

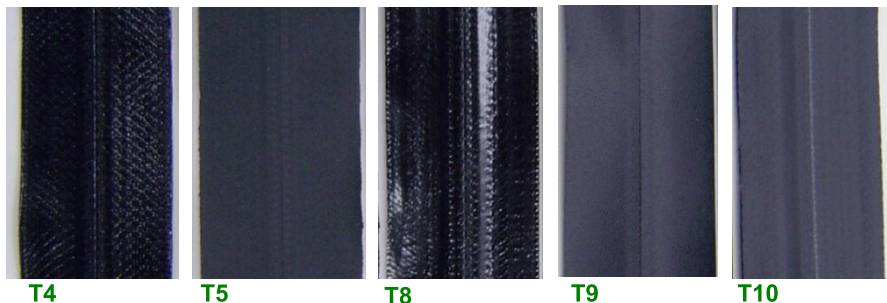
Section 3: Precautions on Zipper Use <<<<<<<<

3-1-1 Proper Usage of AquaGuard® (Water Repellent) Zippers

In order to make sure the AquaGuard® zipper works properly and to avoid any undesirable problems of the garment products, please observe below precautions:

- AquaGuard® is a water repellent zipper, not waterproof or water tight. In other word, water may leak through the slit of the zipper chain.
- AquaGuard® zipper must be closed completely when washing and let it dry naturally after washing in order to avoid damage to the laminated film on the zipper. Any damages on the laminated film may result in deterioration of water repellency.
- Petroleum-based dry cleaning solvent is recommended. Chlorine-based dry cleaning solvent may cause difficulty in operating zipper, cloudy appearance of the laminated film, and/or color runs.
- Do not iron. High temperature (over 150 °C) on the zipper may cause melting / protrusion (bubbles) of the laminated film.
- Keep away from direct sunlight when not wearing. It may cause zipper to turn yellowish especially if zipper is pastel color.
- Prolonged contact with PVC and/or polyurethane may cause color runs.
- Frequent and repeated folding (bending) of the zipper may cause cloudy appearance of the laminated film. However, it will not affect the water repellency.
- Due to the nature of film lamination processing, zipper color may vary slightly from the color shown on the "YKK Standard Color Card".

Types of Water Repellent Zipper



T4

T5

T8

T9

T10

>>>>>>> Section 3: Precautions on Zipper Use

Proper Usage of AquaGuard® (Water Repellent) Zippers 3-1-2

In response to the diversification of the garment style, thermal welding of zippers instead of sewing is widely applied in the garment making, especially to attach water repellent zippers onto the garment. Here, however, welding at high temperature over **150 ℃** may cause color migration from the zipper tape and staining onto the fabric. This problem could be more apparent and serious when the zipper color is in contrast to the fabric color.

Therefore, it is strongly suggested to keep the temperature lower than 140 ℃ at thermal welding.



It is also recommended to place a sheet of paper / lining between the zipper and the fabric underneath during welding in order to prevent staining.

As not only temperature but also such factors as welding pressure, time etc. could affect the possibility of staining, please conduct a preliminary test with a small sample batch before beginning bulk processing.

In addition, the laminate film of AquaGuard® zipper gets heated by the welding and softened. Slider movement in this condition could damage the film edge.

Damaged Film Edge



Film Edge Torn & Damaged



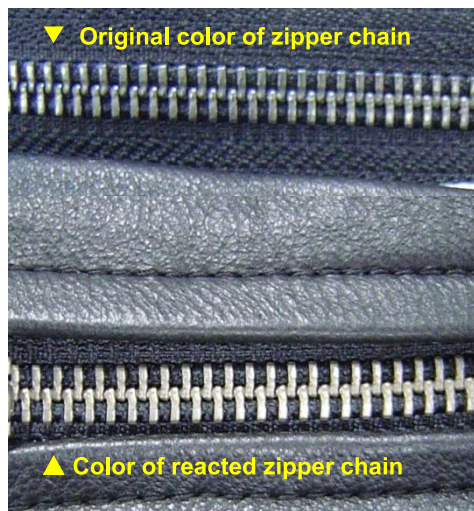
**DO NOT move the slider
until the heated chain has completely cooled down.**

Section 3: Precautions on Zipper Use <<<<<<<<

3-2 Change In Metal Zipper Color by Leather Products

During the leather tanning process, tanning agents such as sulphuric acid, mineral acids, chrome compounds, tannic acid and aldehyde compounds are commonly used. When those tanning chemicals on the leather products come in contact with the metal zippers (or the metal components of the zipper), metal color may change.

Such color change may be accelerated if the products are placed under the air-tight (or poor ventilation) and high temperature environment, or being stored under pressure.



Metal zipper teeth turned yellowish
after contact with remained chemicals
of leather products



Oxidized metal zipper teeth
due to reaction with leather products

Suggestions

- Use the leather which has been sufficiently washed and neutralized after the tanning processes;
- Avoid keeping the metal zippers with the leather products under the air-tight package or in poor ventilation environment;
- Avoid the prolonged contact or pressing the leather against metal zippers.

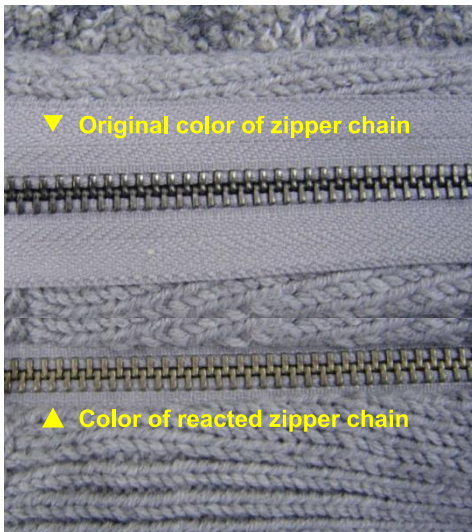
>>>>>>> Section 3: Precautions on Zipper Use

Change In Metal Zipper Color by Wool Products 3-3

When metal zippers are attached to bleached wool knit products, a color change of metal may take place. Generally wool products are bleached by the following methods:

- oxidizing bleach (e.g. hydrogen peroxide)
- reducing bleach (e.g. hydrosulphite)

Furthermore, some wool products are treated with chlorine oxidizers for a shrink-resistant finish. If sufficient washing or neutralization has not been made after treatment, especially with hydro-sulfite or chlorinating agents, gas (e.g. chlorine gas or sulfur dioxide gas) may be generated. These agents may also react directly on metal in humid conditions. For example, if wool products are put into bags immediately after pressing and kept as they are, various chemicals and gases may cause a color change on the metal parts of copper alloy zippers.



Oxidized metal zipper teeth due to sulfuric acid remained on the wool garment fabrics.



Color change of metal zipper teeth

Suggestions

- Use completely washed and dried wool cloth.
- Take sufficient time before wrapping after the products are pressed.

Section 3: Precautions on Zipper Use <<<<<<<<

3-4 Cautions for Aluminum Alloy Zippers

Aluminum zippers are used in some markets because of the competitive price, but it has some disadvantages due to its nature. Please observe below precautions for proper use of the aluminum zipper.

■ Nature of Aluminum Zippers

Aluminum is easily affected by moisture, temperature and humidity, and vulnerable to shock, friction, acidic or alkaline element. Therefore, aluminum zippers are not suitable for harsh treatment such as jeans washing or over-dyeing.

■ Melt of Elements

Jackets and pants are frequently subject to washing at their finishing process. Aluminum is weak to alkali and it is reported that strong alkaline solvents may melt the elements of aluminum zipper. Please pay attention when chemicals as metasilicic acid soda are used. Also make sure to rinse out those chemicals thoroughly and immediately.

■ Migration and Staining from Aluminum Zippers

Since aluminum is vulnerable to friction, tiny metal dust is scraped off when operating zippers, which may cause the stain on the garment. When this metal dust comes together with paraffin wax (which is necessary for smooth zipper operation), it may leave darker stains. Please pay extra attention when applying aluminum zippers to the light-colored garments.

* The stain can be removed to some extent by rinsing with any general detergents.

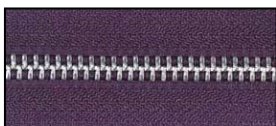


Stain by Aluminum (1 yen coin)

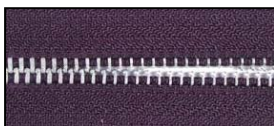
■ Elements Worn-Out

The aluminum zipper is vulnerable to friction so its elements may be worn out during the operation of the zipper with zinc-alloy sliders with lock such as DA/DP type. These zippers cannot be used with a copper-alloy slider such as GA/GS type because the slider is hard, and it may damage the zipper elements significantly.

It is recommended to use the item "YAN", which is an alumite-finished aluminum zipper with improved durability. However, we suggest testing before the actual application of those products.



Normal Elements



Melted Elements

