

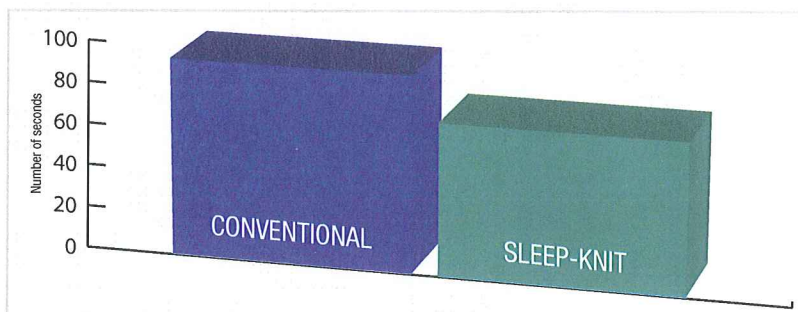
General Laundering Guidelines for Sleep-Knit

Wash House Planning

One of the critical factors regarding Sleep-Knit which is often overlooked is the increase in items per load and the reduction in usage at ward level. A laundry processing 100,000 items per week of traditional polyester cotton linen will process around 993 wash loads per week.

Under Sleep-Knit processing, the reduction in usage at ward level will reduce this requirement by 10% to 894 wash loads per week. In addition, the increased items per load will reduce this figure by a further 23% for 60% of the product mix, which saves a further 123 loads, making the total wash loads per week 771.

It can therefore be estimated that laundries fully converted to Sleep-Knit will require reduced wash processing capacity in the region of **22%**.



Tumbler Capacity

Any laundry processing Sleep-Knit has to be aware of tumbler capacity. It is important to take the reduced number of wash loads (as explained above) into consideration before calculating the additional tumbler capacity required, if any. It is also important to acknowledge that there may or may not be spare capacity, and a tunnel washer line, if programmed correctly, may be able to cope with increased drying capacity as long as the cycle time is not changed.

If the tunnel washer is run at 3 minutes per batch, the tumbler capacity is less likely to be affected as the machine will continue to process batches without the need to stop. If the cycle time is run at 2 minutes per batch, additional tumbler capacity may be required to prevent a bottleneck situation. This will vary from laundry to laundry.

Sleep-Knit takes around 14 minutes to fully dry and cool down in a well maintained 50kg steam tumbler. This is reduced further by as much as 2 minutes in a gas-fired tumbler or in modern high pressure extraction units.

It should be acknowledged that an increase in tumbler capacity, if required, is significantly less capital intensive than a full ironer and folder line which becomes redundant under the Sleep-Knit processing concept.

It is very important when planning Sleep-Knit into production to start from the dry time and work backwards to determine the optimum weight per load which will not slow down the entire tunnel line.

Lint is collected readily at the tumbling stage when processing Sleep-Knit, therefore it is important to clean lint screens regularly. Sleep-Knit is also

prone to snagging on sharp edges from processing machinery, therefore regular checking of tumbler doors with a simple knitted rag should be incorporated into PPM (planned preventative maintenance) schedules.

Wash Process General

- Do not under load or over load during washing or drying.
- Do not over bleach - avoid use if possible.
- Do not over dry as this can accelerate deterioration and cause excessive shrinkage.
- Do not iron as this can damage the natural stretch.

Washing Guidelines for a Typical 50kg Load

(Same process for sheets and pillowcases and thermal spreads)

The following table indicates a very general **recommended** process for Sleep-Knit. It is advisable to discuss specific wash processes with your detergent supplier for the ideal wash process which suits your application. There are a number of installations throughout the UK which have specific Sleep-Knit processes designed by experts. Please feel free to contact MIP and we will put you in touch with a company who has experience with our products.

Step	Time	Temp	Level	Chem	% Dose	pH	Titrates
Prewash	3 min.	35C	High	Alkali/Detergent	70%	10-11	
Optional Prewash	2 min.	35C	High				
Main Wash	6-8 min.	65/71C	Low	Alkali/Detergent	30%	11-11.5	400-700 ppm
Main Wash	8 min.	65/71C	Low	Optional Bleach	2-4oz (10%)	10.2-10.8	130-150 ppm
Rinse	2 min.	55	High				
Rinse	2 min.	55	High				
Rinse	2 min.	55	High				
Optional Sour/Softener	4 min.	37	Low	Sour/ Softener	2-4oz of each	6.5-7	10-30 ppm
Extract	6-7 min.						

Quantity of detergent should be calculated by your detergent supplier

Drying Guidelines

Specific drying cycles are not easy to specify as dryers can vary as much as 50% in efficiency, however a 50kg tumbler should be able to dry a load of sheets or pillowcases in 12-14 minutes and thermal spreads in 14-16 minutes at a temperature of 75C, including a cool down of approximately 5 minutes. It is advisable to set the humidity at 6%, as 4% is considered dry, so this allows a 2% tolerance and reduces the risk of over drying.

Once dried, it is recommended to pack the linens into bags as soon as possible to avoid the weight of the textiles in the barrow causing extra creasing.

Procedure for Holes/Stains

It is important that a quality control check is incorporated as routine into processing procedures for Sleep-Knit. The following protocol is recommended:

- 1) Ensure the wash process gives a rewash percentage of no more than 2-3%.
- 2) Monitor the condition of the stock by incorporating a routine QC inspection of a small sample of Sleep-Knit items on a weekly basis. Check for holes and stains and find an average level. If this level is on the increase over a sustained period of time, conduct a closer inspection of a larger sample of items.
- 3) Undertake a quick visual check of the items before placing in bags as a matter of routine. This may slow the production rates down by a few seconds per item, but it is beneficial to reduce stock arriving at ward level that contains holes or stains. It is important, however, not to slow production down to a level which will negate the productivity benefits that accrue from Sleep-Knit. A balancing act is required between productivity and quality.
- 4) Periodically check for sharp protrusions and shards from mobile equipment and machinery used in the distribution and processing of Sleep-Knit. This could have a serious effect on the condition of the stock if a number of weeks go by without detection.
- 5) Notwithstanding the above procedures, it is inevitable that some items will appear at ward level with stains or holes. Each ward cupboard should contain a specially marked bag for the staff to collect these items. Once the bag is full, it should be returned to linen services for rewash, repair or condemn. It is important to educate ward staff on the importance of respecting the protocols to ensure that they always receive the best quality linen possible.

- 6) Heat seal patches provided by MIP are recommended for repairing Sleep-Knit linen using heat seal machines, on the underside of the sheet. As with traditional sheets, any small holes or tears on the sides of the sheets should be repaired but any holes appearing on the body of the sheet should lead to the item being condemned.
- 7) Staff should also be reminded not to wear jewellery which may catch on the linen, ward staff should avoid use of clips to attach tubes to sheets and all staff needs to be aware of sharp protrusions from mobile equipment. This will help to keep repairs to a minimum.