

**TEST REPORT**

**REPORT NUMBER: 102050611TOR-002**  
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**EVALUATION CENTER**

Intertek Testing Services Ltd.  
6225 Kenway Drive  
Mississauga, Ontario L5T 2L3

**RENDERED TO**

**Safe-T-Strap**  
**1885-209 Clements Road**  
**Pickering, ON L1W 3V4**

**PRODUCT EVALUATED**

Temporary Anchorage Connector

**EVALUATION PROPERTY**

Dynamic Performance Testing

**Report of Testing Temporary Anchorage Connectors for Dynamic Performance Testing in accordance with ANSI/ASSE Z359.1.**

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## 2 Introduction

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Intertek Testing Services NA Ltd. (Intertek) has conducted dynamic performance testing for Safe-T-Strap at their manufacturing location on temporary anchorage connectors conducted in accordance with Section 4.3.3.2 of ANSI/ASSE Z359.1. This evaluation began on April 29, 2015 and was completed on April 30, 2015.

## 3 Test Specimen

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### 3.1. SPECIMEN SELECTION

Samples were submitted to Intertek directly from the client in new and unused condition. Samples were not independently selected for testing. Samples of both Nylon and Polyester anchor straps were received at the Intertek Mississauga Evaluation Center.

The Safe-T-Straps tested were constructed of nominal 2" (51mm) wide, 1/16" (1.6mm) thick material (nylon or polyester) with an overall length of 28" (711mm) and rated for 5000 lb (2268 kg) capacity. One end of the strap was fitted with a 3/8" thick, 2 5/8" x 3" (67mm x 75mm) D-Ring which was retained within the strap by a stitched loop formed by the webbing. This loop was overlapped once. The overlap measured 4 1/4" (108mm) and was stitched by a "double zigzag (2WW)" stitch pattern measuring 2 1/4" x 1 1/2" (57mm x 38mm) overall. The other end consisted of 2 'wings' which were used to attach the strap to the roof peak. These ends consisted of one overlap of webbing per side measuring 8 1/4" (210mm). These ends were sewn together using a "double zigzag (2WW)" stitch pattern measuring 7 1/4" x 1 1/2" (184mm x 38mm).

### 3.2. ASSEMBLY DESCRIPTION

A mock-up roof deck, measuring approximately 3ft (914mm) long by 2ft (610mm) wide was constructed by Safe-T-Strap personnel and provided to Intertek for testing purposes. The roof deck was constructed following approved building methods for timber-frame construction. The roof deck consisted of 6 truss sections made from 2x6 SPF lumber, connected together with a ridge joist and covered with 3/8" SPF sheathing.

The roof deck was securely attached to a structural steel frame constructed to meet the requirements outlined within ANSI/ASSE Z359.1. An engineering report regarding the vibration response of the frame can be found in Appendix B of this report.

Eight (8) temporary anchors were secured over the ridge of the roof deck with 6 fasteners on each side of the strap. Each fastener was placed between the cross-stitching areas of each end of the strap.

Details of the strap assemblies are as follows: (on next page)

Sample #	Strap Material	Environmental Conditioning	Loading Direction	Fastener Type
1	Nylon (Yellow)	-30°C for at least 48 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail
2	Nylon (Yellow)	Ambient	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail
3	Nylon (Yellow)	Ambient	Parallel to ridge (off the side)	3 ¼" Ardox nail
4	Nylon (Yellow)	54°C & 85% RH for at least 2 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail
5	Polyester (White)	-30°C for at least 48 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail
6	Polyester (White)	Ambient	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail
7	Polyester (White)	Ambient	Parallel to ridge (off the side)	3 ¼" Ardox nail
8	Polyester (White)	54°C & 85% RH for at least 2 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail

## 4 Testing and Evaluation Methods

### 4.1. SPECIMEN PREPARATION & CONDITIONING

Two (2) anchor straps (1 of each material) were placed into a freezer at -30°C for a minimum of 48 hours prior to testing. At the time of testing, the samples were removed from the freezer and were allowed to return to room temperature before testing commenced. Two (2) anchor straps (1 of each material) were placed into an oven at 50°C for a minimum of 48 hours prior to testing. At the time of testing, the samples were removed from the oven and were allowed to return to room temperature before testing commenced. The remaining four (4) samples were kept at ambient lab conditions prior to and during the testing period.

All samples were installed onto the mock-up roof deck by qualified Safe-T-Strap personnel using the fasteners and locations as described above.

### 4.2. DYNAMIC PERFORMANCE TESTING

Testing was performed in accordance with Section 4.3.3.2 of ANSI/ASSE Z395.1-1992(R1999). Each of the 6 temporary anchors were attached to the roof deck by qualified Safe-T-Strap personnel, using the appropriate fasteners (as noted above). The fasteners are required to be located within the cross-stitched area on each end of the strap and are also required to be fastened into the roof truss. After the straps were installed, a 6ft (1829mm) long, 3/8" diameter, Type 302 Stainless Steel aircraft cable was attached to the D-Ring on the strap via a 6000lb capacity shackle. The other end of the steel cable was attached to a dynamic load cell via a 6000lb capacity shackle. Finally, a 220lb (100kg) steel load was attached inline to the other end of the load cell. This assembly was then connected to a temporary support with a quick release mechanism. The load was raised the required 6ft distance and dropped. Visual observations were then made and impact loads were recorded. Static strength testing was not evaluated as part of this test program.

## 5 Testing and Evaluation Results

**Table 1. Safe-T-Strap Dynamic Performance Testing Results**

Sample #	Strap Material	Environmental Conditioning	Loading Direction	Fastener Type	Impact Force (lbf)	Loadcell Impact Weight (lbf)	Comments
1	Nylon (Yellow)	-30°C for at least 48 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail	5012	330	No disengagement of nails
2	Nylon (Yellow)	Ambient	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail	5012	345	No disengagement of nails
3	Nylon (Yellow)	Ambient	Parallel to ridge (off the side)	3 ¼" Ardox nail	5012	363	Minimal disengagement of 2 nails – strap withheld load
4	Nylon (Yellow)	54°C & 85% RH for at least 2 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail	5012	355	No disengagement of nails
5	Polyester (White)	-30°C for at least 48 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail	5012	341	No disengagement of nails
6	Polyester (White)	Ambient	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail	5012	374	No disengagement of nails
7	Polyester (White)	Ambient	Parallel to ridge (off the side)	3 ¼" Ardox nail	5012	362	Minimal disengagement of 2 nails – strap withheld load
8	Polyester (White)	54°C & 85% RH for at least 2 hours	Perpendicular to ridge (down the roof face)	3 ¼" Ardox nail	5012	367	No disengagement of nails

## 6 Testing Equipment

Equipment Description	Intertek Inventory Number	Calibration due date
Load Cell Display	280-01-1231A	April 6, 2016
Load Cell	280-01-1231B	April 6, 2016
Scale	280-01-1228	December 23, 2015

## 7 Conclusion

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Intertek Testing Services NA Ltd. (Intertek) has conducted dynamic performance testing for Safe-T-Strap on temporary anchorage connectors conducted in accordance with Section 4.3.3.2 of ANSI/ASSE Z359.1.

The Safe-T-Strap temporary anchorage connectors as described within this report meet the intent of the standard as set forth within ANSI/ASSE Z359.1, Section 4.3.3.2. Static strength testing was not evaluated as part of this test program.

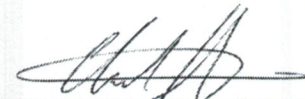
The client is aware of the required markings as per section 5.1.3 of ANSI/ASSE Z359.1 and will be updating the markings going forward.

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