

TRECK S.A.
SANTA ROSA # 5220, SAN JOAQUIN,SANTIAGO,CHILE

THIS REPORT CANCELS AND SUPERSEDES THE TEST REPORT NO. SL518052036929TX DATE: Mar 06, 2018 ISSUED BY SGS (SHANGHAI)

The following sample(s) was/were submitted and identified on behalf of the client as:

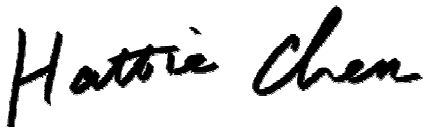
Sample Description : Men's garment: 100% polyester in red(Parka Activex Naranja Fluor T)
Style No. : 06-10-092
Buyer : TRECK S.A.
Order No. : M17042
Country of Destination : Chile

Proposed Care Instruction : 

Test Performed : Selected test(s) as requested by applicant
* * * * *

Sample Receiving Date : Feb 27, 2018
Testing Period : Feb 27, 2018 - Mar 06, 2018
Test Result(s) : Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. For further details, please refer to the following page(s).

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co. Ltd



Hattie Chen
Account Executive



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Test Result

High-visibility clothing – Test methods and requirements

(EN ISO 20471: 2013+A1: 2016)

Claimed Classification: Class 2
 Provided Size:S

Section 4 Design
Section 4.1 Types and Classes

| | Minimum required areas of visible material (m ²) | | | Result (m ²) | Classification |
|-------------------------------|--------------------------------------------------------------|---------|---------|--------------------------|----------------|
| | Class 3 | Class 2 | Class 1 | | |
| Background material | 0.80 | 0.50 | 0.14 | 1.09 | Class 3 |
| Retroreflective material | 0.20 | 0.13 | 0.10 | 0.31 | |
| Combined performance material | N/A | N/A | 0.20 | \ | |

Remarks:

- (1) For additional information on high visibility garment design, see Annex D.
- (1) The minimum visible area requirements to achieve a garment classification in Table 1 are not to be reduced or compromised due to the presence of any logos, lettering, labels etc.
- (1) Regardless of the area of materials used, a class 3 garment shall cover the torso and shall have either long sleeves (1/1arm) with retroreflective bands or full length trouser legs with retroreflective bands, if not both.

Proportion of front and backside background material in overall background material

| Proportion of background material (%) | | Requirement | Pass/Fail |
|---------------------------------------|----------|-------------|-----------|
| Front | Backside | | |
| 50 | 50 | 50 10% | Pass |



Section 4.2 Specific design requirements

| Sections | Requirements | Results | Pass/Fail |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|
| 4.2.2 | Garments covering torso and arms The background material shall encircle the torso and the sleeves and shall maintain a minimum width (height) of 50 mm. Interruptions by retroreflective stripes are not counted. Bands of retroreflective material shall be at least 50 mm wide. | 95 mm 50 mm | Pass |
| | Alternatively , garments covering torso and arms shall have two or more bands of retroreflective material at least 50 mm apart and encircling the torso with a maximum inclination of $\pm 20^\circ$ to the horizontal . The bottom of the lowest torso band shall be at least 50 mm above the bottom edge. | 0 ° 95 mm 150 mm | Pass |
| | If a sleeve blocks a clear view of a horizontal torso band, then the sleeve shall be encircled with two retroreflective bands at least 50 mm apart with the lower band at least 50 mm above the sleeve edge. Testing regarding the clear view shall be done by visual inspection while moving the arm in all positions. | 95 mm 165mm | Pass |
| | Any gap (for fastening systems and seams) in the lengthwise continuity of each band of retroreflective or combined performance material shall not be greater than 50 mm , measured parallel to the direction of the band , and the total of such gaps shall not be greater than 100 mm in any band around the torso and 50 mm around the sleeves. | 0 mm 0 mm 0 mm | Pass |

Sections 5.1.1 and 7.2: Colour Performance Requirements of New Background Materials

| | | Measured Values of Sample | Result |
|---------------------------|---------|---------------------------|--------|
| Chromaticity coordinates | x value | 0.610 | Pass |
| | y value | 0.325 | |
| Luminance Factor, β | | 0.35 | Pass |

The chromaticity shall be within one of the areas defined by coordinates in EN ISO 20471: 2013 Table 2 and the luminance factor shall comply with the corresponding minimum value.

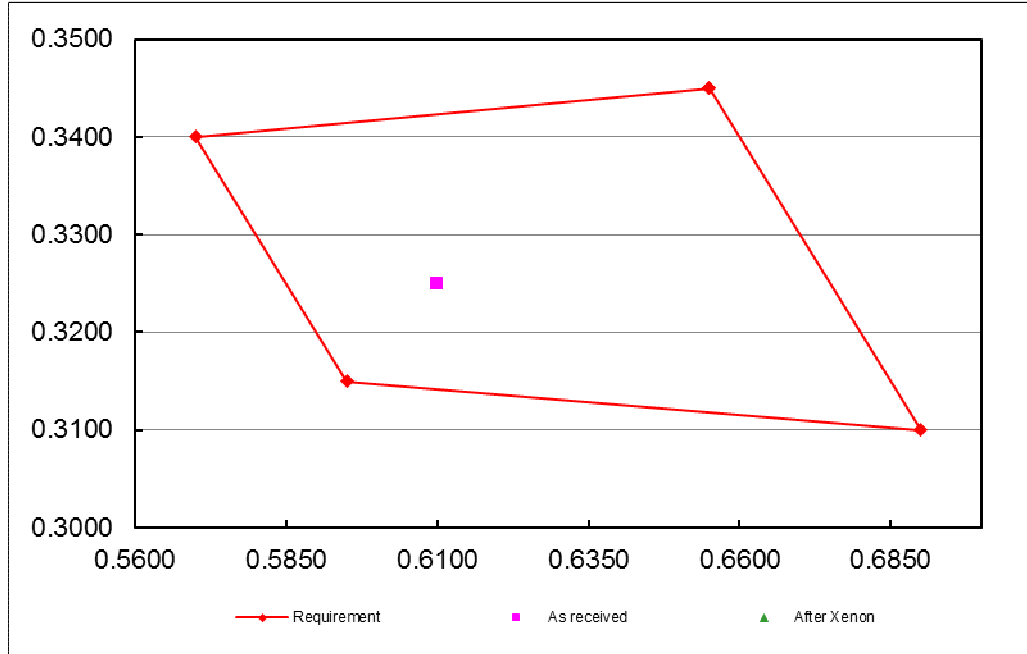
Colour requirements for background material

| Colour | Chromaticity coordinates | | Minimum luminance factor β_{min} |
|-----------------|--------------------------|-------|----------------------------------------|
| | x | y | |
| Fluorescent red | 0.655 | 0.345 | 0.25 |
| | 0.570 | 0.340 | |
| | 0.595 | 0.315 | |
| | 0.690 | 0.310 | |



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Graphs:



Sections 5.2 and 7.2: Colour Performance Requirements of Background Materials after Xenon Test (ISO 105-B02:1994, method 3; Xenon-arc Lamp)

| | | Measured Values of Sample | Result |
|--------------------------|---------|---------------------------|--------|
| Chromaticity coordinates | x value | 0.573 | Pass |
| | y value | 0.349 | |
| Luminance Factor, β | | 0.47 | Pass |

The chromaticity shall be within one of the areas defined by coordinates in EN ISO 20471: 2013 Table 2 and the luminance factor shall comply with the corresponding minimum value.

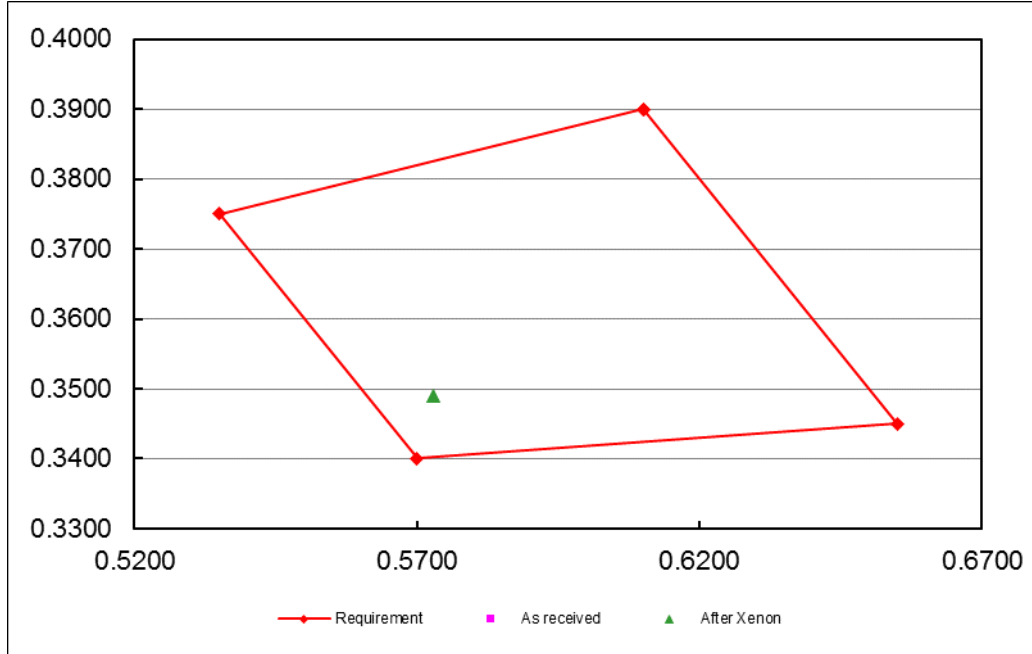
Colour requirements for background material

| Colour | Chromaticity coordinates | | Minimum luminance factor β _{min} |
|------------------------|--------------------------|-------|----------------------------------------------|
| | x | y | |
| Fluorescent orange-red | 0.610 | 0.390 | 0.40 |
| | 0.535 | 0.375 | |
| | 0.570 | 0.340 | |
| | 0.655 | 0.345 | |

Remark: The chromaticity of after xenon test comply with the corresponding minimum value of “fluorescent orange-red”, while client claimed color is “fluorescent red”. This shall be mentioned in the product instruction for use.



Graphs:



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Sections 6.1 and 7.3 Retroreflection for New Separate Performance Retroreflective Material

| <u>Entrance Angle</u> | <u>Observation Angle</u> | <u>Measured value (cd/(lx. m²))</u> | <u>Orientation Sensitive</u> | <u>Minimum Requirement (cd/(lx. m²))</u> | <u>Result (Pass/Fail)</u> |
|-----------------------|--------------------------|------------------------------------------------|------------------------------|-----------------------------------------------------|---------------------------|
| 5° | 12° | 344 | No | 330 | Pass |
| | 20° | 286 | No | 250 | Pass |
| | 1° | 26.1 | No | 25 | Pass |
| | 1°30' | 21.0 | No | 10 | Pass |
| 20° | 12° | 350 | No | 290 | Pass |
| | 20° | 290 | No | 200 | Pass |
| | 1° | 25.2 | No | 15 | Pass |
| | 1°30' | 21.5 | No | 7 | Pass |
| 30° | 12° | 356 | No | 180 | Pass |
| | 20° | 294 | No | 170 | Pass |
| | 1° | 25.6 | No | 12 | Pass |
| | 1°30' | 19.9 | No | 5 | Pass |
| 40° | 12° | 337 | No | 65 | Pass |
| | 20° | 273 | No | 60 | Pass |
| | 1° | 30.3 | No | 10 | Pass |
| | 1°30' | 17.6 | No | 4 | Pass |

(#)Remark:

- When measured at two rotation angles $\epsilon = 0^\circ$ and $\epsilon = 90^\circ$, materials having coefficients of retroreflection that differ by more than 15% are defined as orientation sensitive.
- Orientation-sensitive material shall comply with the minimum requirements for the coefficient of retroreflection stated in Table 4 of EN ISO 20471 at one of the two rotation angles. The coefficient of retroreflection shall be not less than 75% of the values stated in Table 4 (Minimum coefficient of retroreflection for separate performance retroreflective material) at the other rotation angle.

Table 4 – Minimum coefficient of retroreflection in cd/(lx.m²) for separate performance retroreflective material

| Observation angle | Entrance angle β_1 ($\beta_2 = 0$) | | | |
|-------------------|-----------------------------------------------|-----|-----|-----|
| | 5° | 20° | 30° | 40° |
| 12° | 330 | 290 | 180 | 65 |
| 20° | 250 | 200 | 170 | 60 |
| 1° | 25 | 15 | 12 | 10 |
| 1°30' | 10 | 7 | 5 | 4 |



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Retroreflection of Separate Performance Retroreflective Materials

Sections 6.2, 7.3 and 7.4.1 Retroreflection after Abrasion

| <u>Entrance Angle</u> | <u>Observation Angle</u> | <u>Measured value (cd/(lx.m²))</u> | <u>Orientation-Sensitive</u> | <u>Minimum Requirement (cd/(lx.m²))</u> | <u>Result</u> |
|-----------------------|--------------------------|-----------------------------------------------|------------------------------|----------------------------------------------------|---------------|
| 5° | 12' | 297 | No | 100 | Pass |

Sections 6.2, 7.3 and 7.4.2 Retroreflection after Flexing

| <u>Entrance Angle</u> | <u>Observation Angle</u> | <u>Measured value (cd/(lx.m²))</u> | <u>Orientation-Sensitive</u> | <u>Minimum Requirement (cd/(lx.m²))</u> | <u>Result</u> |
|-----------------------|--------------------------|-----------------------------------------------|------------------------------|----------------------------------------------------|---------------|
| 5° | 12' | 299 | No | 100 | Pass |

Sections 6.2, 7.3 and 7.4.3 Retroreflection after Folding at cold temperatures

| <u>Entrance Angle</u> | <u>Observation Angle</u> | <u>Measured value (cd/(lx.m²))</u> | <u>Orientation-Sensitive</u> | <u>Minimum Requirement (cd/(lx.m²))</u> | <u>Result</u> |
|-----------------------|--------------------------|-----------------------------------------------|------------------------------|----------------------------------------------------|---------------|
| 5° | 12' | 301 | No | 100 | Pass |

Sections 6.2, 7.3 and 7.4.4 Retroreflection after Temperature Variation

| <u>Entrance Angle</u> | <u>Observation Angle</u> | <u>Measured value (cd/(lx.m²))</u> | <u>Orientation-Sensitive</u> | <u>Minimum Requirement (cd/(lx.m²))</u> | <u>Result</u> |
|-----------------------|--------------------------|-----------------------------------------------|------------------------------|----------------------------------------------------|---------------|
| 5° | 12' | 301 | No | 100 | Pass |



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Sample Photo



*** End of Report ***



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