**CS-4003 Silver Transfer Film**

**DESCRIPTION**
Chinastars CS-4003 reflective silver transfer film is composed of micro glass beads bonded to a heat activated adhesives, with a transparent PVC liner to protect the reflective side during handling. It uses reflective glass beads technology and reflects light directly to the original light source to enhance the visibility of anyone who wears it. CS-4003 has excellent durability in home wash, and is suitable for many non-stretchable fabrics.

**REFLECTIVE PERFORMANCE**
The reflective coefficient ($R$, in cd/lux/m$^2$) of CS-4003 can meet the requirements in international standards like EN ISO 20471, ANSI/ISEA 107, CSA-Z96-15, AS/NZS 1906.

<table>
<thead>
<tr>
<th>Observation Angle</th>
<th>Entrance Angle</th>
<th>Minimum Reflectivity</th>
<th>Typical Reflectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12'</td>
<td>5°</td>
<td>330</td>
<td>&gt;420</td>
</tr>
</tbody>
</table>

**WASH PERFORMANCE**

<table>
<thead>
<tr>
<th>Product No.</th>
<th>Home Wash Cycles$^1$</th>
</tr>
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<tbody>
<tr>
<td>CS-4003</td>
<td>50</td>
</tr>
</tbody>
</table>

$^1$ISO 6330 Method 2A at 60°C (140°F) and $R \geq 100$ cd/lux/m² (home wash)

Note: Washing depends on the condition of substrates and heat transfer operations.

**COLOR**

<table>
<thead>
<tr>
<th>Product No.</th>
<th>Daytime Color</th>
<th>Reflected Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-4003</td>
<td>Silver</td>
<td>White</td>
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</tbody>
</table>

**PHYSICAL PERFORMANCE**
After the following each exposure testing, CS-4003-FR $R_v$ values are above 100 cd/lux/m² at +5.0° entrance angle and 0.2° observation angle.
Physical Performance | Test Method
--- | ---
Abrasion | EN 530 Method 2, 5000 cycles
Flexing | ISO 7854 Method A, 7500 cycles
Cold Fold | ISO 4675, -20°C (-4°F)
Temperature Cycle | 12 hours @ 50°C (122°F); 20 hours @ -30°C (-22°F)
Wash | ISO 6330 Method 2A @ 60°C (140°F) number of cycles listed
Wet Reflectivity | ANSI 107-2015 Appendix A; EN 20471:2013 Annex C

CERTIFICATION
CS-4003 Silver transfer film meet the requirements in below listed standards for high visibility garments.

<table>
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<tbody>
<tr>
<td>CS-4003</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

APPLICATION
Cutting:
Die-cutting is recommended, although it can also be hand-cut or guillotined. Chinastars reflective heat transfer film has a transparent PVC liner to protect the reflective side during handling and for some products an extra plastic liner to protect the adhesive side. Be sure to remove the extra plastic liner on the adhesive side before applying plotter cut.

Heat lamination:
1. Work on a flat surface where heat and pressure can be applied. Do not heat over seams and stitches.
2. Remove adhesive side liner (if the product has one) before placing heat transfer film on fabric (substrate), exposing dry adhesive. Do not remove reflective side liner.
3. Place reflective transfer film on substrate with the adhesive side down. Use a non-stick slip sheet or cotton fabric between the platen and laminating surface to protect reflective surface from possible contamination. And apply heat and pressure as described in the table below.
4. Allow heat transfer film to cool to room temperature. Remove the reflective liner by lifting one corner and pulling (180°angle) in a continuous, smooth manner.

Additional Precautions for Heat Lamination:
1. Do not exceed lamination temperatures listed above because the clear polyethylene liner may become difficult to remove and affect the physical performance.
Printing:
Inks can be printed on the surface of Chinastars CS-4003 silver transfer film. Before printing, all inks shall be tested to ensure acceptable adhesion. Wipe the surface lightly with a soft cloth dampened with isopropyl alcohol may help ink adhesion.

CARE AND MAINTENANCE INSTRUCTIONS
CS-4003 Silver transfer film meet the requirements in below listed standards for high visibility garments.

- **Do not presoak**
- **Machine wash warm, 40°C (105°F)**
- **Tumble dry low**
- **Cool iron, Do not exceed 120°C (248°F)**
- **Do not bleach**
- **Do not dry-clean**

Some suggestions for extending the life of CS-4003 silver transfer film:
1. Use neutral detergent in hand wash. Do not use detergent that contains bleach, acid or alkali.
2. When do machine wash, you may use a mild detergent, but no bleach or fabric softener!
3. Try to avoid wash the reflective products with your work jeans or any clothing with rough fabric or edges. The microscopic glass beads on the reflective fabric can be worn off by rough texture.

HANDLING PRECAUTIONS
CS-4003 silver transfer film contains aluminum layer, and sweat / oil / water stains may occur if the surface of the product has direct contact with hands during application and is then exposed to hot and humid conditions. Even though these blemishes won’t affect performance of the product, we strongly recommend handling the reflective fabric with gloves and keeping them in the environment of below 26.7 °C (80 °F) and lowering than 70% relative humidity.
STORAGE AND SHELF TIME

Store in a cool, dry place and use within one year after date of receipt.