and toxic if not handled properly. Modern systems are available which use both reduced chlorine and non-chlorine bleach for promoting whiteness and disinfection/sanitization. There are also some enzyme type products available to aid in sanitation.

4. Anti-chlor

If chlorine bleach is used, an anti-chlor after treatment is recommended to prevent damage to the fabric. As the name suggests, an antichlor is a reagent which inactivates and neutralizes chlorine absorbed and retained in fabric. Retained chlorine can cause fiber damage and yellowing of the wash load in drying, ironing, and in storage. Some anti-chlor products also act as a “reducing bleach” and help remove certain types of medical stains.

5. Souring

Alkaline residue from the wash may also cause yellowing in drying, ironing, and storage. The purpose of a sour is to neutralize alkaline residues and lower the fabric pH to neutral or slightly below pH 7. Some souring products assist in rust removal. The fabric pH is the most effective guide in the use of a sour. Oils and fats are common soils which are difficult to remove in laundering. They are most readily emulsified and dispersed with detergent. Other difficult to remove stains include make-up, caffeine, wine and blood. These stains may require chlorine or non-chlorine bleach in addition to detergent for stain removal.

6. Rinsing

Three rinses are recommended for effective soil removal and reducing pH. It has been proven that repetitive rinsing is more effective than single rinsing. Sours and softeners are generally added during the rinse cycles. To avoid thermally induced wrinkling and creasing, reduced

water temperatures are used in each cycle. Reducing rinse temperatures from 140° F to 120° F to 100° F will cool the wash load and accomplish the required results.

7. Fluorescent Whitening Agents & Tints

By definition, whitening agents and tints are dyes. When used judiciously on whites, the appearance of the white fabric is improved, but overuse in whites leads to dullness and graying. Whitening Agents are not recommended for colored products, and can lead to color loss on pastels along with dulling and alteration of dark colors.

8. Softeners

Softeners provide for a smooth and supple fabric and a fresh sent. A softener should be chosen that is readily removed in subsequent laundering to avoid build-up and consequent soiling, water repellency or greasiness.

9. Drying

As a general rule of thumb when drying cotton/polyester blend sheeting, approximately four (4) gallons of water is removed per one hundred (100) pounds of fabric, and in 100% cotton sheets approximately nine (9) gallons of water is removed per one hundred (100) pounds of fabric. Obviously, blend sheets will dry faster than all cotton sheets. **Unfortunately, the rapid drying of blend sheets can also lead to overheating and damage to the sheets in some cases.**

Many commercial laundries use tumble dryers to partially dry the sheets to reduce the load on roller ironing which operates up to 420 F surface temperatures. Moisture levels in the 15-35% range are common coming out of drying going to ironing to improve wrinkle and crease removal. The ironing both presses the linens and completes the drying, and with high temperature roller drying it is critical not to over-heat the linens.

Many on-premise and smaller laundries use tumble dryers with no ironing. Caution should be exercised in all drying process. Over drying and over-heating fabrics is a critical factor in bed linen durability.

Commercial tumble driers can be purchased to process 25 to 170 pounds of linens and operate at 80-180 F. **Scorching and yellowing may occur if the sheets are over dried at the higher end of the temperature range. Repeated over-drying will also damage the cotton fibers; fade colors, and increase shrinkage and wrinkles.** In extreme cases, polyester fibers can begin to contract and even "melt and fuse" which creates harsh or brittle areas within the fabric. Fitted sheet elastic may lose elasticity and with the resulting shrinkage, the fitted sheets may become unusable. **Recommend drying temperature of 140-160. Product should be removed at 10% moisture level for best results.**

Overfilling tumble dryers can cause excessive abrasion and wear and most important the bedding products will not tumble and dry evenly causing uneven drying and over-drying and resulting in damaged product. Many other problems can occur in drying that can cause over-drying such as mechanical failure of thermostats.

10. Ironing

The principal damage to sheets is overheating which primarily occurs during drying and with some heated roller ironing. If poly/cotton blend sheets are overheated, thermal contraction and shrinkage and even fusion of polyester fibers occurs. Polyester fibers begin to contract significantly when heated above 360°F in a relaxed state. Contraction increases rapidly as fiber temperature increase beyond the 360°F threshold. Progressive contraction will occur with repetitive excessive heating. Overheating cotton sheets weakens the fiber and causes it to become brittle. Ironer temperatures are discussed in more detail later, but it is recommended that fabric temperature should not exceed 300 F. **Important commercial laundry operators understand that fabric temperature is the most important aspect when processing sheets.**

Heated mangle or roller press type ironers are most common in commercial laundries. Hot oil or thermal ironers are sometimes operated at temperatures in excess of 420 °F. Electric ironers can reach similar temperatures. Steam heated ironers general operate in the range of 320-360 F. A rationale for the use of such high ironing temperatures is to provide a large temperature differential above the boiling point of water, 212 °F, and thereby increase the rate of drying and ironer production. The danger is that the temperature of the bedding fabric rises rapidly once completely dried. The specific heat or energy required for heating of polyester fiber is very low.

Therefore, the temperature of the polyester in a blend sheet virtually jumps to the temperature of the ironer surface when the fabric is dried. **Excessive ironer**

temperatures can lead to excessive fabric temperatures and permanently damage products.

The solution to thermal shrinkage and fiber fusion in blend sheets using heated mangle/roller ironers is apparent...don't over-heat sheets...and do not allow fabric temperatures to exceed 300°F at any time.

Controlled ironing temperature and conditions will also provide such ancillary benefits as reduced energy cost, reduced static generation, improved ambient working temperature, in addition to increased life of sheets.

● **Summary and specific points to emphasize**

1. Different laundries have different equipment, processes, and chemical systems, therefore must determine the best practices for their facility.
2. Bed linens can be laundered with care and a clean and sanitized result achieved.
3. Selection of proper water temperatures, volumes, and rinse cycles are critical. Wash temperatures, times, and types and concentration of chemicals are also critical.
4. Excessive chlorine and retained chlorine will permanently damage bedding fabrics, causing them to yellow or become weak in drying, ironing, and storage.
5. Over-drying and over-heating bedding fabrics in ironing are primary causes of bedding fabric damage. Bedding fabrics should not exceed 160 F for any extended period in a tumble dryer. Fabrics should never exceed 300 F for any period of time in a dryer or roller press.