

ASAHI KASEI CORPORATION

<http://www.ak-bemberg.com>



It feels so precious.

Guidelines for

Sewing Bemberg™ lining

Superior comfort at all times

AsahiKASEI

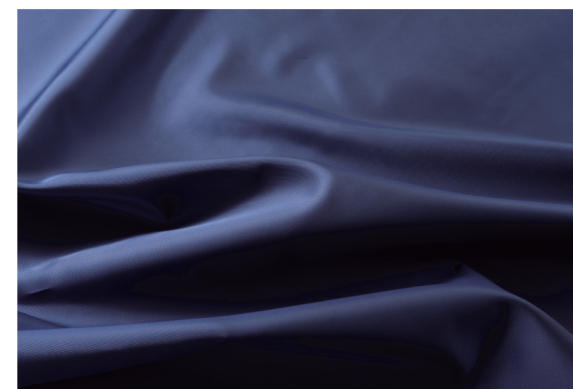
CONTENTS

Introduction	1
〈Guidelines for sewing Bemberg™ lining〉	
Pattern making	2
Marking	2
Spreading	2
Cutting	4
Parts sewing	5
Preliminary ironing and pressing	6
Assembly sewing	7
Final pressing and ironing	8
Bemberg lining roll - quality control and lot number	9
〈Trouble Shooting〉	
Appendix-1. Water spots	10
Appendix-2. Press streaks	11
Appendix-3 Basting holes	12
Appendix-4 Creases	13
Appendix-5 Color change in pleating process	13

Introduction

Bemberg™ lining uniquely combines the gentle qualities of natural fibers and the functional qualities of man-made fibers - supple comfort and freedom together with high functionality such as superior moisture control, anti-static ability, elegant drape and smooth glide. Its silk-like suppleness sets off the appearance and elegance of outer fabrics. All of these qualities are inherent to its constituent regenerated cellulosic yarn, produced from pure, natural cotton linter.

However because of its outstanding features, special attention is recommended at some processes. This manual describes how to handle the Bemberg lining - from pattern making, marking, spreading, cutting, and sewing to final ironing. Also this manual introduces the examples of troubles in sewing, including its mechanism and prevention. We hope this manual will be useful during your creation process.



Bemberg™ is Asahi Kasei's brand of regenerated cellulose fiber, Cupro.

Guidelines for sewing Bemberg lining

1 Pattern making

Key Careful, accurate industrial pattern design, considering deformation of lining.

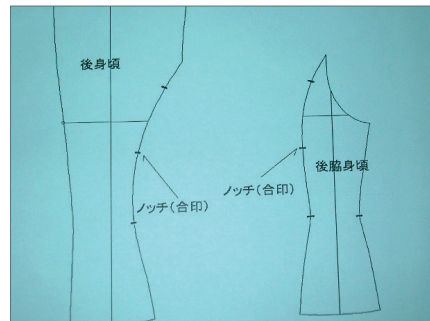
— For thin and soft lining, even a small force can cause deformation in the direction of the bias. —

For Bemberg, as for any fine lining material:

- 1 Use as simple seam design as possible.
- 2 Design at least the following widths of seam allowance.

Garment	Men's	Women's
Seam allowance	8mm	10mm

- 3 Design ease allowances under 2% of the part.
- 4 Place notches at appropriate positions for accurate sewing.

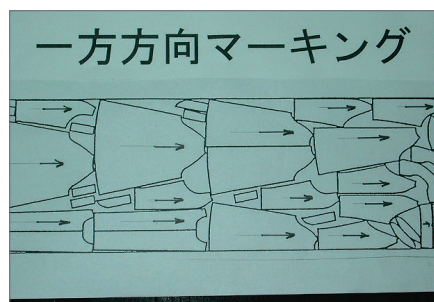


Notches

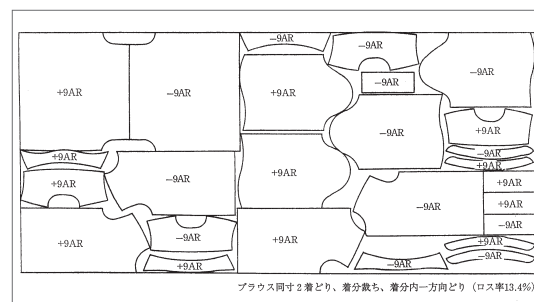
2 Marking

Key Unidirectional parts layout and grain alignment to avoid deformation of lining.

In marking, always lay out all parts in the same direction. Failure to do so may lead to an appearance of subtle color or shade differences in the lining of each part of a garment, particularly for twill and satin linings.



Marking layout 1



Marking layout 2

3 Spreading

Key Uniform tension on warp and weft grains, to prevent parts deformation.

- 1 For any individual garment, always use fabric from the same roll, to avoid subtle color differences among each part.
Bemberg fabric is produced under rigorous color control and color matching between production lots, but slight variation between fabric rolls may nevertheless occur.
- 2 Always use a spreading machine equipped with fabric tension control.
- 3 At the beginning of the spreading process, tear off the leading edge of the fabric along the weft grain by hand, and ensure that the weft grain is straight throughout the fabric.
Instead of tearing off in one stroke, 3~4 strokes are recommended, as tearing in one continuous stroke may cause bowing or skewing.



Spreading machine

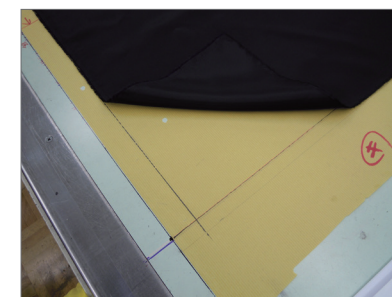


Leading-edge removal by hand tearing

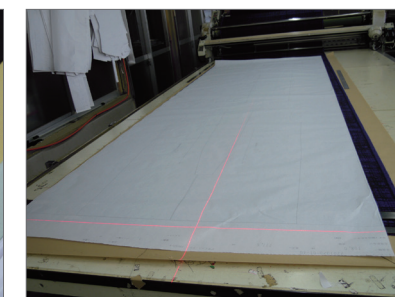
- 4 Set the fabric onto the machine, using a bar to align the weft grain.
- 5 When spreading, use infrared sensor or paper sheet with line to set the weft grain straightly.



Setting on spreading machine



Typical use of paper sheet

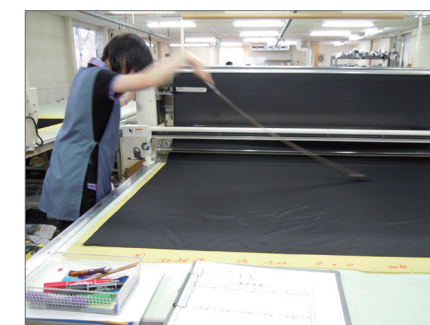


Infrared sensor

- 6 For all fabric layers, perform the spreading with the fabric width in the same direction.
- 7 In case of spreading the fabric by yourself alone, use a rod to smooth out any wrinkles, straighten the grain, and align the fabric along one selvage.
Note: Repeat the hand tearing every fifth layer cut or so, to maintain a straight and uniform weft grain.



One direction spreading



Using a rod

- 8 Use paper sheet above and below each layer, to prevent uneven cutting.
- 9 For accurate and effective piece cutting, it is recommended to spread a small length and numbers of fabric layer. Recommended conditions are as follows;

Garment	Men's	Women's
Length	5~7m	3m
Thickness	0.4 inch(10mm)	50 layers

- 10 Metered spreading with a rotary spreading machine is the best to straighten the weft grain accurately.



Hand tearing



Rotary spreading machine

4 Cutting

Key Accurate parts cutting, to prevent difficulties in sewing and finishing.

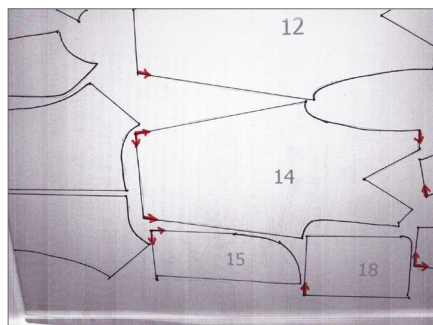
- 1 Secure the fabric layers at the ends and margins using clips, T-pins, or weights, to prevent fabric slipping when cutting.
- 2 Always use a sharp, smooth-cutting, well-maintained blade, to prevent the yarn streaks.
- 3 Cut all curves in the same general direction.
- 4 Use two or more cutting strokes for each part, even with a computer aided design (CAD) system, to prevent fabric slipping.
- 5 Cut notches as shallow as possible.
- 6 Always handle, stow, and carry the cut parts carefully, to prevent fabric deformation and fraying.



Clips to prevent fabric slipping



Accurate cutting



Two cutting strokes with CAD



Typical CAD cutting



Careful stowing



Careful transport

5 Parts sewing

Key Sewing fine seams free from puckering and streaking, to permit fast and easy ironing.

- 1 Ensure match-up of all notches, to prevent sewing slippage and seam misalignment.
- 2 Apply the following guidelines, to prevent seam puckering and fabric streaking.

a. Machine

Presser foot : Smooth-sliding surface, such as Teflon
 Presser load : 2.5 kg or less
 Rotary speed : 2,000~3,000rpm

b. Needle

Replacement : Generally replace the needle once a day, to prevent fabric streaking.
 Description : As shown in the following table.

Garment	Men's	Women's
Needle number	75/11 or smaller	65/9 or smaller
Needle point	Ball-point needle preferred; such as the following. Organ : J, S, KN, SF, NS Groz : RG Schmetz : SES	
Needle plate hole diameter	For 75/11 needle: 1.4~1.6mm	For 65/9 needle: 1.4mm or less

c. Thread

Thread No. : As shown in the following table.

Garment	Men's	Women's
Yarn Count (Japanese)	No.50~60	No.60~80

Note: Japanese thread No. 60 ≈ Coats thread No. 120

Tension : The tension on the thread should be as low as possible, within the range free from loose-seam formation.

d. Stitching pitch

Generally 12~15 stitches per 3 cm.

e. Feed dogs

Four feed dogs, fine tooth pitch, which has 0.6~0.9mm tooth height.

- 3 Keep the fabric under slight tension by pulling the further end of the fabric from your body.



Pulling the fabric forward



Sewing knee lining

6 Preliminary ironing and pressing

- Key**
- Dry ironing or ironing with minimal steam is sufficient to obtain fine tucks and folds in the Bemberg lining - a quality inherent to its regenerated cellulosic yarn.
 - In steam ironing, eject steam to the side and wipe any drain from the iron face before applying the iron, to prevent droplet exposure and water-spot formation in the Bemberg lining.

Ironing

- 1 Dry ironing is effective for the formation of well-crafted darts and tucks.
- 2 For any steam ironing, always eject steam to the side, completely wipe any steam drain or droplets from the iron face and edges, and let the iron temperature stabilize (at 130~150°C), before applying the iron to the Bemberg lining.



Ejecting steam to side



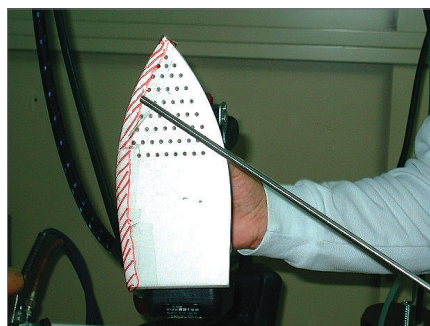
Wiping any droplet



Water spot

Please check also p.10 for water spot

- 3 When steam ironing is used to fold the seam allowance, a very small steam volume is sufficient to obtain an excellent setting effect.
- 4 Using the outer margin of the iron face, apply ironing to the area only where necessary.
- 5 The use of an iron designed especially for seam open is recommended, as its narrow face and body will facilitate the ironing operation.
- 6 The use of a Teflon shoe or similar covering on the iron face can help prevent water-spot formation, because of its steam-diffusing effect.



Using the outer margin of iron face



Ironing only where necessary

Pressing

- 1 Always apply a vacuum to flatten the Bemberg lining on the pressing board and eliminate any wrinkles due to seam puckering or a little bump at the seam allowance. If no vacuum is applied, the wrinkles may appear on the lining.

- 2 Apply the following guidelines for the pressing conditions.

Temperature	130~150°C
Pressing pressure	196~294 kPa
Pressing time	3~5 seconds
Steaming time	3~5 seconds
Vacuuming time	5~10 seconds

Note : 196kPa = 2kgf/cm² (as air pressure)
294kPa = 3kgf/cm² (as air pressure)



Setting front body part



Preliminary pressing

7 Assembly sewing

- Key** Careful handling and alignment, to prevent misalignment and wrinkling.

- 1 Perform sewing carefully with notch marks and gathering uniformly in appropriate points.
- 2 Sew clean-finish seams between the lining and outer fabrics wherever necessary to ensure long-term retention of garment and lining shape under repeated wear and cleaning.



Assembly sewing 1



Assembly sewing 2



Clean finish 1



Clean finish 2

8 Final pressing and ironing

Key Careful placement on the pressing board, flatening the fabric to remove wrinkles.

Pressing

Apply the following guidelines for the final pressing conditions; they are the same as for the preliminary pressing conditions.

Temperature	130~150°C
Pressing pressure	196~294 kPa
Pressing time	3~5 seconds
Steaming time	3~5 seconds
Vacuuming time	5~10 seconds

Note : 196kPa = 2kgf/cm² (as air pressure)
294kPa = 3kgf/cm² (as air pressure)



Pressing body part (vertical type)



Pressing body part (flat type)



Pressing shoulder part



Pressing collar part

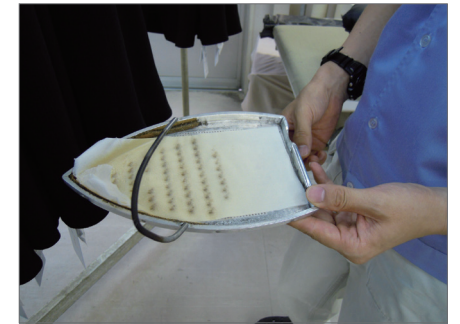
Ironing

- 1 If heatless ironing is used, always eject steam to the side and completely wipe any steam drain or droplets from the face and edge of the iron sole before applying the iron, to prevent water spots.
- 2 Steam ironing with an extremely low steam volume, is a key to product high-quality garments.
- 3 Always apply a vacuum after steam ironing. (Applying both together may cause pressing mark.)
- 4 For steam ironing, the use of a Teflon shoe or similar covering on the iron face can help prevent water-spots, because of its steam-diffusing effect.

- 5 For steam ironing, the use of an electric steam iron is highly recommended to prevent water droplets.
- 6 Wherever the full face of the iron sole is used, smoothly and carefully move the iron point-first from the bottom to the top of the garment.
- 7 To remove any small wrinkles remaining in the lining at the end of the finishing operation, it is best to apply a very fine mist to the wrinkled area first and then use a dry iron.



Ejecting steam before applying Heatless iron



Typical Teflon shoe



Removing wrinkles with an iron



Direction of movement in full-face ironing

9 Bemberg lining roll – quality control and lot number

A label is attached to the side of every Bemberg lining roll on completion of its final inspection before shipment to the customer.

The label identifies the Production Lot No., which serves as an integral part of all quality control throughout production of the Bemberg lining in all process steps from its constituent yarn to its weaving, dyeing, and final inspection.

Please include this Production Lot No. in any inquiry concerning the quality of the Bemberg lining on any roll, to facilitate prompt and accurate response.



Example of label

1 Appendix –a. Water spots

Description, mechanism, and prevention

A water spot has the appearance of a circular or ring-shaped darkening or stain in the lining. It forms during ironing, if a steam-drain (i.e., condensed steam) or other water droplet is absorbed by the lining and then dries.

Appearance	Dark, circular or ring-shaped spot or stain, without change in dye property. It also turns transparent.
Mechanism	<p>The water spot forms in two stages:</p> <ol style="list-style-type: none"> ① On contact with water droplets, the lining fibers in the area of contact swell as they absorb the droplet. ② As the swollen fibers dry, the morphology of the fabric structure in that area changes slightly. <p>The altered morphology changes the light absorption characteristics and thus the luster of the affected area, which therefore appears to the eye as a circular or ring-shaped spot that is darker than the surrounding area.</p>
Picture	
Prevention	<p>In any case where a steam iron or mist sprayer is used:</p> <ol style="list-style-type: none"> ① Eject steam to the side and then wipe off any water from the iron face and edges before applying the iron to the lining. ② Use a very small steam spray volume and always avoid any excessive spray. Bemberg requires very little steam for excellent creasing – substantially less than polyester. ③ For mist spraying, choose a sprayer that provides the smallest possible mist. ④ Always ensure that the water supplied to the steam iron is as free as possible from any type of impurities.

Removal

Water spots can be removed just after the droplet has been absorbed by the lining or after it has dried, by the following procedures.

Just after absorption	<ol style="list-style-type: none"> ① Gently blot the droplet from the lining, using a soft cotton towel. ② Lightly spray the affected area, using a steam iron. ③ Lightly rub the affected area, using a soft cotton towel. ④ Repeat Steps ① ~ ③, until no darkening remains. ⑤ Dry iron(130~150°C) and then vacuum the affected area.
After drying	<ol style="list-style-type: none"> ① Damp the darkened area, by patting it with a cotton towel that has been moistened with a mist sprayer. In particular, pat around the periphery while advancing in a spiraling path, to obtain a gradual transition from darkened to non-darkened areas. ② Using the same towel, lightly rub the entire area in strokes that follow the yarn grain in the weft and the warp direction. ③ Immediately press the entire area, using a dry iron(130°C~150°C). ④ Repeat Steps ① ~ ③, until no darkening remains. ⑤ Apply a vacuum.

2 Appendix -2. Press streaks

Description, mechanism, and prevention

A press streak is a fine ridge-shaped darkening or lightening, usually starting near a seam and extending in the weft or warp direction of the lining, which forms due to deformation of its fabric structure under preliminary pressing or final pressing. Press streaks are particularly apt to occur in final pressing, if strong pressing conditions are used to facilitate the outer fabric finishing.

Appearance	Dark or light ridge, usually extending in either the weft or the warp direction, formed by deformation of the fabric structure.										
Mechanism	<p>The press streak generally forms in two stages:</p> <ol style="list-style-type: none"> ① Bumps or wrinkles occur on the lining fabric, due to factors such as: <ol style="list-style-type: none"> (a) Sewing shrinkage, seam slippage or excessive easing during sewing. (b) Thickness difference between seam allowance and its periphery. (c) Creases that occur when setting the lining on the pressing board. ② Under preliminary or final pressing, the bumps or wrinkling may shift and set, disrupting the woven structure and thus causing the formation of a slight ridge that appears lighter or darker than the surrounding area. 										
Prevention	<p>All of the following are essential, to prevent press streaks.</p> <ol style="list-style-type: none"> ① Perform sewing carefully with appropriate machine settings, to prevent sewing shrinkage or seam slippage. ② Do not use an ease allowance that is more than 2% of the total part area. ③ Minimize the thickness variation at seam allowances. With thick outer fabrics, in particular, lay the seam allowances separately on either side of the seam rather than laying both to one side. ④ Use an appropriate pressing machine. In particular, ensure that: <ul style="list-style-type: none"> -The press mat is appropriately resilience. -The vacuum is sufficiently strong. -The press board conforms to the garment shape. ⑤ Use pressing conditions in accordance with the following guidelines. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Temperature</td> <td>130~150°C</td> </tr> <tr> <td>Pressing pressure</td> <td>196~294 kPa</td> </tr> <tr> <td>Pressing time</td> <td>3~5 seconds</td> </tr> <tr> <td>Steaming time</td> <td>3~5 seconds</td> </tr> <tr> <td>Vacuuming time</td> <td>5~10 seconds</td> </tr> </table> <p style="text-align: right; font-size: small;">Note : 196kPa = 2kgf/cm² (as air pressure) 294kPa = 3kgf/cm² (as air pressure)</p>	Temperature	130~150°C	Pressing pressure	196~294 kPa	Pressing time	3~5 seconds	Steaming time	3~5 seconds	Vacuuming time	5~10 seconds
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Vacuuming time	5~10 seconds										

Removal

Press streaks can be removed by the following procedure. Be careful to avoid water spot formation in either case, particularly with a mist sprayer.

- ① Dampen the cotton towel with a mist sprayer, then rub the surface lightly to the direction perpendicular to the press streaks.
- ② Dry-iron(130°C~150°C) the area while applying a gentle tension on the lining perpendicular to the press streak, and then apply a vacuum to cool the ironed area.
- ③ Repeat above 2 processes.

3 Appendix -3. Basting holes

Description, mechanism, and prevention

A basting hole is a hole left in the lining after removal of the basting stitch which persists even after ironing and pressing.

Appearance	Visible needle hole, formed by machine needle during basting.
Mechanism	The basting hole forms on puncture of the lining by the basting needle and the related fabric structure deformation persists due to inappropriate needle use, excessive force during stitch removal, or insufficient pressing.
Prevention	All of the following are essential, to prevent the occurrence of basting holes. ① Use a fine needle; preferably 75/11 or smaller. ② Use a ball-point needle, such as Organ J or S. ③ Ensure that the needle point is not worn down or deformed. ④ Perform basting stitch removal gently and carefully, to prevent excessive force and deformation of the lining fabric structure around the holes; cutting the stitch before its removal is highly recommended for this purpose. ⑤ Press the lining immediately after the basting stitch removal. ⑥ Use steam in pressing.

Removal

Basting holes can be removed by the following procedure.

- ① Move the fabric structure in the area of the basting hole by gently brushing, kneading it or by ironing it lightly with the tip of an iron, then steam iron the area and immediately apply a vacuum.
- ② Repeat the above procedure until the basting hole is no longer apparent.

4 Appendix 4. Creases

For Bemberg lining, dry ironing or ironing with minimal steam is sufficient to obtain clean tucks and folds. But on the other hand, this function sometimes causes creases at the unnecessary point.

To remove creases with keeping the set shape of the garment, apply the following guideline.

- ① Dampen the edge of creases lightly, by patting it with a cotton towel that has been moistened with a mist sprayer.
- ② Pulling the crease lightly to vertical direction, apply dry ironing.
(Temperature: 130~150°C)
- ③ Repeat ① ~ ② until the crease becomes invisible.
- ④ Apply a vacuum.

5 Appendix 5. Color change in pleating process

Currently, there are some kinds of wrinkle-resistant chemical. This is applied mainly for the outer fabric to keep the shape. However, depending on the condition (temperature, amount of chemical, drying method), the use of these chemical may change the color of lining, so it is highly recommended to find appropriate condition using test piece before taking the process.

Also, please refer to the announcement or manual of each wrinkle-resistant chemical manufacturer.