



# **INSPECTIONS**

## **FOR LIFTING SLINGS**

**A GUIDE TO INSPECTIONS, APPLICABLE STANDARDS, AND MORE!**

**MAZZELLA®**

**MAZZELLACOMPANIES.COM**

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# INTRODUCTION

**THANKS FOR DOWNLOADING OUR GUIDE TO INSPECTIONS, APPLICABLE STANDARDS, AND MORE!**

**Learn more about OSHA and ASME inspection requirements, inspection frequencies, and removal criteria for lifting slings.**

**Do you know who is supposed to be inspecting your lifting slings? More importantly, do you know how often they're inspecting them?**

OSHA 1910.184 and ASME B30.9 have different inspection requirements, frequencies, and removal criteria for each type of sling—including wire rope slings, synthetic slings, alloy chain slings, and metal mesh slings.

At Mazzella Companies, we understand the amount of effort and coordination it takes to stay current on industry standards and to develop an inspection program that keeps your business in compliance. Because of this, we have a dedicated business unit made of up highly-trained and qualified inspectors and technicians that focus only on rigging equipment inspections, industry compliance, and sling testing and repair.

In this e-book, our goal is to help you understand what is required for your lifting slings to meet ASME standards, which in turn, will help to ensure the safety of the users, help extend the service life of the slings, and help reduce unnecessary equipment repair costs and loss of production due to equipment downtime.

**If you have any questions about inspection related to lifting slings, please don't hesitate to contact us at 800-362-4601 or visit [mazzellacompanies.com](https://mazzellacompanies.com).**

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# CLARIFICATION

## OF PERIODIC INSPECTION FREQUENCIES

The term “annual” often gets used incorrectly when it comes to addressing the frequency of a Periodic rigging inspection. In OSHA 1910.184 and ASME B30.9 slings standards, the term “annual” is never actually used when providing a definition for a Periodic inspection or in the determination of the frequency of a Periodic inspection.

### ACTUAL OSHA AND ASME DEFINITIONS FOR PERIODIC INSPECTION:

#### OSHA 1910.184(e)(3)(i):

...a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined on the basis of (A) frequency of sling use; (B) severity of service conditions; (C) nature of lifts being made; and (D) experience gained on the service life of slings used in similar circumstances. Such inspections shall in no event be at intervals greater than once every 12 months.

#### ASME B30.9:

**Periodic Inspection Frequency. Periodic inspection intervals shall not exceed one year.**

**The frequency of periodic inspections should be based on:**

- (1) Frequency of sling use
- (2) Severity of service conditions
- (3) Nature of load-handling activities
- (4) Experience gained on the service life of slings used in similar circumstances

**Guidelines for the time intervals are:**

- (1) Normal service – yearly
- (2) Severe service – monthly to quarterly
- (3) Special service – as recommended by a Qualified person

### CRITERIA FOR DETERMINING PERIODIC INSPECTION FREQUENCIES:

You should be aware that OSHA and ASME require a documented Periodic inspection of your lifting and rigging equipment every 12 months (at a minimum) and monthly to quarterly inspections in more severe service conditions, based on the following criteria:

- Frequency of sling use
- Severity of service conditions
- Nature of lifts / load-handling activities
- Experience gained on the service life of slings used in similar circumstances

**ASME B30.9 provides the following guidelines for Periodic inspection intervals:**

- Normal Service – Yearly
- Severe Service – Monthly to quarterly
- Special Service – As recommended by a Qualified person

## CHAPTER

# 1

## INSPECTION OF WIRE ROPE SLINGS





## WHO PERFORMS WIRE ROPE SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR?

As a starting point, the same work practices which apply to all “working” wire rope apply to wire rope which has been fabricated into a sling. Therefore, a good working knowledge of wire rope design and construction will not only be useful, but essential in conducting a wire rope sling inspection.

***There are two industry standards that exist to provide the end-user with guidelines for inspection and criteria that warrants removal from service: OSHA 1910.184 and ASME B30.9.***



### INITIAL INSPECTION (PRIOR TO INITIAL USE):

Best practice is to inspect the wire rope sling upon receiving it from the manufacturer. Double-check the sling tag to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.

# WHO PERFORMS WIRE ROPE SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

## FREQUENT (DAILY OR PRIOR TO USE):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that the wire rope sling that was selected meets the specific job requirements it's being used for.

Users can't rely on a once-a-day inspection if the wire rope sling is used multiple times throughout the day. Damage to wire rope can occur on one lift and best practice is to perform a visual inspection before any shift change or changes in lifting application. Because shock loads, severe angles, sharp edges, and excessive heat can quickly cause damage to a lifting sling, the user should inspect the sling prior to each lift.

## PERIODIC INSPECTION:

A documented periodic inspection is performed by either a professional service provider, or by a Qualified person every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the wire rope sling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified person

Depending on the severity of the operating environment and frequency of use, your business may decide that a more thorough inspection should occur more often than the minimum yearly requirement.

**Periodic inspections are required to be documented per ASME B30.9 and records retained.**

The employer is required to maintain a record of the most recent thorough sling inspection—however, individual records for each sling that was inspected are not required. Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

**INITIAL  
INSPECTION**

**PRIOR TO  
INITIAL USE**

**FREQUENT  
INSPECTION**

**DAILY OR  
PRIOR TO USE**

**PERIODIC  
INSPECTION**

# WHAT'S REQUIRED ON A WIRE ROPE SLING IDENTIFICATION TAG?

## PER ASME B30.9 ...

The wire rope sling tag on all new slings shall be marked by the manufacturer to include:

- Rated load for the types of hitches (single-leg vertical, choker, and basket) and the angle upon which they are based
- The diameter or size
- Name and trademark of the manufacturer
- Number of legs, if more than one



## IF THE TAG IS MISSING OR ILLEGIBLE ...

The inspector should remove the sling from service and send it to the manufacturer for current or updated certification, tagging, and testing.

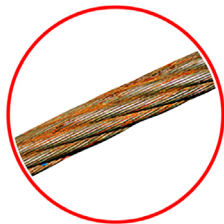


# BASIC INSPECTION CRITERIA FOR WIRE ROPE SLINGS

The goal of a sling inspection is to evaluate remaining strength in a sling which has been used previously to determine if it is suitable for continued use. When inspecting wire rope slings, daily visual inspections are intended to detect serious damage or deterioration which would weaken the sling.

This inspection is usually performed by the person using the sling in a day-to-day job. The user should look for obvious things, such as broken wires, kinks, crushing, broken attachments, severe corrosion, etc. Any deterioration of the sling which could result in appreciable loss of original strength should be carefully noted and determination made on whether further use would constitute a safety hazard.

***ASME B30.9 standards specify that a wire rope sling shall be removed from service immediately if any of the following conditions are present:***

**KINKING****DOGLEGS****BIRDCAGING****SEVERE WEAR****BROKEN WIRES****CORROSION****DAMAGED FITTINGS****ILLEGIBLE TAG / ID**



# BASIC INSPECTION CRITERIA FOR WIRE ROPE SLINGS (CONTINUED)

1

## Missing or Illegible Sling Identification

If the tag is missing or illegible, the inspector should remove the sling from service and send it to the manufacturer for current or updated certification, tagging, and testing.

2

## Broken Wires

For strand-laid grommets and single-part slings, ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay. For cable laid, cable laid grommets and multi-part slings, use the following:

Sling Body	Allowable Broken Wires Per Lay or One Braid	Allowable Strands Per Sling
Less than 8 Part Braid	20	1
Cable Laid	20	1
8 Part or Greater Braid	40	1

3

## Distortion

Kinking, crushing, birdcaging or other damage which distorts the rope structure. The main thing to look for is wires or strands that are pushed out of their original positions in the rope.

4

## Heat Damage

Any metallic discoloration, fusing of wires or loss of internal lubricant caused by exposure to heat.

5

## Damaged End Attachments

Cracked, bent or broken end fittings caused by abuse, wear or damage.

## BASIC INSPECTION CRITERIA FOR WIRE ROPE SLINGS (CONTINUED)

6

### Bent Hooks

No more than 5 percent over the normal throat openings, measured at the narrowest point from the plane of the unbent hook (see ASME B30.10 Hooks).

7

### Corrosion

Severe corrosion of the rope or end attachments which has caused pitting or binding of wires should be cause for replacing the sling. Light surface rust does not substantially affect strength of a sling.

8

### Pulled Eye Splices

Any evidence that eye splices have slipped, tucked strands have moved or pressed sleeves show serious damage may be sufficient cause to reject a sling.

9

### Unbalance

A very common cause of damage is the kink which results from pulling through a loop while using a sling, thus causing wires and strands to be deformed and pushed out of their original position. This unbalances the sling, reducing its strength.

10

### Kinks

Tightened loops with permanent strand distortion that result from improper handling when a rope is being installed or while in service. A kink happens when a loop is permitted to form and then is pulled down tight, causing permanent distortion of the strands. The damage is irreparable and the sling must be taken out of service.

11

### Doglegs

Permanent bends caused by improper use or handling. If the dogleg is severe, the sling must be removed from service. If the dogleg is minor, (exhibiting no strand distortion) and cannot be observed when the sling is under tension, the area of the minor dogleg should be marked for observation and the sling can remain in service.

## DISPOSAL OF DAMAGED OR FAILED WIRE ROPE SLINGS

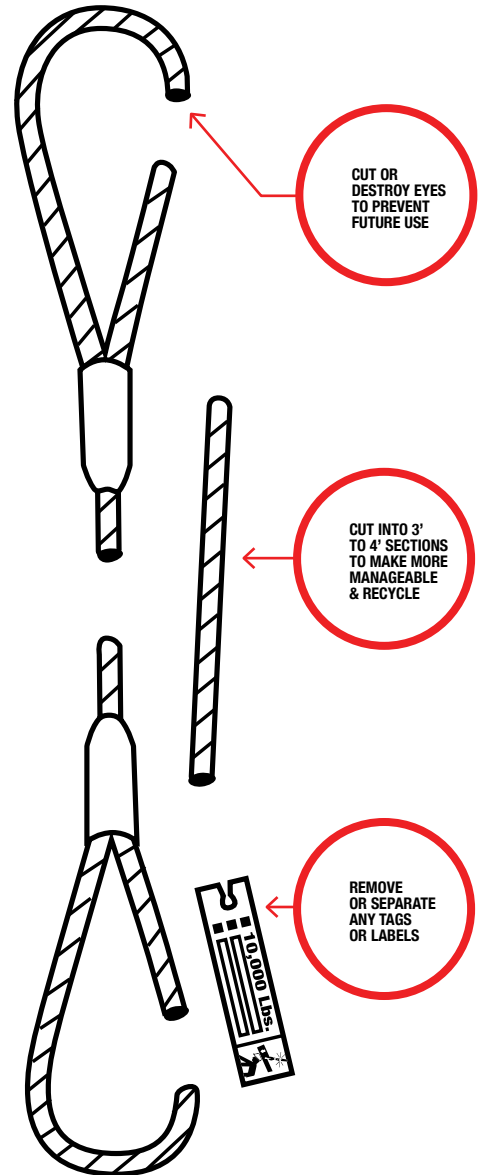
The best lifting and rigging inspection program is of no value if slings, which are worn out and have been retired, are not properly disposed of. When it is determined by the inspector that a sling is worn out or damaged beyond use, it should be tagged immediately **DO NOT USE**.

If it's determined that the wire rope will be removed from service, we suggest cutting it down into more manageable sizes before discarding. This extra effort will help to accommodate the needs of most recycling facilities that will accept the damaged wire rope and also help to make sure that it cannot be used any further.



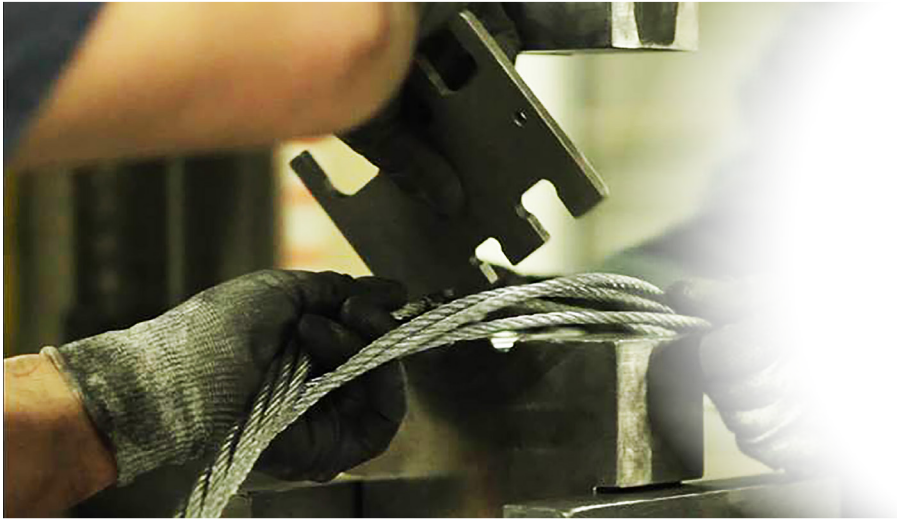
### *Keep the following in mind when disposing of wire rope slings and wire rope cable:*

- Cut into approximately 3' to 4' sections
- Use a chop saw or torch to cut, or destroy, the eyes of the wire rope sling to prevent any further use of the sling
- If the sling body is long enough to allow for an eye to be reformed by other means, the wire should be cut down to shorter lengths
- Use proper PPE when handling the pieces of cut wire—cut or frayed ends of the wire rope will be sharp
- Remove, or separate, any tags and labels from the sling
- Place scrap into your facility's metal recycling bins and coordinate pickup or delivery



# HOW TO INSPECT WIRE ROPE SLINGS

OSHA does not provide clear guidelines on how to make proper and adequate inspections of wire rope slings. It is up to the designated inspection personnel to know the requirements of the sling inspection standards, and to develop a comprehensive inspection protocol.



## *Wire rope inspection should follow a systematic procedure:*

- First, it is necessary that all parts of the sling are readily visible. The sling should be laid out so every part is accessible.
- Next, the sling should be sufficiently cleaned of dirt and grease so wires and fittings are easily seen. This can usually be accomplished with a wire brush or rags.
- The sling should then be given a thorough, systematic examination throughout its entire length, paying particular attention to sections showing the most wear.
- Special attention should also be paid to fittings and end attachments, and areas of the sling adjacent to these fittings.
- When the worst section of a sling has been located, this area should then be carefully checked against the OSHA and ASME criteria.
- Keep records of inspections that include dates and corresponding conditions of slings.
- Immediately dispose of slings that are rejected.



# BEST PRACTICES FOR MAINTAINING WIRE ROPE SLINGS

The best way to help extend the life of a wire rope sling, and help to ensure that it stays in service, is to properly maintain it during and in-between each use. Inspections are easier to perform—and probably more thorough—when slings are easily accessible and organized, kept off of the ground, and stored in a cool and dry environment.



- Hang slings in a designated area where they are off of the ground and will not be subjected to mechanical damage, corrosive action, moisture, extreme temperatures, or to kinking.
- When slings are exposed to extreme temperatures, follow the guidance provided by the sling manufacturer or a Qualified Person.
- Do not subject fiber-core wire rope slings to de-greasing or to a solvent because of possible damage to the core.
- Follow the manufacturer's lubrication requirements.

## WIRE ROPE LUBRICATION

Like any other machine, wire rope is thoroughly lubricated at time of manufacture. Normally, for sling use under ordinary conditions, no additional lubrication is required. However, if a sling is stored outside or in an environment which would cause corrosion, lubrication should be applied during the service life to prevent rusting or corroding.

If lubrication is indicated, the same type of lubrication applied during the manufacturing process should be used. Your sling manufacturer can provide information on the type of lubricant to be used and provide the best method of application. We recommend a wire rope lubricant that is designed to penetrate and adhere to the wire rope core.



## WRAPPING IT UP

**Proper inspection of your wire rope slings for damage or irregularities, prior to each use, is the best way to help keep everybody on the job site safe.**

Keep in mind that you're planning to lift valuable and expensive equipment, and if a failure were to occur, it would not only cause unnecessary equipment repair costs and costly downtime, but also potentially jeopardize the lives of workers on site.





## CHAPTER

# 2

## INSPECTION OF SYNTHETIC WEB SLINGS



## WHO PERFORMS SYNTHETIC WEB SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR?

All inspections shall be performed by a Designated Person with any deficiencies further examined by a Qualified Person to identify hazards and determine what additional steps need to be taken to address the hazard.

*There are two industry standards that exist to provide the end-user with guidelines for inspection and criteria that warrants removal from service: OSHA 1910.184 and ASME B30.9.*



### INITIAL INSPECTION (PRIOR TO INITIAL USE):

Best practice is to inspect the synthetic web sling upon receiving it from the manufacturer. Double-check the sling tag to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.



# WHO PERFORMS SYNTHETIC WEB SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

## FREQUENT (DAILY OR PRIOR TO USE):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that the web sling that was selected meets the specific job requirements it's being used for.

However, users can't rely on a once-a-day inspection if the web sling is used multiple times throughout the day. Shock loads, severe angles, edges, and excessive heat can quickly cause damage to the webbing material, so best practice is to perform a visual inspection before any shift change or changes in lifting application.

## PERIODIC INSPECTION:

A documented periodic inspection is performed by either a professional service provider, or by a Qualified person every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the synthetic web sling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified person

Depending on the severity of the operating environment and frequency of use, your business may decide that a more thorough inspection should occur more often than the minimum yearly requirement.

**Periodic inspections are required to be documented per ASME B30.9 and records retained.**

The employer is required to maintain a record of the most recent thorough sling inspection—however, individual records for each sling that was inspected are not required. Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

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INSPECTION**

# WHAT'S REQUIRED ON A SYNTHETIC WEB SLING IDENTIFICATION TAG?

## PER ASME B30.9 ...

Each synthetic web sling shall be marked by the manufacturer to include:

- Name or trademark of the manufacturer, or if repaired, the entity performing the repair
- Manufacturer's code or stock number
- Rated load for at least one hitch type and the angle at which it is based
- Type of synthetic web material
- Number of legs, if more than one



It is the responsibility of the user to maintain the sling identification—ensuring the tag or identification is still in place and is still legible during the life of the sling. If the identification tag is missing or illegible, it is the responsibility of the inspector to remove the sling from service.

At Mazzella Companies, all of our web slings are sent out the door with our duraKlear™ identification tags. These tags have printing on the inside of the clear durable tag to protect the lettering and can easily be wiped clean. The duraKlear™ tag offers the following benefits:

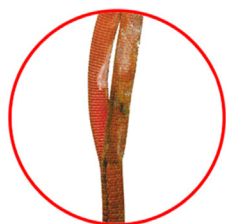
- Lettering remains legible for life of the sling
- Resistant to abrasion
- Dirt, oil, and grease can easily be wiped off
- Easily inspect the webbing material under the tag
- Tag comes with UV inhibitors

## BASIC INSPECTION CRITERIA FOR SYNTHETIC WEB SLINGS

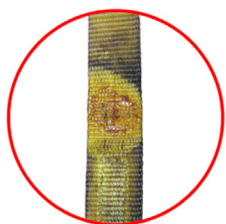
The goal of a sling inspection is to evaluate remaining strength in a sling which has been used previously to determine if it is suitable for continued use. When inspecting web slings, daily visual inspections are intended to detect serious damage or deterioration which would weaken the strength and integrity of the sling.

While a web sling has a higher resistance to mildew, rot, some chemicals, and abrasion—they can still be damaged to the point where they need to be removed from service. This inspection is usually performed by the person using the sling in a day-to-day job.

***ASME B30.9 standards specify that a synthetic web sling shall be removed from service immediately if any of the following conditions are present:***



CHEMICAL DAMAGE



HEAT DAMAGE



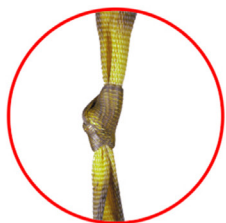
HOLES, CUTS, TEARS



BROKEN/WORN STITCHES



WEAR/ABRASION



KNOTS



UV DAMAGE



DAMAGED FITTINGS

## BASIC INSPECTION CRITERIA FOR SYNTHETIC WEB SLINGS (CONTINUED)

If during any point of the inspection the following is observed, the web sling should be removed from service and be discarded:

**1**

Missing or illegible sling identification

**7**

Knots in any part of the sling

**2**

Acid or caustic burns

**8**

Discoloration and brittle or stiff areas on any part of the sling, which may indicate chemical or UV damage

**3**

Melting or charring of any part of the sling

**9**

Fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken

**4**

Holes, tears, cuts, or snags

**10**

For hooks, removal criteria as stated in ASME B30.10

**5**

Broken or worn stitching in load-bearing splices

**11**

For rigging hardware, removal criteria as stated in ASME B30.26

**6**

Excessive wear or abrasion

**12**

Other conditions, including visible damage, that cause doubt to the continued use of the sling



## DISPOSAL OF DAMAGED OR FAILED SYNTHETIC WEB SLINGS

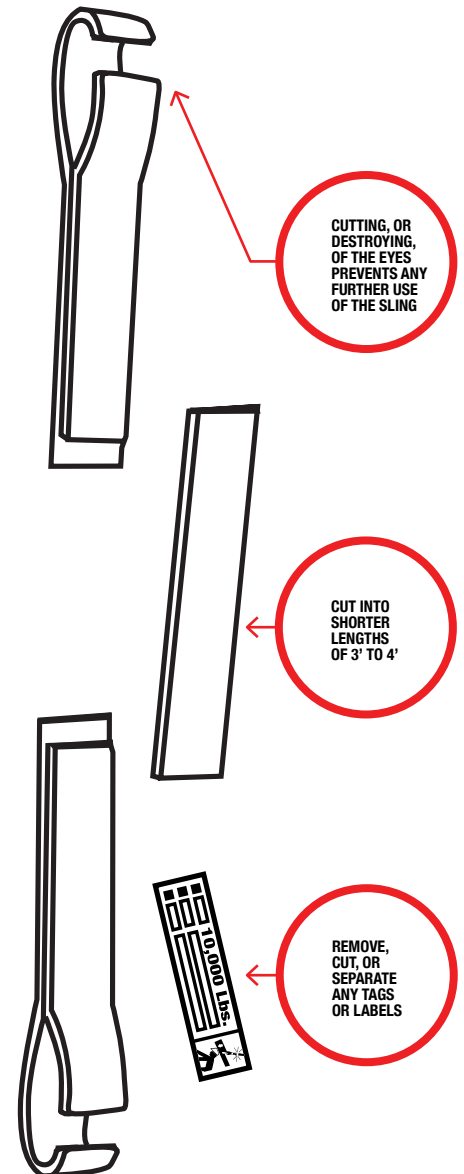
The best lifting and rigging inspection program is of no value if slings, which are worn out and have been retired, are not properly disposed of. When it is determined by the inspector that a sling is worn out or damaged beyond use, it should be tagged immediately DO NOT USE.

If it's determined that the web sling will be removed from service, we suggest cutting the eye in most circumstances to render the sling as unusable. When the sling body is long enough, the webbing should be cut into shorter sections, and the sling should be disposed of as general waste or trash.



### *Keep the following in mind when disposing of web slings:*

- Cutting or destroying of the eyes prevents any further use of the sling
- As an additional step, if the sling body is long enough to allow for an eye to be reformed by other means, the sling should be cut into shorter lengths of 3-4 feet
- Best practice is to remove, cut, or separate any tags or labels from the sling
- Place scrap into your facility's recycling bins



# BEST PRACTICES FOR MAINTAINING SYNTHETIC WEB SLINGS

The best way to help extend the life of a web sling, and help to ensure that it stays in service, is to properly maintain it during and in-between each use. Inspections are easier to perform—and probably more thorough—when slings are easily accessible and organized, kept off of the ground, and stored in a cool and dry environment.

Hang your slings or keep them in a designated locker or rigging box where they are off of the ground and will not be subjected to mechanical damage, corrosive action, moisture, or extreme temperatures.



## Temperature

Hang your slings or keep them in a designated locker or rigging box where they are off of the ground and will not be subjected to mechanical damage, corrosive action, moisture, or extreme temperatures.



## Chemically Active Environments

The strength of synthetic web slings may be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or Qualified Person should be consulted before slings are used in chemically active environments.

Polyester and nylon webbing materials have different chemical resistance properties. Please refer to the chart to the right for guidelines on polyester or nylon web slings in specific chemically-active environments.

	Nylon	Polyester
Acids	No	*
Alcohols	Yes	Yes
Aldehydes	Yes	No
Strong Alkalis	Yes	**
Bleach Agents	No	Yes
Dry Cleaning Solvents	Yes	Yes
Ethers	Yes	No
Halogenated Hydrocarbons	Yes	Yes
Hydrocarbons	Yes	Yes
Ketones	Yes	Yes
Oils (Crude)	Yes	Yes
Oils (Lubricating)	Yes	Yes
Soaps & Detergents	Yes	Yes
Water & Sea Water	Yes	Yes
Weak Alkalis	Yes	Yes

\* Disintegrated by concentrated sulfuric acid

\*\* Degraded by strong alkalis at elevated temperatures

# BEST PRACTICES FOR MAINTAINING SYNTHETIC WEB SLINGS (CONTINUED)



## Sunlight and Ultraviolet Light

The strength of synthetic web slings is degraded by exposure to sunlight and ultraviolet light. The sling manufacturer or a Qualified Person should be consulted for additional retirement or inspection requirements. Web Sling Tie Down Association's WSTDA-UV-Sling standard can be consulted for additional degradation information.



## Edge and Cut Protection

Synthetic lifting slings are most susceptible to cuts, rips, abrasion, and tears. Corner protectors, wear pads, or edge guards should be used to protect nylon and polyester web slings against abrasion and cuts when lifting materials with edges. Edge protection and cut protection should be used on all edges and corners—even the ones that aren't load-bearing surfaces.

Additional material, stitching, finishing, wear pads, or coatings can also be added to synthetic web slings during the manufacturing process to help improve the durability of the sling.



## Keep Your Slings Clean

Continual exposure to dust, dirt, and moisture can degrade the materials over time and shorten the life expectancy of the product. Wipe grease or oil off of your slings and try to keep them clean of dirt, or other particulates which can break down the webbing material over time.

However, web slings and other synthetic slings should never be cleaned in a solvent tank used to degrease other equipment or machined parts. The chemicals used in a solvent solution can degrade the nylon or polyester fibers over time, which will affect the integrity of that lifting sling.





## WRAPPING IT UP

Proper inspection of your web slings for damage or irregularities, prior to each use, is the best way to help keep everybody on the job site safe. Also, providing rigging training for your workers will provide them with rigging best practices and also help them to identify and take action on any damage or defects that meet ASME B30.9 removal from service criteria.

Share this book with your team and put a plan together to assess your lifting and rigging equipment and procedures. Education and transparency are key factors in any safe lifting and rigging environment. Your willingness to improve your processes confirms your commitment to job site safety and proves it's a top priority within your company or department.





## CHAPTER

# 3

## INSPECTION OF ALLOY CHAIN SLINGS



## WHO PERFORMS ALLOY CHAIN SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR?

OSHA states that the employer has the responsibility to inspect and document alloy chain slings at a minimum of 12-month intervals. The employer is also required to maintain a record of the most recent thorough inspection. Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

All inspections shall be performed by a Designated Person with any deficiencies further examined by a Qualified Person to identify hazards and determine what additional steps need to be taken to address the hazard.

***There are two industry standards that exist to provide the end-user with guidelines for inspection and criteria that warrants removal from service: OSHA 1910.184 and ASME B30.9.***



### Initial Inspection (Prior to Initial Use):

Best practice is to inspect the alloy chain sling upon receiving it from the manufacturer. Double-check the sling tag to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.

# WHO PERFORMS ALLOY CHAIN SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

## FREQUENT (DAILY OR PRIOR TO USE):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that the alloy chain sling that was selected meets the specific job requirements it's being used for.

However, users can't rely on a once-a-day inspection if the sling is used multiple times throughout the day. Shock loads, severe angles, edges, and excessive heat can quickly cause damage to a lifting sling, so best practice is to perform a visual inspection before any shift change or changes in lifting application.

## PERIODIC INSPECTION:

A documented periodic inspection is performed by either a professional service provider, or by a Qualified person every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the wire rope sling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified person

Depending on the severity of the operating environment and frequency of use, your business may decide that a more thorough inspection should occur more often than the minimum yearly requirement.

**Periodic inspections are required to be documented per ASME B30.9 and records retained.**

The employer is required to maintain a record of the most recent thorough sling inspection—**per OSHA 1910.184, individual records are required for each sling that was inspected.** Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

**INITIAL  
INSPECTION**

**PRIOR TO  
INITIAL USE**

**FREQUENT  
INSPECTION**

**DAILY OR  
PRIOR TO USE**

**PERIODIC  
INSPECTION**



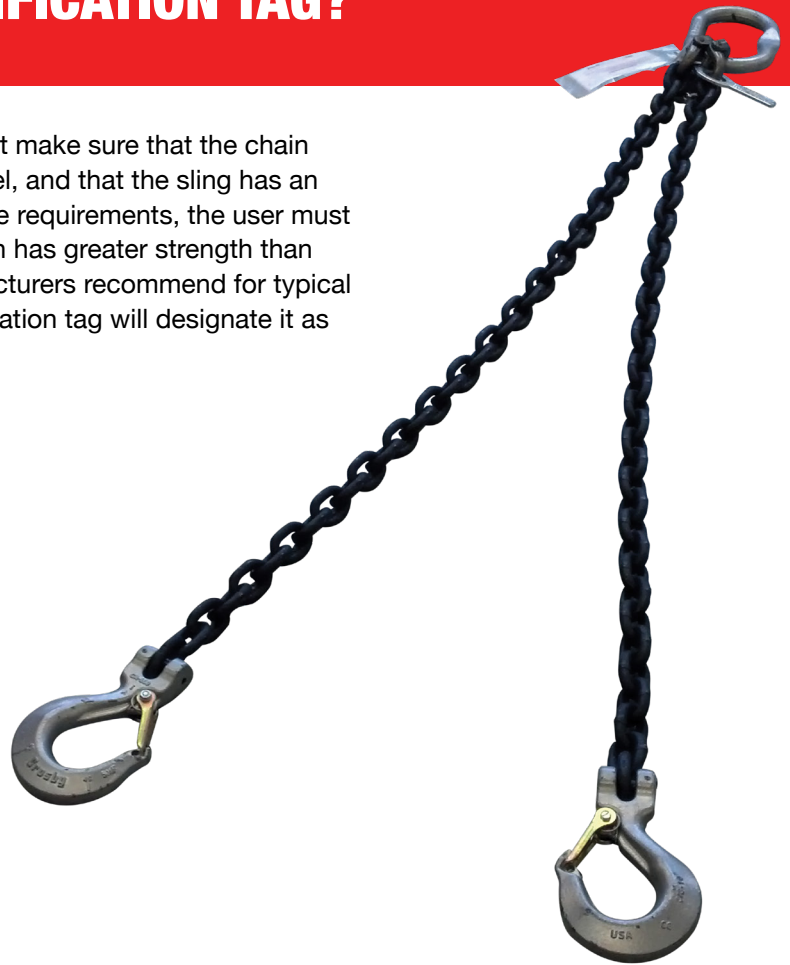
## WHAT'S REQUIRED ON AN ALLOY CHAIN SLING IDENTIFICATION TAG?

When using a chain for overhead lifting, the user must make sure that the chain is composed of alloy steel as opposed to carbon steel, and that the sling has an identification tag. If the chain sling doesn't meet these requirements, the user must not use it for overhead lifting. Size for size, alloy chain has greater strength than carbon chain, and alloy is the only chain that manufacturers recommend for typical overhead lifting. If the chain is alloy, the sling identification tag will designate it as being alloy.

### PER ASME B30.9 ...

**Each alloy chain sling shall be marked by the manufacturer to include:**

- Name or trademark of manufacturer
- Grade
- Nominal chain size
- Number of legs
- Rated load for the type of hitch(es) used and the angle upon which it is based
- Length (Reach) of the sling
- Individual sling identification (e.g., serial numbers)



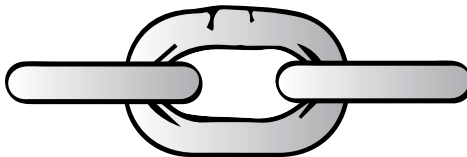
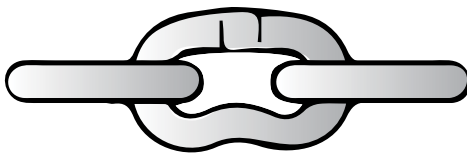
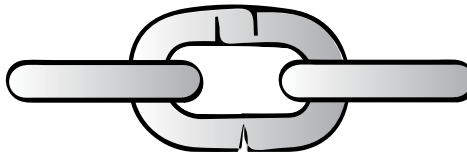
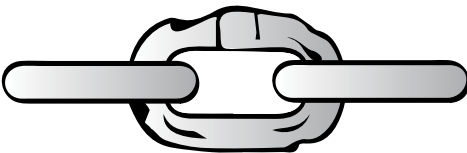
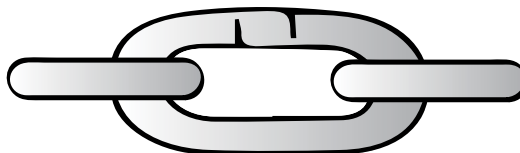
### IF THE TAG IS MISSING OR ILLEGIBLE ...

The inspector should remove the sling from service and send it to an authorized chain repair facility for current or updated certification, tagging, and testing.

## BASIC INSPECTION CRITERIA FOR ALLOY CHAIN SLINGS

Whether you're doing rigging inspections in-house or working with a third-party rigging inspection service, it's very important for the inspector to understand what abuse the chain is seeing and inspect it accordingly.

Prior to inspecting, clean chains with a non-acid / non-caustic solvent so that marks, nicks, wear, and other defects are visible. With regard to inspection criteria, chain damage typically falls into one of five categories and critical damage will be obvious to a properly trained inspector.

**1****Wear****2****Localized Bending****3****Shearing / Cracks****4****Nicks or Gouges****5****Stretching**

## BASIC INSPECTION CRITERIA FOR ALLOY CHAIN SLINGS (CONTINUED)

**An alloy steel chain sling shall be removed from service if any of the following conditions are present:**

- Missing or illegible sling identification
- Cracks or breaks
- Excessive wear, nicks, or gouges. Minimum thickness on chain links shall not be below the values listed in the table below:

### MINIMUM ALLOWABLE THICKNESS AT ANY POINT ON A LINK

Nominal Chain or Coupling Link Size		Minimum Allowable Thickness at Any Point on the Link	
in.	mm	in.	mm
7/32	5.5	0.189	4.80
9/32	7	0.239	6.07
5/16	8	0.273	6.93
3/8	10	0.342	8.69
1/2	13	0.443	11.26
5/8	16	0.546	13.87
3/4	20	0.687	17.45
7/8	22	0.750	19.05
1	26	0.887	22.53
1-1/4	32	1.091	27.71

- Stretched chain links or fittings
- Bent, twisted, or deformed chain links or fittings
- Evidence of heat damage
- Excessive pitting or corrosion
- Lack of ability of chain or fittings to hinge freely
- Weld splatter
- For hooks, removal criteria as stated in ASME B30.10
- For rigging hardware, removal criteria as stated in ASME B30.26
- Other conditions, including visible damage, that cause doubt as to the continued use of the sling



## DISPOSAL OF DAMAGED OR FAILED ALLOY CHAIN SLINGS

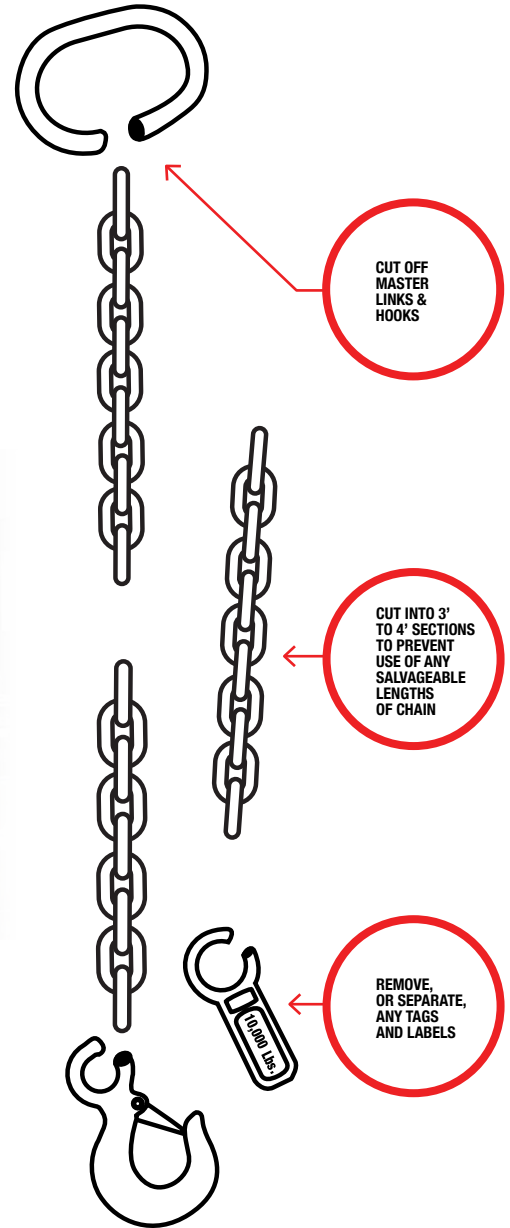
While chain slings are ideal for lifting applications because of their strength, they're still susceptible to being damaged to the point where they are no longer safe to keep in operation. Environmental factors, such as exposure to extreme heat or chemicals, wear beyond specified tolerances, stretching, kinks or binding, and nicks or gouges in the links, can all be criteria for removal from service. Any of these factors can weaken chain slings and may increase the potential for an accident.

If the chain slings and assemblies are rejected during inspection due to damage or failure, they need to be quarantined and removed from service.



***We suggest taking the following actions to help make sure that the chain sling can't be re-purposed into some type of usable assembly:***

- Cut into smaller 3' to 4' sections to prevent use of any salvageable lengths of chain
- Cut off Master links and hooks
- Use proper PPE when handling pieces of cut chain—cutting can leave sharp edges and metal burrs
- Remove, or separate, any tags and labels
- Place scrap into your facility's metal recycling bins and coordinate pickup or delivery





# BEST PRACTICES FOR MAINTAINING ALLOY CHAIN SLINGS

Often times, chain sling abuse is inherent with a given application. However, by knowing what types of applications cause premature chain wear and even sling failure, the rigger can be in a better position to know what to look for when inspecting slings.

The best way to help extend the life of a chain sling, and help to ensure that it stays in service, is to properly maintain it during and in-between each use. Inspections are easier to perform—and probably more thorough—when slings are easily accessible and organized, kept off of the ground, and stored in a cool and dry environment.

Hang your slings or keep them in a designated locker or rigging box where they are off of the ground and will not be subjected to mechanical damage, corrosive action, moisture, extreme temperatures, and kinking.



## Overload / Sling Angle



Overload normally causes chain stretch. The overload can be the result of the load itself weighing more than the sling's capacity.

Severe angles can also result in a sling being overloaded. Alloy chain sling charts have rated capacities at 30°, 45°, and 60° angles. The typical angle is 60°. Normally two, three, and four leg chains have three ratings for a specified number of pounds at 60°. The sling identification tag also states the rated capacity for the specified sling angle. Be aware that sling angles greatly affect the tension on each leg of the sling. The farther apart the legs of the sling are spread, the more tension there is on the sling legs.

**A good rule of thumb is to measure the distance between the hook-up points, and have the sling legs measure at least that long.** For example, if the distance between the hook-up points measures 10 feet, then the sling legs should be at least 10 feet long. This practice ensures that the two leg lengths and the distance between the hook-up points form an equilateral triangle resulting in the sling angles being 60°.

**If the application dictates sling angles less than 60°...**

then the user needs to choose the correct size sling to allow for the more severe angle. In any case, never use a sling at angles less than 30°. This concept for sling angles and leg lengths applies to all sling types—not just chain slings.



## BEST PRACTICES FOR MAINTAINING ALLOY CHAIN SLINGS (CONTINUED)



### Temperature

In applications involving high heat, the user must pay attention to the amount of direct heat that the chain sees. Often, direct heat results in the chain turning a blueish color. The user should consult the chain manufacturer's capacity reduction charts relating to heat. In addition, be aware of any damage caused by weld splatter or molten metal being splashed on the slings.

Temperature		Reduction of Working Load Limit	
°F	°C	While at Temperature	After Exposure to Temperature
Below 400	Below 204	None	None
400	204	15%	None
500	260	25%	5%
600	316	30%	15%
700	371	40%	20%
800	427	50%	25%
900	482	60%	30%
1000	538	70%	35%



### Edge and Cut Protection

Slings in contact with edges, corners, or protrusions should be protected with a material of sufficient strength, thickness, and construction to prevent damage to the sling. Edge protection and cut protection should be used on all edges and corners—even the ones that aren't load-bearing surfaces.



### Keep Your Slings Clean

Continual exposure to dust, dirt, and moisture can degrade the materials over time and shorten the life expectancy of the product. Keep your slings clean and stored in an area free of moisture to avoid excess corrosion and pitting of the links, fittings, and hardware.

## WRAPPING IT UP

Proper inspection of your alloy chain slings for damage or irregularities, prior to each use, is the best way to help keep everybody on the job site safe. Also, providing rigging training for your workers will provide them with rigging best practices and also help them to identify and take action on any damage or defects that meet ASME B30.9 removal from service criteria.

### Follow these best practices for sling use and inspection:

- Do know the weight of the load
- Do determine the type of hitch
- Do choose the correct size and style sling
- Do use the longest sling possible and practical
- Do stand clear of the load
- Do lift evenly and smoothly
- Do visually examine slings each time before use
- Do discard or red tag worn and damaged slings
- Do store properly
- Do use pads around sharp corners to prevent sling damage
- Do have slings repaired or modified only at a qualified sling service center





# PLAN EVERY LIFT. DO YOU NEED LIFTING AND RIGGING TRAINING?

All Mazzella trainers have been accredited by our company through training by a third party training company (Industrial Training International, Inc.), Mazzella Companies' internal Train the Trainer program, and are trained on OSHA and ASME standards.

**CALL 800-362-4601 OR GO TO [MAZZELLACOMPANIES.COM](https://www.mazzellacompanies.com)  
TO SCHEDULE YOUR TRAINING TODAY!**



## INSPECTION OF SYNTHETIC ROUNDSLINGS





## WHO PERFORMS SYNTHETIC ROUNDSLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR?

The most basic, yet essential, part of using a synthetic roundsling is properly inspecting it prior to each use.

*When using a synthetic roundsling, it is imperative that it is properly inspected in accordance with OSHA 1910.184 and ASME B30.9. ASME standards, prior to being put into service.*

Inspecting your synthetic roundsling before each use will confirm that the equipment is in proper working condition, and that the correct synthetic roundsling is being used for the specific job requirements.



### INITIAL INSPECTION (PRIOR TO INITIAL USE):

Best practice is to inspect the synthetic roundsling upon receiving it from the manufacturer. Double-check the sling tag to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.

# WHO PERFORMS SYNTHETIC ROUNDSLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

## FREQUENT (DAILY OR PRIOR TO USE):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that the synthetic roundsling that was selected meets the specific job requirements it's being used for.

However, users can't rely on a once-a-day inspection if the sling is used multiple times throughout the day. Shock loads, severe angles, edges, and excessive heat can quickly cause damage to a lifting sling, so best practice is to perform a visual inspection before any shift change or changes in lifting application.

## PERIODIC INSPECTION:

A documented periodic inspection is performed by either a professional service provider, or by a Qualified person every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the synthetic roundsling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified person

Depending on the severity of the operating environment and frequency of use, your business may decide that a more thorough inspection should occur more often than the minimum yearly requirement.

**Periodic inspections are required to be documented per ASME B30.9 and records retained.**

The employer is required to maintain a record of the most recent thorough sling inspection—however, individual records for each sling that was inspected are not required. Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

**INITIAL  
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**PERIODIC  
INSPECTION**

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## BASIC INSPECTION CRITERIA FOR SYNTHETIC ROUNDSLINGS

A key factor when inspecting synthetic roundslings is being able to identify a potential issue and taking action on it before the sling is connected to any rigging hardware. A small cut, burn, tear or hole in a synthetic roundsling can compromise the strength and lifting capabilities of the sling when under load, and therefore the sling must be removed from service immediately. If there is any doubt as to the condition of the synthetic roundsling prior to use, it needs to be removed from service and replaced.





## BASIC INSPECTION CRITERIA FOR SYNTHETIC ROUNDSLINGS (CONTINUED)

If during any point of the inspection the following is observed, the roundslings should be removed from service and be discarded:

**1**

Missing or illegible  
sling identification

**7**

Knots in the roundslings, except  
for core yarn knots inside the  
cover installed by the manufacturer  
during the fabrication process

**2**

Acid or  
caustic burns

**8**

Fittings that are pitted,  
corroded, cracked, bent,  
twisted, gouged, or broken

**3**

Evidence of  
heat damage

**9**

Discoloration and brittle or  
stiff areas on any part of the  
slings, which may indicate  
chemical or other damage

**4**

Holes, tears, cuts,  
abrasive wear or snags that  
expose the core yarns

**10**

For hooks, removal criteria  
as stated in ASME B30.10

**5**

Broken or damaged  
core yarns

**11**

For rigging hardware,  
removal criteria as stated  
in ASME B30.26

**6**

Weld splatter that  
exposes core yarns

**12**

Other conditions, including  
visible damage, that cause  
doubt to the continued  
use of the sling

## DISPOSAL OF DAMAGED OR FAILED SYNTHETIC ROUNDSLINGS

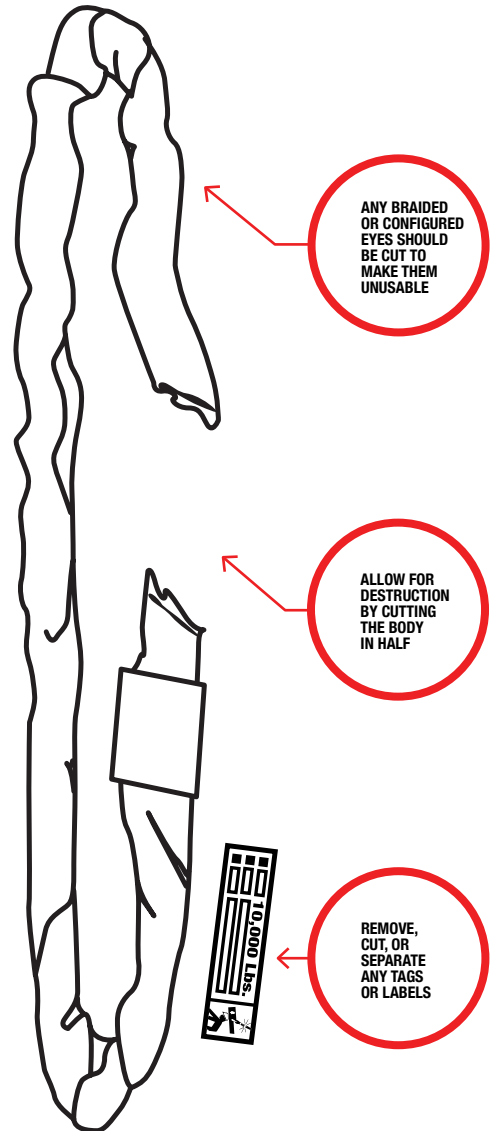
A synthetic roundsling is strong, flexible, and pliable—allowing it to adjust to and tighten around loads better than some other types of slings. Roundslings are an economical option that are versatile and can be used in a variety of hitches including vertical, choker, or basket—so they can be used in many different types of applications. Another benefit is that they have a jacket that provides an added level of protection to the inner load-bearing fibers.

When performing a roundsling inspection, you'll want to identify a potential issue and take action on it before the sling is connected to any rigging hardware. A small cut, burn, tear, or hole in a synthetic roundsling can compromise the strength and lifting capabilities of the sling when under load and therefore the sling must be removed from service immediately.



***If it is determined that a roundsling meets the removal from service criteria, then the following actions need to be taken to discard and render the sling unusable:***

- The standard endless configuration of a roundsling typically allows for destruction by cutting the body in half
- If the sling has been braided or configured to form an eye on each end, then the eyes should be cut to make them unusable
- Best practice is to remove, cut, or separate any tags and labels from the sling
- Place scrap into your facility's recycling bins



# BEST PRACTICES FOR MAINTAINING SYNTHETIC ROUNDSLINGS

The best way to help extend the life of a synthetic roundsling, and help to ensure that it stays in service, is to properly maintain it during and in-between each use. Inspections are easier to perform—and probably more thorough—when slings are easily accessible and organized, kept off of the ground, and stored in a cool and dry environment.

Hang your slings or keep them in a designated locker or rigging box where they are off of the ground and will not be subjected to mechanical damage, corrosive action, moisture, or extreme temperatures.



## Temperature

Polyester roundslings shall not be used in contact with an object or at temperatures in excess of 194°F (90°C) or below -40°F (-40°C).



## Chemically Active Environments

The strength of synthetic roundslings, and their fittings, may be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or Qualified Person should be consulted before slings are used in chemically active environments.

Polyester and nylon webbing materials have different chemical resistance properties. Please refer to the chart to the right for guidelines on polyester or nylon roundslings in specific chemically-active environments.

	Nylon	Polyester
Acids	No	*
Alcohols	Yes	Yes
Aldehydes	Yes	No
Strong Alkalis	Yes	**
Bleach Agents	No	Yes
Dry Cleaning Solvents	Yes	Yes
Ethers	Yes	No
Halogenated Hydrocarbons	Yes	Yes
Hydrocarbons	Yes	Yes
Ketones	Yes	Yes
Oils (Crude)	Yes	Yes
Oils (Lubricating)	Yes	Yes
Soaps & Detergents	Yes	Yes
Water & Sea Water	Yes	Yes
Weak Alkalis	Yes	Yes

\* Disintegrated by concentrated sulfuric acid

\*\* Degraded by strong alkalis at elevated temperatures

# BEST PRACTICES FOR MAINTAINING SYNTHETIC ROUNDSLINGS (CONTINUED)



## Sunlight and Ultraviolet Light

The strength of synthetic roundslings is degraded by exposure to sunlight and ultraviolet light. The sling manufacturer or a Qualified Person should be consulted for additional retirement or inspection requirements.



## Edge and Cut Protection

Synthetic lifting slings are most susceptible to cuts, rips, abrasion, and tears. Corner protectors, wear pads, or edge guards should be used to protect roundslings against abrasion and cuts when lifting materials with edges. Edge protection and cut protection should be used on all edges and corners—even the ones that aren't load-bearing surfaces.

Additional material, stitching, finishing, wear pads, or coatings can also be added to synthetic roundslings during the manufacturing process to help improve the durability of the sling.



## Keep Your Slings Clean

Continual exposure to dust, dirt, and moisture can degrade the materials over time and shorten the life expectancy of the product. Wipe grease or oil off of your slings and try to keep them clean of dirt, or other particulates which can break down the sling material over time.

Please note that synthetic slings should never be cleaned in a solvent tank used to degrease other equipment or machined parts. The chemicals used in a solvent solution can degrade the nylon or polyester fibers over time, which will affect the integrity of that lifting sling.





## WRAPPING IT UP

The best way to help extend the life of a synthetic roundsling, and help to ensure that it stays in service, is to properly maintain it during and in-between each use. Take care of your gear and your gear will take care of you—it's that simple.

*Here are some best practices to keep your synthetic roundslings in great condition:*

- Keep your synthetic roundslings off of the ground and store them in a cool, dry, and dark environment.
- Avoid continued exposure to extreme hot or cold temperatures and store them away from direct sunlight and UV exposure to prevent loss of strength.
- Keep your synthetic roundslings clean. Continual exposure to dust, dirt, and moisture can degrade the materials over time and shorten the life expectancy of the product.
- Do not store your synthetic roundslings in a chemically active environment. Chemically active environments can affect the strength of the polyester synthetic roundslings in varying degrees, ranging from little to total degradation. Consult your synthetic roundsling manufacturer before using your synthetic roundslings in a chemically active environment.
- Synthetic roundslings should not be used at temperatures in excess of 194° F / 90° C, or at temperatures below -40° F / -40° C.
- Use edge protection or barriers to prevent cutting of the polyester jacket and yarn core when lifting materials with edges.
- Always contact your synthetic roundsling manufacturer with any questions or concerns about maintaining, storing, and protecting your synthetic roundsling equipment.

Proper inspection of your synthetic roundslings for damage or irregularities, prior to each use, is the best way to help keep everybody on the job site safe. Keep in mind that you're planning to lift valuable and expensive equipment, and if a failure were to occur, it would not only cause unnecessary equipment repair costs and costly down time, but also potentially jeopardize the lives of workers on site.



# INSPECTION OF HIGH-PERFORMANCE SYNTHETIC ROUND SLINGS



## WHO PERFORMS HIGH-PERFORMANCE ROUNDSLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR?

One of the most basic but crucial aspects of using a high-performance roundsling is properly inspecting it prior to each use. Taking the time to perform a brief visual inspection will confirm that the roundsling meets the specific job and lifting requirements and will also help to ensure the safety of the user, help extend the life of the equipment, and help to reduce unnecessary equipment repair costs and costly down time.

***Before each use, a high-performance roundsling needs to be inspected in accordance with OSHA 1910.184 and ASME B30.9 standards, prior to being put into service.***



### INITIAL INSPECTION (PRIOR TO INITIAL USE):

Best practice is to inspect the roundsling upon receiving it from the manufacturer. Double-check the sling tag to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.



# WHO PERFORMS HIGH-PERFORMANCE ROUNDSLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

## FREQUENT (DAILY OR PRIOR TO USE):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that roundsling that was selected meets the specific job requirements it's being used for.

However, users can't rely on a once-a-day inspection if the sling is used multiple times throughout the day. Shock loads, severe angles, edges, and excessive heat can quickly cause damage to a lifting sling, so best practice is to perform a visual inspection before any shift change or changes in lifting application.

## PERIODIC INSPECTION:

A documented periodic inspection is performed by either a professional service provider, or by a Qualified person every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the high-performance roundsling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified person

Depending on the severity of the operating environment and frequency of use, your business may decide that a more thorough inspection should occur more often than the minimum yearly requirement.

**Periodic inspections are required to be documented per ASME B30.9 and records retained.**

The employer is required to maintain a record of the most recent thorough sling inspection—however, individual records for each sling that was inspected are not required. Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

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## WHAT'S REQUIRED ON A HIGH-PERFORMANCE ROUNDSLING IDENTIFICATION TAG?

### PER ASME B30.9 ...

A high-performance roundsling shall be marked to include:

- Name or trademark of manufacturer, or if repaired, the entity performing repairs
- Manufacturer's code or stock number
- Rated load for at least one hitch type and the angle upon which it is based
- Core yarn – fiber type(s) or blend
- Cover material, if different from core material
- Number of legs, if more than one



### IF THE TAG IS MISSING OR ILLEGIBLE ...

The inspector should remove the sling from service and send it to an authorized repair facility for current or updated certification, tagging, and testing.

# BASIC INSPECTION CRITERIA FOR HIGH-PERFORMANCE ROUNDSLINGS

A key factor when inspecting high-performance roundslings is being able to identify a potential issue and taking action on it before the sling is connected to any rigging hardware. A small cut, burn, tear or hole in a high-performance roundsling can compromise the strength and lifting capabilities of the sling when under load, and therefore the sling must be removed from service immediately. If there is any doubt as to the condition of the roundsling prior to use, it needs to be removed from service and replaced.





## BASIC INSPECTION CRITERIA FOR HIGH-PERFORMANCE ROUNDSLINGS (CONTINUED)

The following ASME B30.9 high-performance roundsling inspection standards require immediate removal from service for any sling with any of the following visible occurrences:

**1**

Missing or illegible  
sling identification

**7**

Knots in the roundsling, except  
for core yarn knots inside the  
cover installed by the manufacturer  
during the fabrication process

**2**

Acid or  
caustic burns

**8**

Fittings that are pitted,  
corroded, cracked, bent,  
twisted, gouged, or broken

**3**

Evidence of  
heat damage

**9**

Discoloration and brittle or  
stiff areas on any part of the  
slings, which may indicate  
chemical or other damage

**4**

Holes, tears, cuts,  
abrasive wear or snags that  
expose the core yarns

**10**

For hooks, removal criteria  
as stated in ASME B30.10

**5**

Broken or damaged  
core yarns

**11**

For rigging hardware,  
removal criteria as stated  
in ASME B30.26

**6**

Weld splatter that  
exposes core yarns

**12**

Other conditions, including  
visible damage, that cause  
doubt to the continued  
use of the sling

## DISPOSAL OF DAMAGED OR FAILED HIGH-PERFORMANCE ROUNDSLINGS

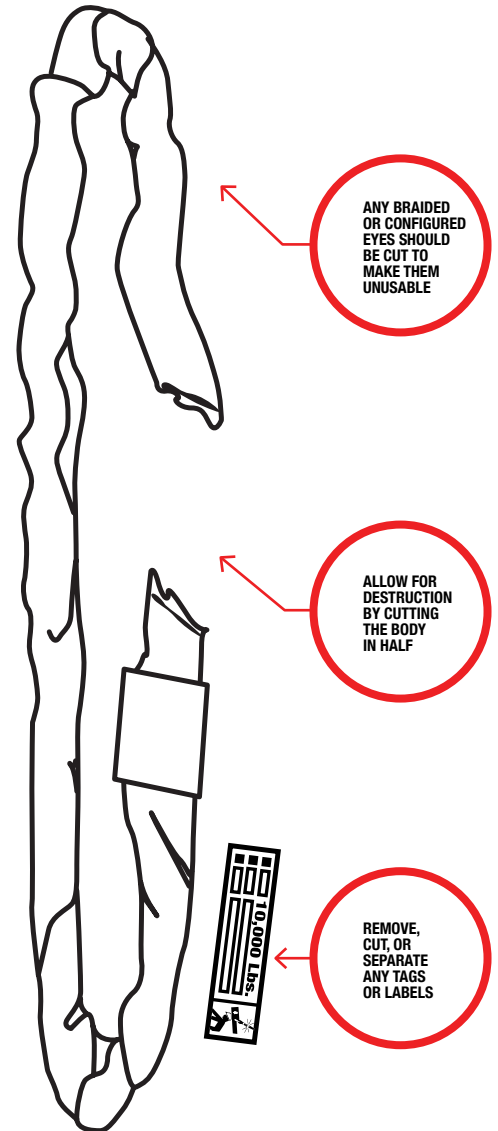
A high-performance roundsling is strong, flexible, and pliable—allowing it to adjust to and tighten around loads better than some other types of slings. Roundslings are an economical option that are versatile and can be used in a variety of hitches including vertical, choker, or basket—so they can be used in many different types of applications. Another benefit is that they have a jacket that provides an added level of protection to the inner load-bearing fibers.

When performing a roundsling inspection, you'll want to identify a potential issue and take action on it before the sling is connected to any rigging hardware. A small cut, burn, tear, or hole in a synthetic roundsling can compromise the strength and lifting capabilities of the sling when under load and therefore the sling must be removed from service immediately.



***If it is determined that a roundsling meets the removal from service criteria, then the following actions need to be taken to discard and render the sling unusable:***

- The standard endless configuration of a roundsling typically allows for destruction by cutting the body in half
- If the sling has been braided or configured to form an eye on each end, then the eyes should be cut to make them unusable
- Best practice is to remove, cut, or separate any tags and labels from the sling
- Place scrap into your facility's recycling bins





## BEST PRACTICES FOR MAINTAINING HIGH-PERFORMANCE ROUNDSLINGS

The best way to help extend the life of a high-performance roundsling, and help to ensure that it stays in service, is to properly maintain it during and in-between each use. Inspections are easier to perform—and probably more thorough—when slings are easily accessible and organized, kept off of the ground, and stored in a cool and dry environment.

Hang your slings or keep them in a designated locker or rigging box where they are off of the ground and will not be subjected to mechanical damage, corrosive action, moisture, or extreme temperatures.



### Temperature

Some synthetic yarns do not retain their published breaking strength above 140°F (60°C). The high-performance roundsling manufacturer should be consulted for the temperature range of the roundsling selected for use.



### Chemically Active Environments

The strength of high-performance roundslings, and their fittings, may be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or Qualified Person should be consulted before slings are used in chemically active environments.

Polyester and nylon webbing materials have different chemical resistance properties. Please refer to the chart below for guidelines on polyester or nylon roundslings in specific chemically-active environments.

	Nylon	Polyester
Acids	No	*
Alcohols	Yes	Yes
Aldehydes	Yes	No
Strong Alkalies	Yes	**
Bleach Agents	No	Yes
Dry Cleaning Solvents	Yes	Yes
Ethers	Yes	No
Halogenated Hydrocarbons	Yes	Yes
Hydrocarbons	Yes	Yes
Ketones	Yes	Yes
Oils (Crude)	Yes	Yes
Oils (Lubricating)	Yes	Yes
Soaps & Detergents	Yes	Yes
Water & Sea Water	Yes	Yes
Weak Alkalies	Yes	Yes

\* Disintegrated by concentrated sulfuric acid

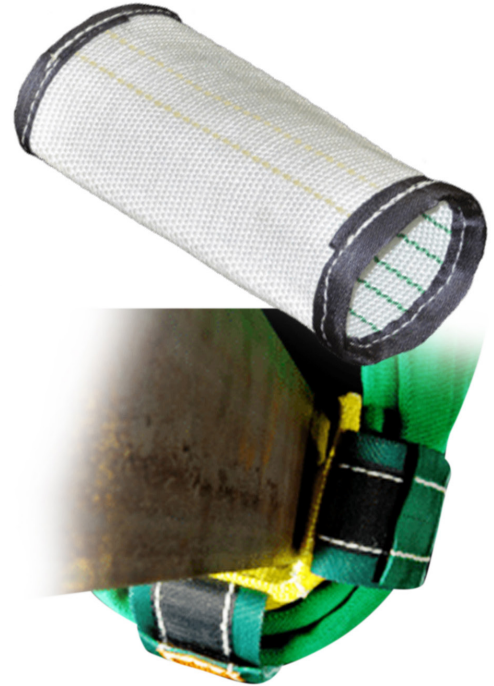
\*\* Degraded by strong alkalies at elevated temperatures

# BEST PRACTICES FOR MAINTAINING SYNTHETIC ROUNDSLINGS (CONTINUED)



## Sunlight and Ultraviolet Light

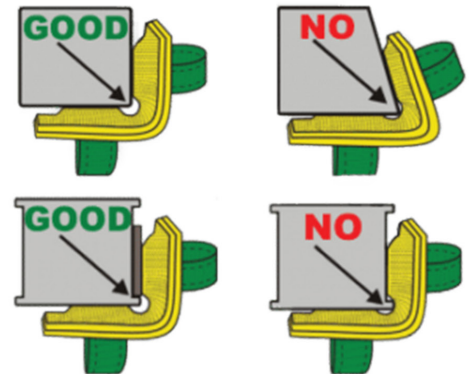
The strength of high-performance roundslings is degraded by exposure to sunlight and ultraviolet light. The sling manufacturer or a Qualified Person should be consulted for additional retirement or inspection requirements.



## Edge and Cut Protection

Synthetic lifting slings are most susceptible to cuts, rips, abrasion, and tears. Corner protectors, wear pads, or edge guards should be used to protect roundslings against abrasion and cuts when lifting materials with edges. Edge protection and cut protection should be used on all edges and corners—even the ones that aren't load-bearing surfaces.

Additional material, stitching, finishing, wear pads, or coatings can also be added to high-performance roundslings during the manufacturing process to help improve the durability of the sling.



## Keep Your Slings Clean

Continual exposure to dust, dirt, and moisture can degrade the materials over time and shorten the life expectancy of the product. Wipe grease or oil off of your slings and try to keep them clean of dirt, or other particulates which can break down the sling material over time.

Please note that synthetic slings should never be cleaned in a solvent tank used to degrease other equipment or machined parts. The chemicals used in a solvent solution can degrade the nylon or polyester fibers over time, which will affect the integrity of that lifting sling.

## WRAPPING IT UP

Take care of your gear and your gear will take care of you—it's that simple.

*Here are some best practices to keep your high-performance roundslings in great condition:*

- Store them in a cool, dry, and dark environment and hang them up to keep them off of the ground. Avoid storing them in extreme hot or cold conditions.
- Avoid prolonged sunlight and UV exposure to prevent loss of strength.
- Keep your synthetic roundslings clean. Continued exposure to oil, dust, dirt, and moisture can wear down the materials over time and also make it difficult to see and read the sling tag.
- Do not store your synthetic roundslings in a chemically active environment. Chemically active environments can affect the strength of synthetic roundslings in varying degrees, ranging from little to total degradation. Consult your synthetic roundsling manufacturer before using in a chemically active environment.
- Some synthetic yarns do not retain their published strength at temperatures above 140° / 60°C. Consult with the manufacturer if you plan to use in a high heat environment.
- When lifting material with edges, use edge protection or barriers to prevent cutting of the polyester jacket and yarn core.
- If there are any questions about the proper way to store, maintain, and protect your synthetic roundsling equipment, please contact the manufacturer.

**Prior to each use, regular inspection of high-performance roundslings for damage or irregularities is the best way to help avoid costly downtime and help to keep everybody on the job site safe. Routine inspection should be looked at as an investment that, over time, will help keep valuable equipment running and keep workers safe.**





# INSPECTION OF METAL MESH SLINGS





## WHO PERFORMS METAL MESH SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR?

Metal mesh slings, also known as wire mesh slings, can be looked at as the perfect marriage between wire rope or alloy chain slings and slings made from synthetic nylon or polyester materials. When using a metal mesh sling, you get strength and durability combined with flexibility and excellent load grip and securement.

Metal mesh slings are widely used in demanding and high-heat environments like metalworking facilities, steel mills, or steel processing facilities where the loads may be abrasive and hot. The steel construction of these slings resists abrasion, cutting, and heat damage that synthetic slings would be more susceptible to.

Often, the wire mesh material is made from galvanized high-carbon steel to resist corrosion. The fittings can be plated or made from an alloy material for corrosion resistance and longer service life.

Metal mesh slings are often preferred in rough environments because of their ability to be repaired and recertified. They also have low stretch and a wide-bearing surface area to firmly grip and secure a load—reducing load damage.



## WHO PERFORMS METAL MESH SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

All inspections shall be performed by a Designated Person with any deficiencies further examined by a Qualified Person to identify hazards and determine what additional steps need to be taken to address the hazard.

*There are two industry standards that exist to provide the end-user with guidelines for inspection and criteria that warrants removal from service: OSHA 1910.184 and ASME B30.9.*



### INITIAL INSPECTION (PRIOR TO INITIAL USE):

Best practice is to inspect the metal mesh sling upon receiving it from the manufacturer. Double-check the sling identification to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.

# WHO PERFORMS METAL MESH SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

## FREQUENT (DAILY OR PRIOR TO USE):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that the metal mesh sling that was selected meets the specific job requirements it's being used for.

However, users can't rely on a once-a-day inspection if the sling is used multiple times throughout the day. Shock loads, severe angles, edges, and excessive heat can quickly cause damage to the material, so best practice is to perform a visual inspection prior to each use.

## PERIODIC INSPECTION:

A documented periodic inspection is performed by either a professional service provider, or by a Qualified person every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the metal mesh sling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified person

Depending on the severity of the operating environment and frequency of use, your business may decide that a more thorough inspection should occur more often than the minimum yearly requirement.

**Periodic inspections are required to be documented per ASME B30.9 and records retained.**

The employer is required to maintain a record of the most recent thorough sling inspection. Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

**INITIAL  
INSPECTION**

**PRIOR TO  
INITIAL USE**

**FREQUENT  
INSPECTION**

**DAILY OR  
PRIOR TO USE**

**PERIODIC  
INSPECTION**



## WHAT'S REQUIRED ON A METAL MESH SLING IDENTIFICATION TAG?

### PER ASME B30.9 ...

Each metal mesh sling shall be marked by the manufacturer to include:

- Name or trademark of the manufacturer, or if repaired, the entity performing the repair
- Rated load for at least one hitch type and the angle upon which it is based
- Individual sling identification (ex: serial number)



### IT IS THE RESPONSIBILITY OF THE USER ...

To maintain the sling identification—ensuring it remains legible during the life of the sling. If the identification is missing or illegible, it should be removed from service.



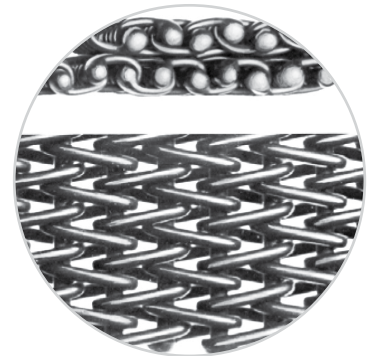
# METAL MESH SLING FABRIC CONSTRUCTION SPECIFICATIONS

The table below can be found in 9-3.2.1 Fabric Construction: Metal Mesh Slings from ASME B309-2018.

Specification	Heavy Duty	Medium Duty	Light Duty
Nominal spiral turns per foot mesh width	35	43	59
Approx. spiral wire size	10 gage	12 gage	14 gage
Equivalent decimal size	0.135 in.	0.105 in.	0.080 in.
Nominal cross rods per foot of fabric length	21	30	38
Approx. size of cross rods	8 gage	10 gage	14 gage
Equivalent decimal size	0.162 in.	0.135 in.	0.080 in.
Nominal fabric thickness	1/2 in.	3/8 in.	5/16 in.



**10 GAGE**



**12 GAGE**



**14 GAGE**





## BASIC INSPECTION CRITERIA FOR METAL MESH SLINGS

The goal of a sling inspection is to evaluate remaining strength in a sling which has been used previously to determine if it is suitable for continued use. When inspecting metal mesh slings, daily visual inspections are intended to detect serious damage or deterioration which would weaken the strength and integrity of the sling.



## BASIC INSPECTION CRITERIA FOR METAL MESH SLINGS

If during any point of the inspection the following is observed, the metal mesh sling should be removed from service and be discarded, according to ASME B30.9 standards:

1

Missing or illegible sling identification

7

Distortion of either end fitting so the width of the eye opening is decreased by more than 10%

2

Broken weld or a broken brazed joint along the sling edge

8

15% reduction of the original cross-sectional area of any point around the hook opening of the end fitting

3

Broken wire in any part of the mesh

9

Visible distortion of either end fitting out of its plane

4

Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion

10

Slings in which the spirals are locked or without free articulation shall not be used

5

Lack of flexibility due to distortion of the mesh

11

Cracked end fittings, or fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken

6

Distortion of the choker fitting so the depth of the slot is increased by more than 10%

12

Other conditions, including visible damage, that cause doubt as to the continued use of the sling



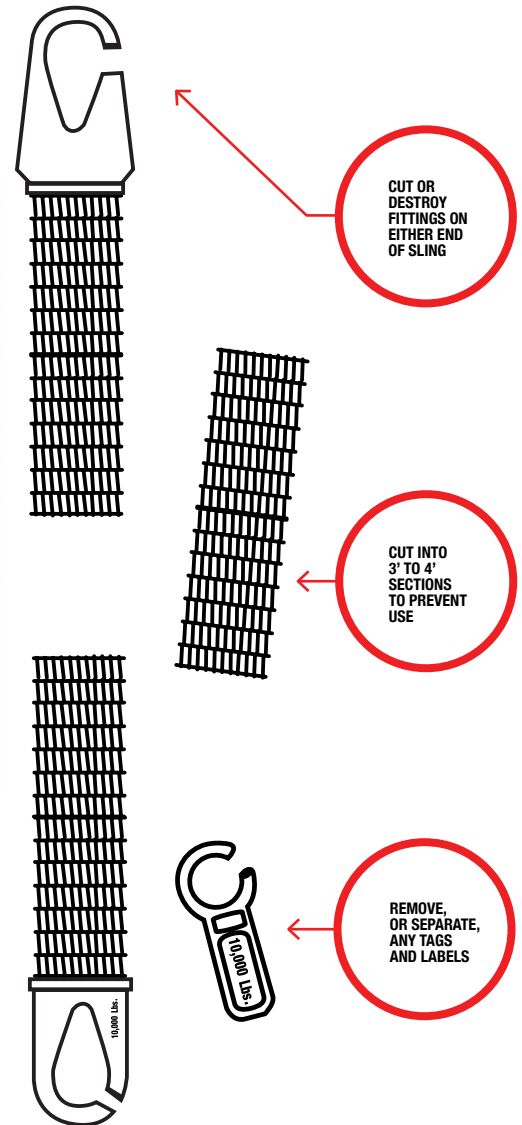
## DISPOSAL OF DAMAGED OR FAILED METAL MESH SLINGS

When performing a metal mesh sling inspection, you'll want to identify a potential issue and take action on it before the sling is connected to any rigging hardware. Broken welds, broken wires, visible distortion, or damage to either fitting can compromise the strength and lifting capabilities of the sling when under load. Therefore, the sling must be removed from service immediately.



***If it is determined that a metal mesh sling meets the removal from service criteria, then the following actions need to be taken to discard and render the sling unusable:***

- Cut into smaller 3' to 4' sections to prevent use of any salvageable lengths of the sling
- Use a chop saw or torch to cut or destroy fittings on either end of the sling
- Use proper PPE when handling pieces of cut wires—cutting can leave sharp edges and metal burrs
- Remove, or separate, any tags and labels
- Place scrap into your facility's metal recycling bins and coordinate pickup or delivery



## BEST PRACTICES FOR MAINTAINING METAL MESH SLINGS

Maintaining a metal mesh sling during and in between uses is the best way to help extend the life of it and help to ensure that it stays in service. Inspections are easier to perform—and probably more thorough—when slings are easily accessible and organized, kept off of the ground, and stored in a cool and dry environment.

Hang your slings or keep them in a designated locker or rigging box where they are off of the ground and will not be subjected to mechanical damage, corrosive action, moisture, or kinking.



### Temperature

When slings are used at temperatures above 550°F / 228°C or below -20°F / -29°C, the sling manufacturer should be consulted.

If the sling contains any coatings that change the temperature range of the sling, the manufacturer shall provide a revised temperature range.



### Chemically Active Environments

The strength of metal mesh slings may be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or a Qualified Person should be consulted before slings are used in chemically active environments.



# BEST PRACTICES FOR MAINTAINING METAL MESH SLINGS (CONTINUED)



## Edge and Cut Protection

Slings in contact with edges, corners, or protrusions, should be protected with a material of sufficient strength, thickness, and construction to prevent damage.

Edge protection and cut protection should be used on all edges and corners—even the ones that aren't load-bearing surfaces.



## Keep Your Slings Clean

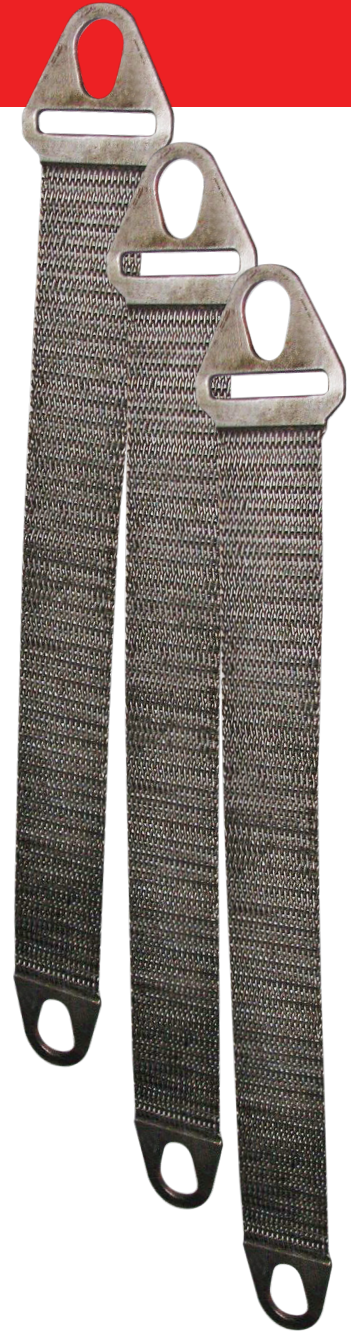
Continual exposure to dust, dirt, and moisture can degrade the materials and cause corrosion—shortening the life expectancy of the product. Wipe grease or oil off of your slings and try to keep them clean of dirt, chemicals, or other particulates which can break down the material over time.



## Avoid Misuse and Abuse

Use rigging best practices when lifting a load with metal mesh slings. Avoid the following before, during, and after an overhead lift to prevent damage to the sling:

- Avoid shock loads
- Loads should not be rested on the sling
- Slings should not be pulled from under a load if a load is resting on a sling
- Be aware of possible snagging during load-handling activities
- Slings should not be dragged on the floor or over an abrasive surface
- Slings should not be constricted, bunched, or pinched by the load, hook, or any fittings
- Avoid twisting and kinking of the sling





# INSPECTION OF SYNTHETIC ROPE SLINGS



# HOW DO I INSPECT SYNTHETIC ROPE SLINGS TO ASME B30.9 STANDARDS?

Synthetic rope slings are increasing in popularity—especially as synthetic rope becomes more widely accepted and specified for different lifting applications. Synthetic rope slings come in a variety of braided constructions that are extremely strong, durable, lightweight, and flexible.

With synthetic rope slings, you get a product with the strength and durability of wire rope and chain slings, plus the weight-savings and load protection of synthetic slings—all in one product.

Synthetic rope slings are preferred in certain lifting applications in the construction, shipyard, and offshore and deepwater industries. However, synthetic rope slings can be more prone to damage from heat, chemicals, and abrasion or cutting when lifting loads with sharp corners or edges. So, regular inspection is key when forming synthetic rope into slings for lifting applications.



ASME has a chapter in their B30.9 Slings standard dedicated to the selection, use, inspection, and maintenance of synthetic rope slings. If you're unfamiliar with this standard, or new to the use of synthetic rope slings, we'll walk you through the following in this article:

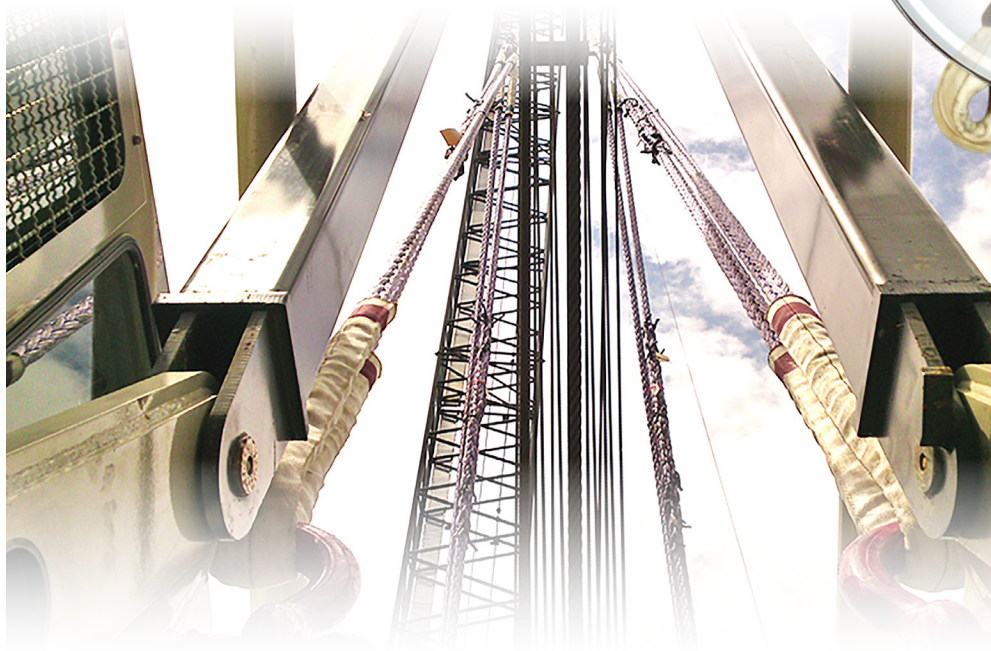
- How often you need to inspect synthetic rope slings
- Synthetic rope sling construction and component specifications
- What information is required for sling identification
- Inspection criteria for synthetic rope slings
- Best practices for maintaining synthetic rope slings



## WHO PERFORMS SYNTHETIC ROPE SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR?

All inspections shall be performed by a Designated Person with any deficiencies further examined by a Qualified Person to identify hazards and determine what additional steps need to be taken to address the hazard.

*There are two industry standards that exist to provide the end-user with guidelines for inspection and criteria that warrants removal from service: OSHA 1910.184 and ASME B30.9.*



### Initial Inspection (Prior to Initial Use):

Best practice is to inspect any synthetic rope sling upon receiving it from the manufacturer. Double-check the sling identification to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.



# WHO PERFORMS SYNTHETIC ROPE SLING INSPECTIONS AND HOW OFTEN DO THEY OCCUR? (CONTINUED)

## FREQUENT (DAILY OR PRIOR TO USE):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that the synthetic sling that was selected meets the specific job requirements it's being used for.

However, users can't rely on a once-a-day inspection if the sling is used multiple times throughout the day. Shock loads, severe angles, edges, and excessive heat can quickly cause damage to the material, so best practice is to perform a visual inspection prior to each use.

**INITIAL  
INSPECTION**  
PRIOR TO  
INITIAL USE

## PERIODIC INSPECTION:

A documented periodic inspection is performed by either a professional service provider, or by a Qualified person every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the wire rope sling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified person

Depending on the severity of the operating environment and frequency of use, your business may decide that a more thorough inspection should occur more often than the minimum yearly requirement.

**FREQUENT  
INSPECTION**  
DAILY OR  
PRIOR TO USE

**PERIODIC  
INSPECTION**

**Periodic inspections are required to be documented per ASME B30.9 and records retained.**

The employer is required to maintain a record of the most recent thorough sling inspection—however inspection records of individual slings are not required. Failure to maintain and retain inspection records is one of the most common issues we see that can prevent a company from reaching full OSHA compliance.

## WHAT'S REQUIRED FOR SYNTHETIC ROPE SLING IDENTIFICATION?

### PER ASME B30.9 ...

Each synthetic rope sling shall be marked by the manufacturer to include:

- Name or trademark of the manufacturer, or if repaired, the entity performing the repair
- Manufacturer's code or stock number
- Rated load for at least one hitch type and the angle upon which it is based
- Type of fiber material
- Number of legs, if more than one



### IT IS THE RESPONSIBILITY OF THE USER ...

To maintain the sling identification—ensuring it remains legible during the life of the sling. If the identification is missing or illegible, it should be removed from service.

# SYNTHETIC ROPE SLING CONSTRUCTION AND COMPONENT SPECIFICATIONS

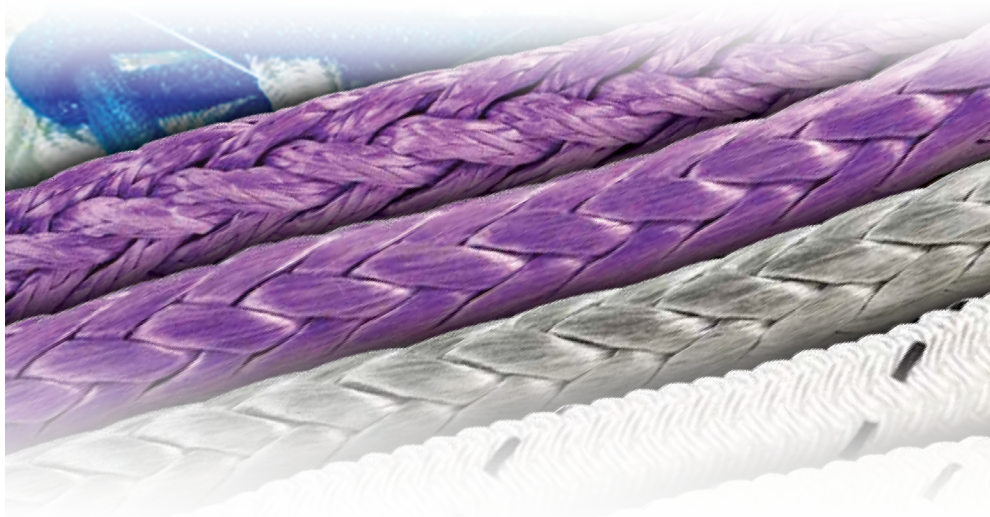
ASME B30.9 has laid out specifications for the construction and components of synthetic rope slings.

## SYNTHETIC ROPES

Although ASME B30.9 covers synthetic ropes made from either nylon or polyester fiber materials, fiber rope slings can also be made from a variety of other synthetic fiber materials. These ropes shall be made of fibers that have been produced with an appropriate ultraviolet inhibitor.

Rope constructions covered under ASME B30.9 include three-strand laid, eight-strand plaited, single braided, and double braided. ASME requires that each rope construction be manufactured and tested in accordance with the following Cordage Institute specifications:

Rope Type	Designation
Nylon Three-Strand Laid	CI 1303
Nylon Eight-Strand Plaited	CI 1303
Nylon Double Braid	CI 1306
Polyester Three-Strand Laid	CI 1304
Polyester Eight-Strand Plaited	CI 1304
Polyester Double Braid	CI 1307
Polyester Single Braid	CI 1305





# SYNTHETIC ROPE SLING CONSTRUCTION AND COMPONENT SPECIFICATIONS (CONTINUED)

## FITTINGS

Fittings should be selected to meet the following requirements:

- Suitability of mechanical or socketed fittings shall be verified by a Qualified Person
- Material shall be compatible with the mechanical and environmental requirements imposed on the sling
- Fittings shall have sufficient strength to sustain twice the rated load of the sling without visible permanent deformation
- Fitting surfaces in contact with the sling shall be finished to remove edges that could damage the sling.
- Thimbles shall have a minimum diameter at the bearing surface of at least 2 times the rope diameter
- When employed, hooks shall meet the requirements of ASME B30.10
- When employed, rigging hardware shall meet the requirements of ASME B30.26



## OTHER COMPONENTS

Slings that employ synthetic ropes and fittings other than those listed in ASME B30.9 may be used. When such components are employed, the sling manufacturer or a Qualified Person shall provide specific data regarding deviations from the applicable sections of the B30.9 standard and shall comply with all other requirements of the B30.9 standard.

## ASME B30.9 INSPECTION CRITERIA FOR SYNTHETIC ROPE SLINGS

The goal of a sling inspection is to evaluate remaining strength in a sling which has been used previously to determine if it is suitable for continued use. When inspecting synthetic rope slings, daily visual inspections are intended to detect serious damage or deterioration which would weaken the strength and integrity of the sling.

**If during any point of the inspection the following is observed, a synthetic rope sling should be removed from service, according to ASME B30.9 standards:**

**1**

**Missing or illegible sling identification**

**2**

**Cuts, gouges, areas of extensive fiber breakage along the length, and abraded areas on the rope**

**3**

**Damage that is estimated to have reduced the effective diameter of the rope by more than 10%**

**4**

**Uniform fiber breakage along the major part of the length of the rope in the sling such that the entire rope appears covered with fuzz or whiskers**

**5**

**Inside the rope, fiber breakage, fused or melted fiber (observed by prying or twisting to open the strands) involving damage estimated at 10% of the fiber in any strand or the rope as a whole**



# ASME B30.9 INSPECTION CRITERIA FOR SYNTHETIC ROPE SLINGS (CONTINUED)

**6**

Discoloration, brittle fibers, and hard or stiff areas that may indicate chemical damage, ultraviolet damage, or heat damage

**7**

Dirt and grit in the interior of the rope structure that is deemed excessive

**8**

Foreign matter that has permeated the rope and makes it difficult to handle and may attract and hold grit

**9**

Kinks or distortion in the rope structure, particularly if caused by forcibly pulling on loops (known as hockles)

**10**

Melted, hard, or charred areas that affect more than 10% of the diameter of the rope or affect several adjacent strands along the length that affect more than 10% of strand diameters

**11**

Poor condition of thimbles or other components manifested by corrosion, cracks, distortion, sharp edges, or localized wear

**12**

For hooks, removal criteria as stated in ASME B30.10

**13**

For rigging hardware, removal criteria as stated in ASME B30.26

**14**

Other conditions including visible damage that cause doubt as to the continued use of the sling





## DISPOSAL OF DAMAGED OR FAILED SYNTHETIC ROPE SLINGS

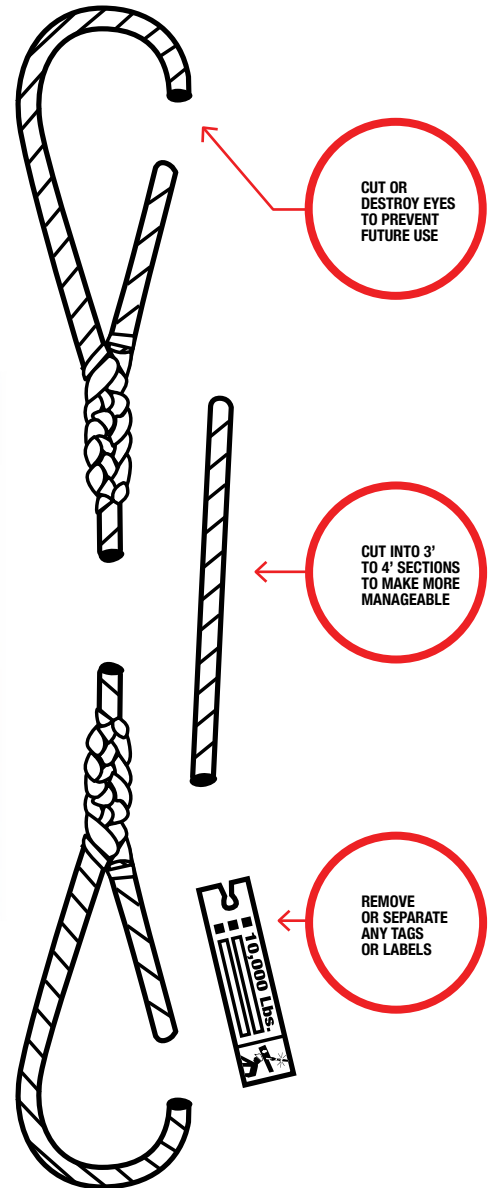
The best lifting and rigging inspection program is of no value if slings, which are worn out and have been retired, are not properly disposed of. When it is determined by the inspector that a sling is worn out or damaged beyond use, it should be tagged immediately **DO NOT USE**.

If it's determined that the wire rope will be removed from service, we suggest cutting it down into more manageable sizes before discarding. This extra effort will help to accommodate the needs of most recycling facilities that will accept the damaged wire rope and also help to make sure that it cannot be used any further.



### *Keep the following in mind when disposing of synthetic rope slings:*

- Cut into approximately 3' to 4' sections
- Cut or destroy the eyes of the synthetic rope sling to prevent any further use of the sling
- If the sling body is long enough to allow for an eye to be reformed by other means, the rope should be cut down to shorter lengths
- Remove, or separate, any tags and labels from the sling



# BEST PRACTICES FOR MAINTAINING SYNTHETIC ROPE SLINGS

Maintaining a synthetic rope sling during and in between uses is the best way to help extend the life of it and help to ensure that it stays in service. Inspections are easier to perform—and probably more thorough—when slings are easily accessible and organized, kept off of the ground, and stored in a cool and dry environment.

Hang up your slings or keep them in a designated locker or rigging box where they are off of the ground and will not be subjected to mechanical damage, corrosion, chemical or ultraviolet exposure, or extreme temperatures.



## Temperature

Polyester and nylon rope slings shall not be used in contact with objects or at temperatures above 194°F (90°C) or below -40°F (-40°C).



## Chemically Active Environments

The strength of synthetic rope slings may be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or a Qualified Person should be consulted before slings are used in chemically active environments.

When slings or their fittings are to be exposed to acidic or alkaline fumes, vapors, sprays, mists, or liquids, the sling manufacturer or a Qualified Person should be consulted.

Polyester and nylon materials have different chemical resistance properties. Please refer to the chart for guidelines on polyester or nylon material in specific chemically-active environments.

	Nylon	Polyester
Acids	No	*
Alcohols	Yes	Yes
Aldehydes	Yes	No
Strong Alkalis	Yes	**
Bleach Agents	No	Yes
Dry Cleaning Solvents	Yes	Yes
Ethers	Yes	No
Halogenated Hydrocarbons	Yes	Yes
Hydrocarbons	Yes	Yes
Ketones	Yes	Yes
Oils (Crude)	Yes	Yes
Oils (Lubricating)	Yes	Yes
Soaps & Detergents	Yes	Yes
Water & Sea Water	Yes	Yes
Weak Alkalis	Yes	Yes

\* Disintegrated by concentrated sulfuric acid

\*\* Degraded by strong alkalis at elevated temperatures

# BEST PRACTICES FOR MAINTAINING SYNTHETIC ROPE SLINGS (CONTINUED)



## Sunlight and Ultraviolet Light

The strength of synthetic rope slings is degraded by exposure to sunlight or ultraviolet light. The sling manufacturer or a Qualified Person should be consulted for additional retirement or inspection requirements.



## Edge and Cut Protection

Slings in contact with edges, corners, or protrusions, should be protected with a material of sufficient strength, thickness, and construction to prevent damage.

Edge protection and cut protection should be used on all edges and corners—even the ones that aren't load-bearing surfaces.



## Keep Your Slings Clean

Continual exposure to dust, dirt, and moisture can degrade the materials and cause corrosion—shortening the life expectancy of the product. Wipe grease or oil off of your slings and try to keep them clean of dirt, grit, chemicals, or other particulates which can break down the material over time.

Slings exposed to salt water should be thoroughly rinsed with fresh water to prevent mechanical damage from salt crystals when the rope dries.



## Avoid Misuse and Abuse

Use rigging best practices when lifting a load with synthetic rope slings. Avoid the following before, during, and after an overhead lift to prevent damage to the sling:

- Avoid shock loading
- Slings shall not be shortened or lengthened by knotting or twisting
- Loads should not be rested on the sling
- Slings should not be pulled from under a load if a load is resting on a sling
- Avoid twisting and kinking
- Do not drag the slings across the floor or over an abrasive surface
- Slings should not be constricted, bunched, or pinched by the load, hook, or any other fitting



## WRAPPING IT UP

A well thought-out sling inspection program can help prevent industry compliance issues, keep your workers safe, and extend the life of your lifting equipment.

At Mazzella Companies, we understand the amount of effort and coordination it can take to stay in compliance with OSHA and ASME's industry standards. We offer a variety of services including site assessments, rigging and crane operator training, sling inspection and repairs, overhead crane inspections and so much more.



Our rigging inspection program is its own dedicated business unit with a team of inspectors that are certified through Industrial Training International to meet OSHA 1910.184 and ASME B30.9 requirements for sling inspection.

If you want more information on our sling inspection program or want to schedule a consultation to learn how you can assess the compliance of your lifting and rigging program, contact a Lifting Specialist today.

## HOW TO CHOOSE A THIRD-PARTY RIGGING INSPECTION COMPANY FOR OSHA COMPLIANCE





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As a manufacturer and distributor of wire rope, wire rope slings, chain slings, synthetic slings, and rigging hardware, we often see customers confused about what is involved in the inspection of their rigging equipment. When it comes down to it, there are many factors that should be considered when selecting a rigging inspection company to partner with.

In this final chapter, we hope to educate you on what to consider when hiring a third-party inspector, so that your rigging equipment is in compliance with OSHA, ASME, and other industry or manufacturer standards.





## WHO IS PERFORMING THE RIGGING INSPECTION?

OSHA 1910.184 states that slings shall be inspected by a Competent Person. ASME B30.9 states that slings shall be inspected by a Designated Person with final determination made by a Qualified Person as to whether a condition may constitute a hazard.

One of the most important aspects of selecting a rigging inspection company is to understand who is actually performing the inspection. Does the company have certified inspectors on staff? Understanding that certified means that their employees have been through an accredited training program to obtain a certification—they didn't just sit through one class in order to receive an "attendance certificate."



Unfortunately, some companies who offer rigging inspection services don't have certified inspectors on their team. Instead, they'll send out one of their salespeople, bring in someone from a third-party vendor, or even use someone who works in their shop or warehouse to perform a rigging inspection.

They may argue that their inspector has "20 years of experience." But, if that person doesn't actually have a certification from an accredited organization, then you may not be meeting OSHA and ASME inspection requirements to have a "competent" and "qualified" person perform your inspection.

If a company sends out someone from their sales team, or a representative from one of their vendors to come perform your inspection, that could create a conflict of interest. Your inspection company should be solely focused on the inspection process, addressing solutions as required, and completing the service in a timely manner. If they're more interested in how they can sell you replacement equipment, or get you under contract to repair your broken or damaged rigging products, then they don't have your best interests in mind.

**Always ask your inspection provider what documentation or actions they can provide to prove that their inspectors are qualified to perform rigging inspection services.**



## WHAT TYPE OF INSPECTION RECORDS WILL YOU RECEIVE?

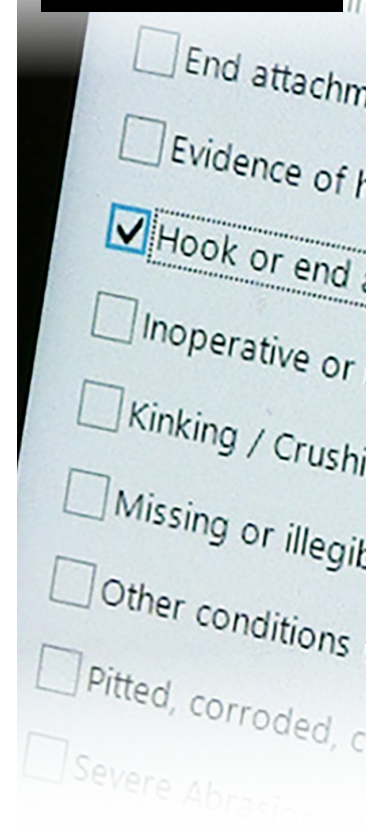
Another important consideration when hiring a third-party rigging inspector is to find out what type of reporting or records you will receive. OSHA and ASME have clear guidelines on how your rigging equipment should be inspected, tagged, stored, and maintained and what type of documentation you should have to prove that you're in compliance with their standards.

Companies who are serious about rigging inspection utilize software and hardware to systematically observe and record the condition of your rigging gear. They will often bring a tablet or computer with them during the inspection and record their findings in real-time. If it's an extreme environment, they may take notes and then type up a formalized report and email it to you when they get back to the office, but their records will always be digital for easy retention and accessibility down the road.

Unfortunately, some companies don't utilize software solutions to track and maintain their reporting records. They'll show up with a clipboard, and hand-write their inspection report and then turn it over to you when they're finished. Part of the inspection process is to review previous inspection documentation. If you were to somehow lose a copy of that report, would your inspection provider be able to provide you with a replacement of those reports?

**OSHA / ASME require that documentation for the most recent periodic inspection performed shall be maintained. Ask the following questions to any company you're considering using for rigging inspection:**

- Will they provide you with a digital copy of their inspection report, or do they leave you with a hand-written report?
- What type of criteria is covered in the inspection report? Will it satisfy OSHA and ASME requirements if they show up for an audit?
- Do they keep a copy of the report, and for how long do they retain a copy of the report? ASME states that documentation that the most recent periodic inspection was performed shall be maintained.
- Are their reports in compliance with unique OSHA / ASME standards for wire rope inspection, roundsling inspection, chain sling inspection, and the inspection of rigging hardware?



## PROACTIVE SCHEDULING

Companies that are serious about the inspection of rigging equipment will have a dedicated team to reach out, schedule, and coordinate inspections with their customers. They will run a proactive program to reach out to you monthly, quarterly, or yearly—depending on the agreement that you have in place. This helps to take a lot of the guesswork out of when they might show up, and also helps take some of the responsibility off of your shoulders to remember to schedule your inspections.

Remember, once they've entered into a contract with you, they're equally as invested in keeping you in compliance, because they're the company on record for inspection if OSHA were to come in and find any violations.



Companies that “dabble” in rigging inspections don't typically have the teams in place, or the infrastructure, to coordinate this type of system. These companies are more focused on selling you on their additional services like replacement or repair of your rigging equipment and have more sales staff in place than true inspectors or logistics teams.

A rigging inspection company with your best interests in mind will reach out and present you with next year's inspection schedule and estimated costs for the following calendar year. This makes it easy for you to just say yes, and sign off on the process—taking one more thing off of your plate so you can focus on your facility's equipment maintenance or production needs.





## WHAT IS A “FREE” RIGGING INSPECTION?

One of the questions that we get asked all of the time is, “Why don’t you guys perform rigging inspections for free like company XYZ does?” Well to be honest, do you really know what level of service you’re receiving during the course of a “free” rigging inspection?

The word “free” can be thrown around, but it doesn’t really carry any weight. Companies that don’t charge for their rigging inspection services may offer to inspect your rigging equipment for free once you’ve entered into an agreement allowing them to service, repair, or replace any of your damaged rigging products. This has the potential to create a conflict of interest.

So, based on an understanding of what is truly involved in a commitment to the laws as standards for the inspection of rigging equipment, do you really understand what you’re receiving during the course of a “free” rigging inspection?

Mazzella Companies is a leader in rigging inspection and safety training—with all of our lifting specialists and field personnel being experienced and certified in OSHA and ASME standards. Our sole focus is to help with your in-plant inspection needs and we will partner with you to ensure the peace of mind that safety compliance brings.

### Consider the following value-added services that we provide to our customers:

- We have a dedicated full-time business unit that is focused solely on rigging inspection. Our goal is to perform a thorough inspection process, address solutions as required, and complete the service in a timely manner.
- Our team of inspectors are certified through Industrial Training International to meet OSHA 1910.184 and ASME B30.9 requirements when it comes to the inspection of rigging equipment. ITI is an accredited user training company via LEEA.
- We provide digital reporting outputs and we retain copies of all inspection records to ensure that our customers are in full compliance with OSHA requirements.
- We run a proactive program and reach out to each customer well in advance of the next periodic inspection to schedule and coordinate their rigging inspections for the next calendar year.
- We are also a distributor and manufacturer of all of the equipment that we inspect, giving us unique insight into the proper usage, standards, and application of rigging gear.



If you’re interested in learning more about our rigging inspection program and how we can help keep you in compliance with OSHA and ASME standards, contact us today to schedule a consultation.



**Phone: 800-362-4601**  
**[mazzellacompanies.com](http://mazzellacompanies.com)**

Don’t forget to check out our resources section **with blogs, videos, downloads, and more!**



**PLAN EVERY LIFT. DO YOU NEED LIFTING AND RIGGING TRAINING?**

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