Strength & Elongation Recommended Test Method for Sling & Tie Down Webbing

WSTDA-TM-1

$25.00

FOREWORD

This Recommended Standard Specification applies to The Tensile Strength and Elongation Test Method for Sling and Tie Down Webbing. It recommends the equipment and method for testing widths up through 12 inches. This standard is modeled after Federal Test Method Standard No. 191A, Method 4108. The original federal standard was inactivated and is no longer updated or revised by the U.S. government.

This Standard may be used for testing tensile strength and elongation of sling and tie down webbing up through 12 inches in width. Other standards such as ASTM describe testing methods for tensile strength and elongation but are limited in the width and tensile strength that can be tested. Webbing manufactured from material, construction or widths other than those detailed in this Recommended Standard Specification shall be tested in accordance with the recommendation of the webbing manufacturer or a qualified person.

This Recommended Standard Specification is intended to assist users specifying the test method for tensile strength and elongation and to serve as a guide to the industry, government and other regulatory bodies.

Safety is of paramount consideration when using this standard as a test method. Individuals operating test equipment shall be trained in the proper methods for safe operation. They shall be knowledgeable about the industry, local, state, federal and provincial regulations applicable to testing equipment.

MANDATORY AND ADVISORY RULES

Mandatory rules of this Recommended Standard Specification are characterized by the use of the word "shall".
If a rule is of an advisory nature, it is indicated by the use of the word "should", or it is stated as a recommendation.

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WEB SLING & TIE DOWN ASSOCIATION ™

Tensile Strength and Elongation Test Method For Sling and Tie Down Webbing

SECTION 1 SCOPE

1.1 This method is intended for determining the breaking strength and elongation of sling and tie down webbing ranging in widths up through 12 inches (305mm).

SECTION 2 TEST SAMPLES

2.1 The sample shall be a single length of 54 inches (1372 mm) minimum and the webbing at full width. The distance between the clamps shall be as stated in 4.1.2 (b).

SECTION 3 NUMBER OF DETERMINATIONS

3.1 Unless otherwise specified a minimum of three (3) samples shall be tested from each production lot.

SECTION 4 APPARATUS

4.1 The machine shall consist of three main parts:
- (a) Straining mechanism.
- (b) Clamps.
- (c) Load and elongation recording mechanism(s).

4.1.1 Straining mechanism. A machine wherein the sample is held by two clamps and subjected to a uniform strain rate.

4.1.1.1 The machine shall have a uniform speed of 3.0 ± 1.0″ (76 ± 25mm) per minute unless otherwise specified.

4.1.2 Clamps

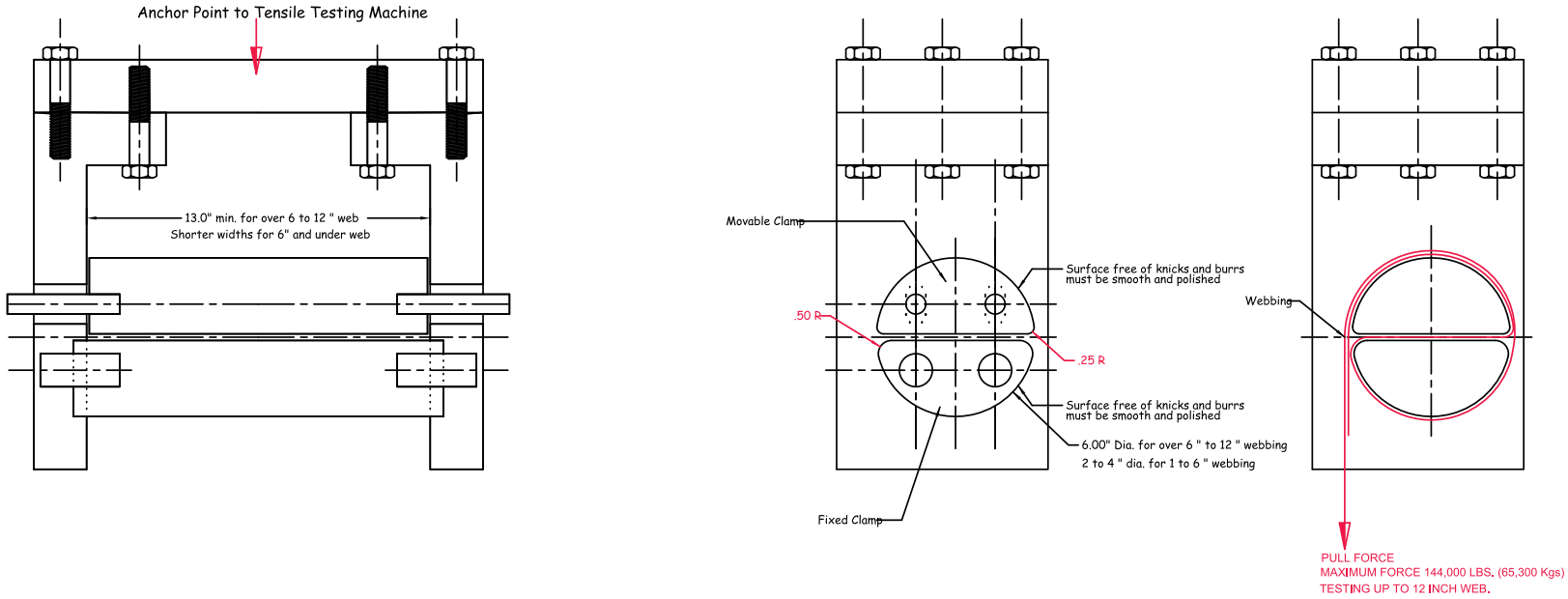
4.1.2.1 (a) Split drum. Unless otherwise specified, the machine shall have two split drum type clamps as shown in figure 1.
(b) The sample length distance between the clamps shall be a minimum of 10 inches (254mm).

4.1.3 Load Recording Mechanism(s): Calibrated chart, dial or digital scale to indicate the applied load and retain the peak load.

4.1.4 Capacity: The machine should be of such capacity that it exceeds the maximum load required to break the sample by at least 15%.

4.1.5 Machine Calibration: The test machine shall be certified annually to ASTM E4 or equivalent.

Figure 1



Note:This drawing is for illustration only of a typical test fixture

2 Clamps required!

1 clamp installed on fixed crosshead
1 clamp installed on the moveable crosshead

WSTDA CLAMPS FOR WEBBING		
DRAWN WSTDA 2012	Clamps for Webbing Tensile Testing	
CHECKED		
ENGINEER		
APPROVED	SIZE D	DWG NUMBER 2012-12
SCALE No Scale	REV - 0	SHEET 1 OF 1

SECTION 5 PROCEDURE

5.1 Preparation of Samples

5.1.1 Unless otherwise specified in the order document, the samples shall be conditioned for a minimum period of 24 hrs. at 70° F. ± 2° (21° C ± 1°) and a relative humidity of 65% ± 5% and tested within a time period of 30 minutes after being removed from the conditioning environment.

5.2 Elongation Measurement

5.2.1 Elongation shall be determined on the same sample being tested for breaking strength. The equipment will be stopped and the distance between the two fine ink marks or pins measured with calipers or other suitable measuring device at the load level specified.

5.2.2 The specimen shall be placed in the clamps of the machine with the long dimension parallel to the application of the load. When measurement of elongation is required a slight tension shall be applied to the sample as it is placed in the clamps and the two fine ink marks or pins shall be placed a minimum of five (5) inches (127 mm) apart and shall not be closer than 1-1/2 inches (38 mm) to either clamp. The use of photo or electronic instruments may also be used to determine the elongation.

5.2.3 Unless otherwise specified, synthetic sling webbing shall be measured for elongation at approximately one fifth (20%) of the expected minimum break and synthetic tie down webbing shall be measured at approximately one third (33.3%) of the expected minimum.

5.3 Break Strength Test

5.3.1 If during the course of a break strength test an individual test sample slips within the clamps, breaks in or at the edges of the clamps, or if for any reason attributable to faulty technique fails the test, such result shall be discarded and another sample shall be tested.

5.3.2 Force shall be applied to the sample at such a rate that the clamp through which the force is applied will move at a rate of 3.0 ± 1.0 inches (76 ± 25 mm) per minute until the sample is taken to destruction.

5.3.3 After destruction of the sample, the breaking load shall be read from the dial, digital scale or chart and the value recorded.

SECTION 6 REPORT

6.1 The breaking strength of each of the three (3) samples must meet or exceed the minimum required break strength. Failure to meet the minimum required break strength of any of the three (3) samples shall deem the sample lot to have failed the test and retesting is required.

6.1.1 If retesting is required, all three (3) samples must meet or exceed the minimum required break strength after which the sample lot is considered to have passed.

Breaking strength	Reported to nearest
0 – 5,000 lbs (2268 kg)	5 lbs (2.27 kg)
5,001 lbs and up (2268.4 kg) and up	10 lbs (4.54 kg)

6.2 The break strengths of each sample tested shall be reported individually.

6.3 The recorded elongation shall be the average of the sample lot tested and shall be reported to the nearest 1.0 percent. The report shall state the force at which the elongation was measured for each sample. Measurement example: 5 inch (127mm) marked measurement elongates to 5.5 inches (140mm) at required measurement force, (5.5 ÷ 5) -1 X 100 = 10% elongation.

OTHER WEB SLING & TIE DOWN ASSOCIATION PUBLICATIONS

Recommended Standard Specifications:

Printed Books

Synthetic Web Slings	WSTDA-WS-1
Synthetic Polyester Roundslings	WSTDA-RS-1
High Performance Yarn (HPY) Roundslings	WSTDA-RS-1HP
Webbing for Synthetic Web Slings	WSTDA-WB-1
Sewing Threads for Slings & Tie Downs	WSTDA-TH-1
Synthetic Web Tie Downs	WSTDA-T-1
(French) Synthetic Web Tie Downs	WSTDA-T-1
Winches Used With Web Tie Downs	WSTDA-T-3
Synthetic Webbing Used for Tie Downs	WSTDA-T-4
Load Binders Used with Chain Tie Downs	WSTDA-T-6
All Standards In A Three-Ring Binder	WSTDA-ASB

Recommended Standard Specifications:

PDF Files On CD

All Standards CD - (All Standards on CD)	WSTDA-ASCD

Recommended Test Methods:

Strength & Elongation Test Method for Sling & Tie Down Webbing	WSTDA-TM-1

Operating & Inspection Manuals

Synthetic Web Slings	WSTDA-WS-2	Synthetic Web Slings	WSTDA-WS-PS-2 (pocket sized)
Synthetic Polyester Roundslings	WSTDA-RS-2	Synthetic Polyester Roundslings	WSTDA-RS-2-PS (pocket sized)
Synthetic Web Tie Downs	WSTDA-T-2	Synthetic Web Tie Downs	WSTDA-T-2-PS (pocket sized)

Illustrated Wall Chart

Inspection of Web Slings & Roundslings	WSTDA-WSWC-1

UV Degradation Reports

Summary Report UV Degradation	WSTDA-UV-Sling-2003
UV Degradation Mini Manual	WSTDA-UV-MM-2005
UV Degradation Report	WSTDA-UVDR-1981 (Revised 2005)

Training CD-Rom

North America Cargo Securement Standard	WSTDA-CD-TP-2003

Fabric Warning Tags

Web Slings	WSWT-1
Tie Downs	TDWT-1
Roundslings	RSWT-1

Paper Safety Bulletins

Web Slings	WSSB-1
Roundslings	RSSB-1
Tie Downs	TDSB-1

All Fabric Warning Tags and Paper Safety Bulletins are available in three languages; English, Spanish and French

For ordering information and prices, contact the association office or visit our website:

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This recommended standard specification has been formulated as a guide to users, industry and government to ensure the proper method of measuring Tensile Strength and Elongation For Sling and Tie Down Webbings. The existence of this recommended standard specification does not, however, prevent members of the Web Sling & Tie Down Association, Inc. and other manufacturers from manufacturing or selling products beyond the scope of this recommended standard specification.