This Recommended Standard Specification applies to web tie downs made of nylon or polyester fibers used for securing cargo. It recommends construction, identification and marking of these web tie downs. In addition, it provides tie down capacity information and important practical advice on the use, maintenance and inspection of web tie downs.

The exclusion from this Recommended Standard Specification of web tie downs of different materials and capacities is not intended to preclude their use and shall not be interpreted in this manner.

Web tie downs made from materials or construction other than those detailed in this Recommended Standard Specification shall be used in accordance with the recommendations of the tie down manufacturer or qualified person. The specifications contained in this Recommended Standard Specification for Web Tie Downs were formulated under the auspices of the Web Sling & Tie Down Association, Inc. This Recommended Standard Specification is intended to assist users in specifying the proper synthetic web tie down for their particular needs, to serve as a guide to the industry in the construction and use of web tie downs and to serve as a guide to governmental and other regulatory bodies responsible for the proper use and inspection of synthetic web tie downs.

Safety is the paramount consideration involved in the use of any web tie down. The appropriate web tie down shall be selected for their specific application. Users of web tie downs shall have knowledge and training on the proper method of cargo securement. Also, users shall be knowledgeable about industry, local, state, federal and provincial regulations applicable to cargo securement.

MANDATORY AND ADVISORY RULES

Mandatory rules of the Recommended Standard Specification are characterized by the use of the word “shall” or “must”.

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.

WEB SLING & TIE DOWN ASSOCIATION, INC.
2105 Laurel Bush Road, Suite 201
Bel Air, Maryland 21015

Phone (443) 640-1070
Fax (443) 640-1031
Email: info@wstda.com
Website: www.wstda.com

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CHAPTER 1.0
TERMINOLOGY AND DEFINITIONS

SECTION 1.1 PURPOSE
1.1.1 This chapter provides a description of web tie downs and definitions that apply to such tie downs.

SECTION 1.2 DESCRIPTION
1.2.1 A web tie down is fabricated of nylon or polyester yarn, woven, and with or without hardware, for the purpose of securing cargo.

SECTION 1.3 BASIC TYPES
1.3.1 Winch Strap
Figure 1-1

1.3.2 Ratchet Strap
Figure 1-2

1.3.3 Logistic Strap
Figure 1-3

SECTION 1.4 DEFINITIONS OF TERMS
ABRASION The mechanical wearing or scuffing of a surface resulting from frictional movement between two materials or objects.

AGGREGATE WORKING LOAD LIMIT The summation of the working load limit (WLL) of all devices used to secure an article of cargo on a vehicle.

ANCHOR POINT Part of the structure, fitting or attachment point on a vehicle or article of cargo that should have an identifiable, rated working load limit to which a tie down is attached. (See Figure 1-4)
BREAKING STRENGTH  The result of a destructive tensile load test expressed in pounds and/or kilograms at which point any load-bearing part of a web tie down fails.

COATING  A finish applied for a special purpose.

DESIGN FACTOR  The ratio of the breaking strength to the working load limit (WLL) for each new web tie down, 3:1. Also phrased as the work load limit (WLL) is 1/3 minimum breaking strength (MBS).

DESIGNATED PERSONNEL  Selected or assigned by the employer or employer’s representative as being a competent person who is knowledgeable of regulations, standards, capable of assessing risk, identifying predictable hazards and is authorized to take corrective action.

ELONGATION  The measurement of stretch at a given tensile load, expressed as a percentage of the original, slackened length. All materials subjected to tension will stretch and different materials have different rates of stretch at the same tensile load.

FIBER  A synthetic filament capable of being spun into yarn.

FITTING  A load-bearing device that is attached to the web tie downs. (See Figure 1-5)

INDIRECT TIE DOWN  A tie down that goes from an anchor point on the vehicle, through, over or around the cargo and then attaches to another anchor point on the vehicle.

DIRECT TIE DOWN  A tie down that goes from an anchor point on the vehicle to an attachment point on an article of cargo.

MANDREL  The component of a winch and ratchet which the webbing is inserted into for tensioning the web tie down. (See Figure 1-6)

PROOF LOAD TEST  A non-destructive load test of the web tie down to a multiple of one and one half (1.5) times the working load limit (WLL) of that web tie down including hardware if applicable.
**TENSIONING DEVICE**  The mechanical component of a tie down that applies or maintains force and incrementally adjusts webbing. Winches, Ratchets, Cams & Over Center Buckles are commonly used. (See Figure 1-7)

![Figure 1-7](image)

**THREAD**  The yarn that is used to sew a stitch pattern.

**TIE DOWN**  Any combination of fittings, webbing and tensioners forming an assembly that attaches to vehicle anchor points. They are used for securing articles of cargo to a vehicle or restraining articles of cargo from movement on a vehicle. (See Figure 1-8)

![Figure 1-8](image)

**VEHICLE**  Any device for carrying goods or equipment, such as a truck, trailer, van or otherwise.


**WINCH**  A mechanical tensioner mounted to a vehicle by welding, bolting or a track system. Reference the WSTDA Recommended Standard Specifications for Winches Used With Web Tie Downs WSTDA-T-3.

**WORKING LOAD LIMIT**  The maximum allowable loading force for each web tie down.

**YARN**  Strands of fibers which are used to make webbing and thread.
CHAPTER 2.0
MATERIALS & CONSTRUCTION OF NYLON OR POLYESTER WEB TIE DOWNS

SECTION 2.1 PURPOSE
2.1.1 This chapter provides an outline of materials and construction characteristics of web tie downs.

SECTION 2.2 WEBBING
2.2.1 Webbing shall conform to the WSTDA Recommended Standard Specification for Webbing Used For Tie Downs WSTDA-T-4.

SECTION 2.3 THREAD
2.3.1 The thread used in the sewing of synthetic web tie downs shall conform to the WSTDA Recommended Standard Specification for Synthetic Sewing Threads for Slings and Tie Downs WSTDA-TH-1.

SECTION 2.4 STITCHING
2.4.1 Stitching shall be lock-stitched and preferably continuous. When not continuous, stitching shall be back-stitched at the ends to prevent raveling.

SECTION 2.5 HARDWARE (FITTINGS & BUCKLES)
2.5.1 This section relates to the hardware, of metal or other suitable materials, which may be attached to the web tie down for the purpose of securing cargo. The hardware may be a permanent or detachable part of the tie down.

2.5.2 Material - The hardware material selected shall be compatible with the mechanical and environmental requirements imposed on the hardware.

2.5.3 Finish - Surfaces shall be cleanly finished and edges shall have sufficient radii to prevent cutting or other forms of damage to the tie down.

2.5.4 Design Criteria - Hardware shall have a minimum design factor of 3:1 and have sufficient strength to sustain a proof load test of 1.5 times the WLL without causing any permanent deformation.

2.5.5 Reuse of Hardware - Hardware shall be inspected prior to reuse. Hardware shall not be reused if excessive wear, pitting, corrosion, cracks, distortion and/or breaks are visible. No repairs shall be permitted.

2.5.6 Proof Load Test - Synthetic web tie downs incorporating reused hardware shall be proof tested to a minimum of one and one half (1.5) times the working load limit (WLL) of the synthetic web tie down assembly.

SECTION 2.6 COATINGS
2.6.1 Any finishes or coatings that are applied to the tie down materials shall be compatible with the material of the webbing or fittings and shall not impair the performance of the tie down assembly.
SECTION 2.7 DESIGN FACTOR

**WARNING**

The tie down design factor is based on destructive, laboratory controlled testing conditions, which will not be exactly duplicated during actual loading conditions. Never load any tie down in excess of its working load limit (WLL).

2.7.1 The design factor for new synthetic web tie downs, with or without hardware, shall be a minimum of 3:1 when tested in accordance with Chapter 3.

SECTION 2.8 IDENTIFICATION / MARKING REQUIREMENTS

2.8.1 Each web tie down shall be durably marked or labeled by the manufacturer to show:
   a. Working load limit (WLL) in pounds and kilograms
   b. Name or trademark of the tie down manufacturer

2.8.2 Use / inspection information shall accompany each new web tie down.
(Example: Figure 2-1)

2.8.3 If the required identification markings become illegible or missing, the web tie down shall be removed from service.
SECTION 2.9 WORKING LOAD LIMIT

2.9.1 Web tie downs shall not be loaded in excess of the identified working load limit (WLL), shown on its identification markings/label.

2.9.2 Each manufacturer shall retain the test data used to validate the web tie down minimum breaking strength. Suppliers should retain the test data provided by the manufacturer to validate the web tie down minimum breaking strength. Destructive tests shall be conducted periodically, according to the test procedure outlined in Chapter 3.

CHAPTER 3.0

STANDARD PROCEDURES FOR TESTING

SECTION 3.1 PURPOSE

3.1.1 This chapter provides standard procedures for the testing of web tie downs.

SECTION 3.2 TYPES OF TESTS

3.2.1 Destructive - A tensile test of a web tie down for the purpose of verifying the minimum breaking strength. The tie down shall be pulled in a straight line pull until any load bearing component fails.

3.2.2 Proof Load - A non-destructive load test of a web tie down, including hardware if applicable, to 1.5 times the working load limit (WLL).

SECTION 3.3 TEST CHARACTERISTICS

3.3.1 Sample - When testing for the purpose of verification of the minimum breaking strength, the web tie down samples shall be made in the same manner used to produce production tie downs.

3.3.2 Hardware - Tie downs incorporating hardware shall be tested with the hardware attached.

3.3.3 A minimum of three (3) samples shall be tested to establish the breaking strength of a web tie down. The lowest test result shall be used to determine the breaking strength of the assembly.

3.3.4 All web tie downs are to be tested in a straight-line pull with force applied to both ends of the assembly. The ram shall be retracted at a uniform speed of 2 to 10 inches (50 to 250mm) per minute, or 100 to 1,000 pounds (45 to 454 kgs) per second until failure. The tensile load at failure is the breaking strength. Tie downs should be tested at ambient temperature unless otherwise noted.

3.3.5 The test machine shall be certified annually to ASTM E4 or equivalent.

3.3.6 Test results shall be kept on file by the web tie down manufacturer. Suppliers should retain the test data provided by the manufacturer to validate the web tie down minimum breaking strength.

3.3.7 The web tie down manufacturer or an independent testing laboratory shall perform the testing of the web tie downs.

SECTION 3.4 PROOF TESTING REQUIREMENTS

3.4.1 Proof Testing - Unless specified by the purchaser, web tie downs are not required to be proof tested prior to their initial use.
3.4.2 **Proof Testing Procedures** - When tie downs are proof tested, the proof load shall be a minimum of 1.5 times the working load limit (WLL).

3.4.3 **Proof Test Certificate** - When a certificate of testing is required, the certificate, issued by the company performing the test, shall show:

- The test date
- A description of the test method
- Product stock and serial number (if applicable)
- The applied load expressed in pounds or kilograms
- Product working load limit (WLL)
- Any indicated result

## CHAPTER 4.0

RECOMMENDED OPERATING PRACTICES

### SECTION 4.1 PURPOSE

4.1.1 The purpose of this chapter is to provide guidelines to the designated personnel responsible for tie down selection, inspection, and usage in accordance with recommended operating practices.

### SECTION 4.2 Training Requirements

**WARNING**

Before using tie downs, users must be properly trained. The use of tie downs by untrained personnel is potentially hazardous.

4.2.1 The following six points briefly summarize some important safety issues. All tie down users shall be trained in the following areas:

- **Tie Down Selection** - Understand the limitations of each tie down type.
- **Tie Down Inspection** - Understand how to properly inspect tie downs, so damaged tie downs can immediately be removed from service.
- **Prevention of Tie Down Damage** - Know how to prevent tie down damage, including how to properly protect them from being cut or damaged from direct contact with corners, edges, protrusions, or abrasive surfaces.
- **Proper Use of Tie Downs** - Each tie down user shall be competent in considering all risk factors prior to securing cargo, and be able to verify that each tie down will not be loaded in excess of its working load limit.
- **Remaining Alert When Securing Cargo** - Whenever using tie downs, all personnel shall be trained to remain alert and stand clear of any lifted cargo.
- **Proper Storage of Tie Downs** - Users should know where to store tie downs in an environment where they will not become damaged, such as by exposure to heat, chemicals and sunlight, or other UV light.

Users should read, understand and follow the information contained in this publication, as well as all applicable local, state, federal, and provincial regulations applicable to cargo securement.
SECTION 4.3 PROPER SELECTION

4.3.1 Select a web tie down having suitable characteristics for the type of load, environment and attachments to vehicle anchor points. Fittings shall have the required shape & size to attach properly to the vehicle anchor point.

4.3.2 Identify the working load limit (WLL) marked on the web tie down by the manufacturer. If the required markings are missing or illegible, remove the tie down from service. Read all warnings and/or instructions provided by the manufacturer.

4.3.3 Identify the working load limit of the anchor points. If no rating is visible contact the vehicle owner or manufacturer.

SECTION 4.4 TIE DOWN INSPECTIONS

4.4.1 Initial Inspection - Prior to use, all tie downs shall be inspected by designated personnel to verify compliance with all applicable provisions of this Standard.

4.4.2 Frequent Inspection - A visual inspection for damage shall be performed by the user or other designated personnel each day or shift the tie down is used. In severe service applications, this inspection shall be performed before each use.

4.4.3 Periodic Inspection - A complete inspection for damage shall be performed by designated personnel. This inspection should be done by someone other than the individual(s) that most commonly performs the frequent inspection.

a. Periodic Inspection Frequency. Periodic inspection intervals shall not exceed 1 year. The frequency of periodic inspections should be based on:
   1. frequency of tie down use
   2. severity of service conditions
   3. nature of cargo being secured
   4. experience gained on the service life of web tie downs used in similar conditions

b. Written Records. A written record of the most recent periodic inspection should be maintained.

4.4.4 Removal Criteria - A tie down shall be removed from service if any of the following forms of damage are visible. See next page for illustrative examples.

a. Holes, tears, cuts, snags or embedded particles which cause doubt as to the strength of the tie down. Figures 1 & 8.

b. Broken or worn stitching in load bearing stitch patterns. Figure 2.

c. Excessive abrasive wear. Figure 3.

d. If any load bearing part of the tie down has been tied into one or more knots. Figure 4.

e. Melting, charring or weld spatter on any part of the tie down. Figure 5.

f. Acid or alkali burns on the tie down. Figure 6.

g. Signs of ultra-violet light degradation such as bleaching, increased stiffness or surface abrasion in areas not in contact with the load. See 4.7.8.2.

h. Distortion, excessive pitting, corrosion or other damage to hardware.

i. If either the tie down manufacturer or supplier identification is illegible or missing, or the assigned working load limit (WLL) is no longer visible.

j. Any other visible damage which causes doubt as to the strength of the tie down. Figures 7, 8 and 9.
FIGURES - DAMAGED SYNTHETIC WEB TIE DOWNS

Figure 1
Holes, Tears
Cuts, Snags

Figure 2
Broken or Worn Stitching
in Load Bearing Sew
Patterns

Figure 3
Excessive
Abrasive Wear

Figure 4
Knots in the
Tie Down

Figure 5
Melting or Charring
of the Tie Down,
or Weld Spatter
on the Tie Down

Figure 6
Chemical
Burns

Figure 7
Damaged Loop,
Eye Hook too
Small or too Rough

Figure 8
Tear in Webbing
at the Fitting

Figure 9
Other Apparent Damages
that may Affect Strength
Ratings; Such as Crushed
Webbing, Etc.
SECTION 4.5 Securement Planning Considerations

**WARNING**

Tie downs shall not be loaded in excess of the working load limit (WLL) provided by the manufacturer. Consideration should be given to the tie down angle, from the horizontal (tie down to trailer) that affects the downward pressure of the tie down(s).

4.5.1 **Effect of Angle** - Example: If using tie downs at 30 degrees the effective downward pressure is reduced to 50% of the vertical strap assembly efficiency. Multiply the working load limit (WLL) to 50% to get the reduced effective efficiency of the tie down and add additional tie downs necessary to secure the load properly. The effectiveness examples pictured below are only true of indirect tie downs. (See Figure 4.6)

![Figure 4-6]

<table>
<thead>
<tr>
<th>Angle</th>
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<tr>
<td>90 degrees</td>
<td>100%</td>
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<tr>
<td>60 degrees</td>
<td>87%</td>
</tr>
<tr>
<td>45 degrees</td>
<td>71%</td>
</tr>
<tr>
<td>30 degrees</td>
<td>50%</td>
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4.5.2 Select a web tie down having suitable characteristics for the type of load, environment and attachment to vehicle anchor point. Fittings shall be the proper shape and size to ensure that they will attach properly to the vehicle anchor points.

4.5.3 Identify the working load limit (WLL) marked on the tie down.

4.5.4 Identify the working load limit (WLL) of the vehicle anchor points. If no rating is visible contact the owner or vehicle manufacturer for tie down instructions. The lesser rated working load limit (WLL), whether that is the anchor point or the web tie down, shall determine the working load limit (WLL) of the entire securement system.

4.5.5 Determine the proper number of web tie downs required based on the weight of the cargo, the type of commodity, the aggregate working load limit of the securement system and the length/weight ratio of the cargo being secured. The tie down angle should also be considered.

4.5.6 Web tie downs shall be attached to the vehicle and positioned in accordance with applicable regulations for the commodity being transported to prevent against shifting of and/or loss of cargo. Additionally, tie down users are required to know commodity specific rules governing proper tie down determination as published by the Federal Motor Carrier Safety Administration, Standard for Protection Against Shifting and Falling Cargo; 49 CFR 393.100 – 393.136 Final Rule published June 22, 2006 and or Canadian Council of Motor Transport Administrators, National Safety Code Standard 10 amended June 2013 or current regulations in effect.
SECTION 4.6 OTHER CONSIDERATIONS

4.6.1 Web tie downs shall be used, inspected and adjusted during the transportation of cargo per all applicable federal, state, provincial, local and industry regulations.

4.6.2 Web tie downs in contact with edges, corners, or protrusions MUST ALWAYS be protected with materials of sufficient strength, thickness, and construction to prevent tie down damage. This protection must resist abrasion, cutting and crushing.

4.6.3 Web tie downs should not be dragged on the floor, ground or over an abrasive surface.

4.6.4 Web tie downs shall not have knotting in any load bearing section of the tie down.

4.6.5 Web tie downs should not be pulled from under cargo when the cargo is resting on the tie down.

4.6.6 Web tie downs designed to secure cargo shall not be used for lifting, lowering or suspending cargo or for towing.

4.6.7 Before operating any web tie down, users shall secure their footing to prevent slipping or falling. In adverse weather conditions, including freezing conditions, additional caution should be exercised.

4.6.8 When using web tie downs with a winch or ratchet, a minimum of 2 and a maximum of 4 wraps of webbing shall be wound on the winch or ratchet mandrel. Excessive wraps of webbing on the mandrel may reduce the working load limit (WLL) of the web tie down and may interfere with proper operation.

4.6.9 Tie downs that appear to be damaged shall not be used unless inspected and accepted as usable under Section 4.4.

4.6.10 Nylon and polyester elongate at different rates when under tension. Tie downs of different materials shall not be used together when restraining cargo in the same direction due to different elongation characteristics.

4.6.11 Longer length tie downs have more potential to elongate than shorter length tie downs. When restraining cargo in the same direction, tie downs of similar lengths should be used to ensure similar elongation.

4.6.12 When tie downs are attached directly to cargo, they should be attached symmetrically and above the cargo’s center of gravity to reduce the tendency of cargo to overturn.

4.6.13 Under most conditions, the tension on a tie down is greater on the side nearest the tensioner. Tie downs should be installed so that the tensioners are attached in a staggered pattern, alternating on opposite sides of a vehicle.

SECTION 4.7 ENVIRONMENTAL CONSIDERATIONS

4.7.1 Web tie downs should be stored in a cool, dry and dark place to prevent loss of strength (when not in use) through exposure to ultra-violet light. Tie downs shall not be stored in chemically active areas.

4.7.2 Chemically active environments can affect the strength of web tie downs in varying degrees ranging from little to total degradation. The tie down manufacturer or qualified person should be consulted before web tie downs are used in chemically active environments.

4.7.3 ACIDS

4.7.3.1 Nylon is subject to degradation in acids, ranging from little to total degradation.

4.7.3.2 Polyester is resistant to many acids, but is subject to degradation ranging from little to moderate with some acids.
4.7.4 ALKALIS

4.7.4.1 Polyester is subject to degradation in alkalis, ranging from little to total degradation.

4.7.4.2 Nylon is resistant to many alkalis, but is subject to degradation ranging from little to moderate with some alkalis.

4.7.4.3 Each application shall be evaluated, taking into consideration the following:
   i. Type of Alkali
   ii. Exposure Conditions
   iii. Concentration
   iv. Temperature

4.7.5 Tie downs using nylon or polyester webbing shall not be used at temperatures in excess of 194 degrees F (90 degrees C) or below -40 degrees F (-40 degrees C).

4.7.6 Tie downs using nylon or polyester webbing shall not come in contact with any object with a temperature in excess of 194 degrees F (90 degrees C) or below -40 degrees F (-40 degrees C). This includes the cargo being secured, vehicle and anchor points.

4.7.7 Web tie downs incorporating aluminum fittings shall not be used where fumes, vapors, sprays, mists or liquids of alkalis or acids are present unless the compatibility of this material is verified.

4.7.8 The strength of tie downs exposed to ultraviolet light will be affected from slight to total degradation.

4.7.8.1 Each application shall be evaluated, taking into consideration the following:
   i. Length of time of continuous exposure
   ii. Webbing construction and design
   iii. Other environmental factors such as weather conditions and geographic location

4.7.8.2 Some visual indications of possible ultra-violet light degradation are:
   i. Bleaching out of webbing color
   ii. Increased stiffness of webbing
   iii. Surface abrasion in areas not normally in contact with the load

CAUTION Degradation can take place without visible indications. If in doubt, contact the tie down manufacturer for possible proof load test.

4.7.9 Web tie downs and associated hardware may be subjected to dirt, mud, snow, ice, road salt, cleaning solutions, etc. Frequent inspection, cleaning and lubrication as appropriate will ensure proper operating condition. Aluminum fittings should not be cleaned with chlorine based cleaning agents, or used in high chlorine environments.

SECTION 4.8 REPAIRS

4.8.1 There shall be no repairs of webbing, hardware or stitching/sew patterns.
WARNING

Read and follow all use and safety information provided with this tie down. Failure to do so may result in severe INJURY or DEATH due to tie down failure and/or loss of load.

The following six points briefly summarize several important safety issues:

1. **All users must be trained in tie down selection, use and inspection, cautions to personnel and environmental effects. Users must follow all applicable federal, state, provincial and local regulations and industry standards.**

2. **Inspect tie down for damage** before each use. A tie down shall be removed from service if you detect any of the conditions listed on the back of this label. If you have ANY doubts about the condition of a tie down, do not use or repair it.

3. **Protect tie down from damage.** ALWAYS protect tie downs in contact with edges, corners, protrusions or abrasive surfaces with materials of sufficient strength, thickness and construction to prevent damage.

4. **Do not exceed the working load limit of the tie down.** Taking into account the tie down, the load, the vehicle’s anchor points, etc. Always consider the effect of tie down angle and tension on the tie down’s capacity.

5. **Be alert when securing loads.** Loads must be securely blocked and stabilized before applying tension to or releasing tie downs.

6. **Maintain and store tie downs properly.** Tie downs should be protected from mechanical, chemical and environmental damage.

(continued on back)

**EXAMPLE OF WSTDA FABRIC TIE DOWN WARNING TAG**

**Inspection and Removal from Service**

The entire tie down must be inspected before each use and it shall be removed from service if ANY of the following are detected:

- If tie down identification tag is missing or not readable.
- Holes, tears, cuts, snags or embedded materials.
- Broken or worn stitches in the load bearing splices.
- Knots in any part of the webbing
- Acid or alkali burns.
- Melting, charring or weld spatters on any part of the webbing.
- Excessive abrasive wear or crushed webbing.
- Signs of ultraviolet (UV) light degradation.
- Distortion, excessive pitting, corrosion or other damage to buckles or end fittings.
- Any conditions which cause doubt as to the strength of the tie down.

To detect possible damage, perform a visual inspection of the entire length of the tie down. Even damage that looks “minor” can significantly degrade tie down performance. If you have ANY doubts about the condition of a tie down, DO NOT USE IT.

Never attempt to perform temporary field repairs of damaged tie downs (e.g., tie knots in the webbing, etc.).

Use this tie down for securing cargo only. NEVER use a tie down for towing purposes. NEVER use a tie down for lifting, lowering, or suspending objects.

If you want more information about Tie Down safety, contact WSTDA to obtain copies of the Synthetic Tie Down Safety Bulletin — a companion document to this labeling. (Roundsling & Web Sling Safety Bulletins are also available)

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TDWT-1 2010

TIE DOWN  
TDWT-1 2010

EXAMPLE OF WSTDA FABRIC TIE DOWN WARNING TAG
The following six points briefly summarize some important safety issues:

1. **All users must be trained** in tie down selection, use and inspection, cautions to personnel, environmental effects, all applicable standards, regulations and tie down practices.

2. **Inspect tie down for damage** before each use. If the tie down is damaged, remove it from service.

3. **Protect tie down from damage.** ALWAYS protect tie downs in contact with edges, corners, protrusions, or abrasive surfaces with materials of sufficient strength, thickness and construction to prevent damage.

4. **Do not exceed the working load limit of the tie down;** taking into account the tie down, the load, the vehicle anchor points, tie down configuration and angle, etc.

5. **Be alert when securing cargo.** Users must remain alert to hazards when securing cargo.

6. **Maintain and store tie downs properly.** Tie downs should be protected from mechanical, chemical and environmental damage.

### 1. All Tie Down Users Must Be Trained and Knowledgeable

All tie down users must be trained on the proper use of tie downs, including tie down selection and inspection, cautions to personnel and environmental effects. The Web Sling & Tie Down Association (WSTDA) defines a "qualified person" as one: “who by possession of a recognized degree, certificate of professional standing or by extensive knowledge, training and experience has successfully demonstrated the ability to solve or resolve problems related to the subject matter and work.” (WSTDA-T-1, page 2)

It is important that all tie down users be knowledgeable about the safe and proper use and application of tie downs and loading practices and be thoroughly familiar with the manufacturer’s recommendations and safety materials provided with each product. In addition, all tie down users must be aware of their responsibilities as outlined in all applicable federal, state, provincial and local regulations and industry standards.

If you are unsure whether you are properly trained and knowledgeable, or if you are unsure of what the standards and regulations require of you, ask your employer for information and/or training— **DO NOT** use tie downs until you are absolutely sure of what you are doing. Remember, when it comes to using tie downs, lack of skill, knowledge and care can result in severe INJURY or DEATH to you and others.

### 2. Tie Downs Must Be Regularly and Properly Inspected

Even seemingly “minor” damage to a tie down can significantly reduce its capacity to hold objects and increases the chance that the tie down will fail during use. Therefore, it is very important that tie downs are regularly and properly inspected. In reality, there simply is no such thing as “minor” damage. If you are not sure whether a tie down is damaged, **DO NOT USE IT**.

#### 2a. How to inspect tie downs

To detect possible damage, you should perform a visual inspection of the entire tie down. You should look for any of the types of conditions listed in Table 1. Table 2 shows examples of some of these types of damage, but note that they are relatively extreme examples provided for illustration purposes only.

#### 2b. What to do if you identify damage in a tie down

If you identify ANY of these types of damage in a tie down, **remove it from service immediately** even if the damage is not as extensive as shown in the pictures in Table 2. Tie downs that are removed from service must be destroyed and rendered completely unusable, as no repairs of the tie down webbing, fittings, buckles or stitching/sew patterns shall be permitted. Web tie downs may be re-webbed using existing hardware if the tie down manufacturer determines the hardware is reusable. All re-webbed tie downs utilizing used hardware shall be proof tested to 150% of the WLL and certified. You should never ignore tie down damage or attempt to perform temporary field repairs of damaged die downs (e.g., tie knots in the webbing, etc.).

<table>
<thead>
<tr>
<th>Table 1. Tie down removal from service criteria</th>
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<tr>
<td>The entire tie down must be inspected before each use and it shall be removed from service if ANY of the following are detected:</td>
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<tr>
<td>- If tie down identification tag is missing or not readable.</td>
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<td>- Holes, tears, cuts, snags or embedded materials.</td>
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<td>- Broken or worn stitches in the load bearing splices.</td>
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<td>- Knots in any part of the webbing.</td>
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<td>- Acid or alkali burns.</td>
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<td>- Melting, charring or weld spatters on any part of the webbing.</td>
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<td>- Excessive abrasive wear or crushed webbing.</td>
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<td>- Signs of ultraviolet (UV) light degradation.</td>
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<td>- Distortion, excessive pitting, corrosion or other damage to buckles or end fitting(s).</td>
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<td>- Any conditions which cause doubt as to the strength of the tie down.</td>
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ADDITIONAL RESOURCES

U.S. Department of Transportation
Federal Motor Carrier Safety Administration (FMCSA)
Federal Motor Carrier Safety Regulations (FMCSRs) 392.9, Safe Loading; 393.100 ~ 393.136
Subpart 1 - Protection Against Shifting or Falling Cargo
1200 New Jersey Avenue SE
Washington, D.C. 20590
Telephone (800) 832-5660
www.fmcsa.dot.gov

California Administrative Code:
Office of Public Affairs or
Commercial Vehicle Section
California Highway Patrol,
Enforcement Services Division
PO Box 942898
Sacramento, CA 94298-0001
www.chp.ca.gov

In Canada Contact:
The Ministry of Transportation
In Each Province.

Canadian Council of Motor Transport Administrators
223 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
Telephone: (613) 736-1003
Fax: (613) 736-1395
Email: ccmta-secretariat@ccmta.ca

In Mexico Contact:
MEXICO CITY, MEXICO
Mauricio Hinojosa
Director General Adjunto de Supervisión Autotransporte Federal
Czda. de las Bombas No 411,
10 Piso Col. Los Girasoles,
C.P. 04920 Delegación Coyoacan,
México D.F.
Telephone: +52-55-54824100
Fax: +52-55-46849628
ohinojos@sct.gob.mx
http://dgaf.sct.gob.mx/

Commercial Vehicle Safety Alliance (CVSA)
North America Standard Out of Service Criteria (OOSC)
6303 Ivy Lane, Suite 310
Greenbelt, MD 20770
Phone (301) 830-6143
Fax (301) 830-6144
www.cvsa.org

Specialized Carriers & Rigging Association
5870 Trinity Parkway, Suite 200
Centreville, VA 20120
Telephone (703) 698-0291
Fax (571) 722-1698
Email: info@scranet.org
www.scranet.org

WEB SLING & TIE DOWN ASSOCIATION, INC.
2105 Laurel Bush Road, Suite 201
Bel Air, Maryland 21015
Phone (443) 640-1070
Fax (443) 640-1031
Email: info@wstda.com
Website: www.wstda.com

WEB SLING & TIE DOWN ASSOCIATION, INC.
## 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
- Synthetic Web Tie Downs (French): WSTDA-T-1FP
- Winches Used With 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

### Operating & Inspection Manuals
- Synthetic Web Slings: WSTDA-WS-2
- Synthetic Polyester Roundslings: WSTDA-RS-2
- Synthetic Web Tie Downs: WSTDA-T-2
- Synthetic Polyester Roundslings (pocket sized): WSTDA-RS-2PS
- Synthetic Web Tie Downs (pocket sized): WSTDA-T-2PS

### Illustrated Wall Chart
- Inspection of Web Slings & Roundslings: WSTDA-WSWC-1

### UV Degradation Reports

### 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:

**Web Sling & Tie Down Association, Inc.**
2105 Laurel Bush Road, Suite 201
Bel Air, Maryland 21015
Phone (443) 640-1070
Fax (443) 640-1031
Email: wstda@stringfellowgroup.net
Web Site: www.wstda.com
This recommended standard specification has been formulated as a guide to users, industry and government to ensure the proper use, maintenance and inspection of synthetic web tie down assemblies. 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 not conforming to this standard.