ORALITE® Microprismatic Segmented Fire Tapes

This document applies to ORALITE® microprismatic tapes (garment trims) for heat application to fire fighters' garments. Products include:

- ORALITE® FTP 2051 Segmented
- ORALITE® FTP 2151 Segmented

1.0 General Information

ORALITE® FTP 2051 Segmented and ORALITE® FTP 2151 Segmented are microprismatic retroreflective tapes, used to reflectorise fire-fighters' garments, and are fully certified to meet the requirements of EN 469:2005.

For more information on the *retroreflectivity* of ORALITE® microprismatic segmented fire tapes, please reference the relevant technical data sheet. These are available from your ORAFOL representative, or they can be downloaded at www.orafol.com.

ORALITE® FTP 2051 Segmented and ORALITE® FTP 2151 Segmented should be applied using the recommendations below, however converters are also advised to determine which configuration best suits their substrate based on their individual equipment. These conditions will vary depending on the type of equipment, age, model etc and should be evaluated accordingly to select the best processing conditions

Background Fabric

As there can be great variation in the background fabrics produced, variation in chemical treatments used on fabrics, variation in the fusing methods and equipment and variation in the washing processes, it is important that these parameters are evaluated for each application.

It is strongly recommended that an ongoing quality system is in place to monitor the critical aspects of the heat lamination process, including temperature, time and pressure consistency and reflective material/background compatibility from lot to lot in order to ensure acceptable adhesion performance is maintained.

It is a mandatory requirement to submit the background fabric to ORAFOL prior to application for compatibility tests. It is a prerequisite to test the products on the actual substrate before commencing production. It remains the responsibility of the user to test the specific fabric to be sure that the adhesion of the tapes is satisfactory on an ongoing basis before commencing production.

All candidate fabrics should be tested for adhesion and washability. Chemical fabric treatments, such as water repellent and waterproof finishes, may contain silicone paraffin, fluorocarbon resin, or other material that may strongly influence the level of adhesion to the fabric and the lamination conditions. Because all fabrics have variations in construction and in the amount of finishes applied, ORAFOL makes no warranty that the end product will be suitable for its projected use, or that similar fabrics will perform in an identical manner. After application, allow 24 hours for curing before conducting any tests.

For Technical Support please contact your ORAFOL representative.

Storage & Shelf Life

The product must be used within one year from the shipment date. All rolls including partially used rolls should be stored in original packaging, tightly wound. Store in a clean and dry area, away from direct sunlight. Store at 20°C ± 2°C and 50% ±15% relative humidity.
Completed garments with tape attached should be stored in well-ventilated packaging and maintained in similar environmental conditions (20° C and 50% relative humidity).
Long storage periods can potentially diminish the protective properties of all PPE materials.
It is recommended that completed garments are not stored for more than 1 year.

2.0 Preparation

It is important to ensure that the equipment being used can apply uniform heat & pressure during the lamination process. The following guidelines are for stationary press lamination and are recommendations only.
(For continuous heat presses, ensure that the temperatures in each zone of the press are uniform across the width of the press. A handheld infrared thermometer is recommended when setting up, to compare settings with actual conditions in the heat press. A tachometer is also recommended for setting the correct belt speed)

1. Pre-Heat the press to the settings in Table 1 depending on the product, substrate type and type of press. The temperature settings in Table 1 are equipment set points. It is important to ensure that the temperature sensors within the particular equipment model are working accurately, if necessary, calibration of the temperature sensors may need to be performed.
2. ORAFOL recommends the use of Self-Adhesive Temperature labels during the establishment of machine parameters and in process production in order to verify actual machine temperature and consistency. These are available from ORAFOL upon request.

3. It is necessary to determine if the chosen substrate will shrink at the above temperatures. To do this place a sample of the fabric on a flat table & mark a 100 mm x 100 mm square on the fabric using a permanent marker/pen. Pass the sample through the press. Allow to cool & measure the % reduction in size, if the % reduction is greater than 3 % in either direction, then the substrate will need to be pre-shrunk in advance of applying the reflective tape.

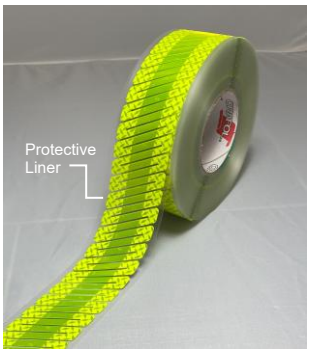
4. For best performance tape ends should be configured on the garment to allow them to be sealed into a seam.

2.1 Table 1 – Operating Settings for a Stationary Heat Press

Transfer Tape	Fabric Substrate	Temperature	Time	Pressure*	Temperature	Time	Pressure*
		Cycle 1			*Cycle 2 (Performed immediately after cycle 1 – **Do not remove the protective carrier**)***		
FTP2051S/ FTP2151S	100% meta aramid	155°C	15 sec	2 Bar	155°C	15 sec	2 Bar

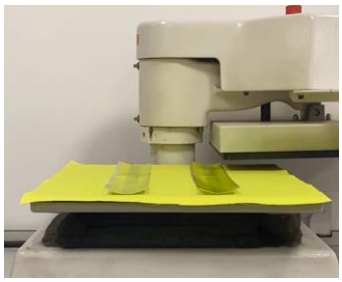
* Pressure measured over entire press area. These are recommendations for selected fabrics. Other fabrics are possible and need to be evaluated.

3.0 Lamination



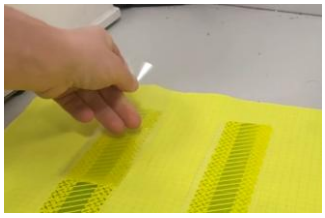
Step 1

ORALITE® FTP 2051 Segmented and ORALITE® FTP 2151 Segmented are provided with a clear protective liner on their reflective side.
The liner should be left on during application and for a minimum of 5 minutes after lamination is complete, and the tape has been allowed to cool.



Step 2

Place the tape with the adhesive side facing the substrate. Do not stretch the tape as it is being applied. For best results ensure that the temperature and pressure are uniform across the width. After Cycle 1 is completed, leave the application liner in place and proceed immediately to Cycle 2. Do not allow the tape to cool in between cycles.



Step 3

After completion of Cycle 2, Allow the protective liner to cool to room temperature before stripping the liner for a minimum of 5 minutes. To remove, lift the protective liner at one edge & separate from the reflective surface by gently pulling back onto itself.

4.0 Care instructions

ORALITE® FTP 2051 Segmented and ORALITE® FTP 2151 Segmented are certified for 50 wash cycles according to ISO 6330:2012 Method 6N*. Changes in product performance due to modifications in the specified process are the responsibility of the user. The suitability of the intended care process must be determined by the end user.

4.1 Care Symbols

40	Maximum washing temperature 40° C Normal Process	60	Maximum washing temperature 60° C Normal Process		Only non-chlorine bleach when needed		Drying in a tumble dryer is possible, at a low temperature of 60°C. Gentle process.		Ironing with a maximum soleplate temperature of 120°C. Do not use steam.		Do not dry clean

Table 1: Overview of Care Instructions

PRODUCT	RECOMMENDED CARE SYMBOLS	WASH TEMPERATURE	APPROVAL
ORALITE® FTP 2051S/ FTP 2151S		50 cycles at 60° C	ISO 6330:2021 Method 6N+F

ORALITE® microprismatic fire tapes wash as well at lower temperatures as they do at higher temperatures. Therefore select the lowest washing temperature that will ensure adequate cleaning of the fabric. This will allow environmentally friendly washing and will extend the life of the garment.

Variations in environmental conditions as well as the chosen care process may affect the life of your garment. Regular inspection of the garment performance against the requirements is recommended. Information included in the care label should be verified to ensure that the reflective material maintains compliance with the relevant requirements.

4.2 Hand Washing

Hand washing can be done with a sponge, a soft fabric cloth or a soft brush with lukewarm water and a mild detergent. After washing, the tape must be rinsed with clean water.

4.3 Household Washing

Washing Machine: Standard household washing machine

Temperature: 40° or 60° C
Detergent: Standard household detergent**
Setting: “Coloured clothing without pre-wash”

Maximum washing time on highest temperature should not exceed 12 minutes.
Maximum total washing time should not exceed 50 minutes.

** The detergent should not contain free sodium hydroxide or potassium hydroxide and ideally be low- to medium- alkaline detergents should be used.

4.4 Bleaching

Only use non-chlorine bleach when needed.

4.5 Drying

Use a household tumble dryer - normal, low or medium heat.
Dry to “slightly humid”. DO NOT OVER DRY!
Maximum exhaust temperature shall not exceed 80° C.
For an extended life, the garment should be turned inside out before drying

Fire garments are sometimes dried in a static drying room where cool air is blown into the inside of the jacket and the jacket is dried from the inside out.

4.6 Ironing

Do not use steam.
Use a cool or warm temperature setting.
Avoid direct contact with the tape when ironing, use a press cloth.

4.7 Chemical Cleaning / Dry Cleaning
Do not dry clean.

4.8 Cleanability
ORALITE® microprismatic segmented fire tapes feature a glossy top surface which is inherently resistant to soiling and allows for easy cleaning. Dirt, soot and smoke stains may be readily cleaned using non-abrasive soap and water, thus restoring significant reflectivity and fluorescence to the product. The reflective elements, which are behind the top surface, will not be affected.

Note! Washing process, drying process and detergent selection changes can significantly change the wash durability of the reflective tape. It is important that these parameters are evaluated for each application, and it remains the responsibility of the user to test their specific conditions to assess durability.

IMPORTANT NOTICE
All ORALITE® products are subject to careful quality control throughout the manufacturing process and are warranted to be of merchantable quality and free from manufacturing defects. Published information concerning ORALITE® products is based upon research which the Company believes to be reliable although such information does not constitute a warranty. Because of the variety of uses of ORALITE® products and the continuing development of new applications, the purchaser should carefully consider the suitability and performance of the product for each intended use, and the purchaser shall assume all risks regarding such use. All specifications are subject to change without prior notice.