



WEEKLY SAFETY MEETING

All Euramax Subsidiaries

ROPES, CHAINS AND SLINGS

Safety Meeting Contents

- Meeting Notice
- Leaders Guide
- Employee Handout
- Employee Quiz
- Meeting Sign-In Sheet
- Employee Puzzle

PRIOR TO THE WEEKLY MEETING:

- Post the meeting notice by the timeclock
- Read through the Leaders Guide and Employee Handout to familiarize yourself with the topic for the week
- Make copies of the employee handout (one for each employee)
- Make copies of the employee quiz (one for each employee)
- Make copies of the weekly puzzle (one for each employee)

AT THE SAFETY MEETING:

- Pass around the meeting sign-in sheet – ensure all employees present at the meeting print and sign their names
- Pass out the employee hand-out
- Pass out the employee quiz
- Pass out the weekly puzzle
- Keep the meeting simple
- Encourage discussion and questions

WEEKLY SAFETY MEETING NOTICE

THIS WEEK, OUR SAFETY MEETING WILL COVER
ROPES, CHAINS, AND SLINGS

TIME: _____

DATE: _____

PLACE: _____

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Leaders Guide

EURAMAX PROCEDURE REFERENCE:

C-6.0 Hoisting Equipment

MEETING OBJECTIVE:

The use of ropes, chains, and slings in the workplace poses special safety problems. Many accidents occur because employees are unaware of indifferent to load limitations and proper inspection and care procedures for this equipment. The purpose of this meeting is to teach employees to work safely with and around these useful pieces of equipment.

MEETING PREPARATION:

Read the Euramax procedure, understand the contents, and ensure compliance.

Gather samples of new and worn fiber ropes, wire ropes, and chains (if applicable).

Review the employee handout to see if there are any other materials you wish to bring to the meeting.

Use a flip chart during the discussion to write key points and employee responses. This technique visually reinforces your instruction.

MATERIALS CHECKLIST:

- Samples of new and worn fiber ropes, wire ropes, and chains
- Flip chart and marking pens

MEETING

INTRODUCTION

What you don't know about ropes, chains, and slings could hurt you. Today we're going to discuss these items – what they're made of and how to take care of them, so that they work the way we expect them to work. In addition, we're going to talk about safety procedures when working with or around ropes, chains, and slings. Here are a couple of definitions related to ropes:

Fiber Rope: Ropes are made of natural or synthetic fibers. Both types have their advantages and disadvantages. Synthetic fiber ropes are more popular because there's more of a variety to choose from for particular jobs and they're easier to splice. Nylon (synthetic) rope has 2 ½ times the breaking strength of Manila (fiber) rope and about four (4) times it's working elasticity.

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Wire Rope: Wire rope is made of steel wires, strands, and core. It is frequently used instead of fiber rope because it is stronger and more durable and its physical characteristics don't change in different environments. In addition, wire rope's stretch characteristics are more predictable.

DISCUSSION GUIDE

Explain that during this meeting you will be talking about fiber rope, wire rope, fiber and wire rope slings, and chains and chain slings.

FIBER ROPE

Display samples of new and worn fiber ropes.

Explain the factors to consider when choosing a rope:

- Rot resistance
- Strength
- Stretch with load
- Recovery from stretch
- Floatability
- Water repellency
- Temperature resistance
- Chemical resistance
- Sunlight resistance
- Friction melting

Remind employees to consult their supervisor when choosing a rope for a particular job.

- Usage charts indicating working load capacity are tabulated for rope in top-notch condition with appropriate splices in noncritical applications.
- They're generally rated for static, not dynamic, loads.
- When a load is swung, picked up, stopped quickly, or moved in any way, there is an increase force exerted on the rope. Therefore, the working load capacity needs are increased.

Discuss the different types of ropes used at your facility and their appropriate applications.

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Question: What types of accidents do you think could happen when ropes are used improperly?

Answer: A heavy load suspended above one or more workers could fall and the workers could be seriously injured. Prevent this by keeping the area below a raised load clear of employees. Employees can also be injured by the “whiplash” of a broken line.

Question: What do you look for when you inspect a new rope?

Answer: (Demonstrate) Check the entire length of the rope for damage or defects before using it.

Question: What do you look for when you inspect an in-service rope?

Answer: (Demonstrate) Ropes used under normal conditions should be inspected every 30 days. Ropes used for critical operations, such as supporting scaffolding, should be inspected more often. Check the entire length of the rope for...

- Abrasions, wear
- Broken or cut fibers
- Displacement of yarns or strands
- Rotting, discoloration

Question: How do you inspect a rope?

Answer: The inter fibers can be inspected by untwisting the rope in several places to see whether the inner yarns are clear and bright. Replace a fiber rope that has been exposed to acids. Visual inspection might not reveal deterioration.

Tell employees to use the fingernail test for detecting deterioration in fiber ropes.

- Scratch inner fibers with fingernail.
- If fibers part easily there has been too much wear.
- If fiber rope has been loaded to more than 50 percent of its breaking strength, it will be damaged and must be replaced.

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Question: What steps can we all take to prevent too much wear and tear on ropes used at the facility?

Answer: Never drag a rope. This hurts the outer fibers and leads to the eventual deterioration of the ropes overall strength.

Avoid kinking. This strains the rope and overstresses the fibers.

Splice, don't knot. When the job requires joining lengths of ropes, they should be spliced, not knotted. A properly done splice will hold up to 100 percent of the strength of the rope, a knot only half.

Dry out rope after use to prevent deterioration.

Don't allow rope to freeze.

Store away from heat, moisture, chemicals, rodents, sunlight.

Never store rope in areas containing acid or acid vapors. Dark brown or black spots will develop, indicating rope deterioration.

Clean rope before storage.

Demonstrate the proper way to coil a rope to prevent kinking.

- Set the rope coil on the ground with the bottom end down.
- Pull the bottom end up through the coil, and unwind the rope counterclockwise.
- If it uncoils in the other direction, you'll have to turn the coil of rope over and pull the end out on the other side.

WIRE ROPE

Question: What are some of the signs that wire rope is damaged?

Answer: Look for any break or movement in the strands that make up the rope. For example:

- Kinks
- Wire breaks in the valleys of strands
- "bird cages"
- Square breaks in the crown of the strands

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Question: What are some causes of damage and deterioration?

Answer: Corrosion, wear, kinks, fatigue, drying out, overloading, and overwinding

Question: What can we do to improve the safety and efficiency of wire ropes?

Answer: Use sheaves and drums of suitable size and design.
Lubricate properly, according to schedule
Maintain rope and hoisting equipment.
Don't exceed the rated capacity or wire rope.
Be sure to use the correct lay (twist) for the application.
Report and replace defective wire rope.

FIBER AND WIRE ROPE SLINGS

Question: What points should you consider when using a fiber or wire rope sling?

Answer: Capacity
Method of fastening rope to the fitting, type of sling (single or three-legged)
Type of hitch

Remind employees that all rules for regular maintenance and inspection of ropes apply to slings, as well.

Question: If a load has sharp edges, what precautions must be taken and why?

Answer: To prevent breakage, pads or saddles should be used.

Discuss OSHA inspection requirements for the slings used at your facility.

CHAINS AND CHAIN SLINGS

Question: What are some of the reasons for chain failure?

Answer: Brittleness caused by cold working on metal surface
Failure of weld
Repeated severe bending or deformation of links.
Overloading

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Metal fatigue
Brittleness caused by defects in the metal
Tensile failure (full elongation of links)

Question: What should you always do before you use a chain or chain sling?

Answer: Make sure hooks, attachments, and safety attachments are in place and in good condition, and that springs are intact. Never use makeshift devices (such as bolts).

Question: What steps are involved in inspecting chains?

Answer: Inspection of chains can prevent most failures. Operators should inspect chains daily before using for signs that the chain isn't safe to use. A link-by-link inspection should include looking for:

- Bent links
- Worn links
- Cracks, nicks, and gouges
- Corrosion
- Elongation

Question: What steps can you take to prevent chains from breaking?

Answer: Take up slack slowly and make sure every link seats correctly.
Never force a hook over a chain link.
Use only the correct chain attachments.
Store properly. (Explain how)
Pay attention to heat limitations.
Never use in excess of rated capacities.

Remind employees that they should:

- Never remove manufacturer's tags from chains.
- Always know the load limits and break test limits for types of chains used in the department.
- Always double-check the capacities and inspection date on sling before use.
- Have repairs to chains and slings approved by me or the safety manager before you use them again.



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Leaders Guide

SUMMARY:

As you've seen, there are many important issues involved in using ropes, chains, and slings safely. Please keep what you have learned today in mind, and put it to good use from now on.

EMPLOYEE HANDOUT:

- A. Employee Handout
- B. Ropes, Chains, and Slings Safety Quiz
- C. Ropes, Chains, and Slings Puzzle

QUIZ ANSWERS:

- | | |
|-----------|--|
| 1. False | 11. False.They should be inspected daily |
| 2. True | 12. False |
| 3. True | 13. True |
| 4. True | 14. A and B |
| 5. True | 15. True |
| 6. False | 16. True |
| 7. True | 17. True |
| 8. False | 18. True |
| 9. False | 19. True |
| 10. False | 20. A |



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Employee Handout

Never walk under a suspended load. For many of us, that advice sums up what we need to know about sling safety.

For those of us working in materials handling, construction, forestry, fishing, heavy manufacturing and other occupations where things are lifted into the air and moved, there's more to it. For instance, choosing the right lifting equipment, using it correctly and maintaining it are important to the safety of workers and bystanders.

Slings and hoisting equipment are used in a variety of industries for moving heavy and awkward loads. They are available in countless designs for specific jobs. These are the main kinds of slings:

- Wire rope is the most widely used sling, carrying heavy loads in industries such as construction and forestry. For some applications these have fiber cores; for other uses there are wire cores.
- Chain is used for heavy loads in workplaces with high temperatures and repeated work such as steel mills and foundries.
- Mesh, a combination of chain and wire, handles objects that have sharp edges or are hot. Machining plants and metal storage facilities use these slings.
- Web slings of fiber or synthetic material are used in situations where the load must be protected from damage. Painted surfaces and delicate equipment can be lifted with a web sling.

You need special training in use and storage of slings, ropes and chains to prevent injury and equipment damage.

These are some of the recommended safe work practices for slings of various types:

- Slings must be chosen for the load, the kind of hitch and the environment in which they will be used.
- The weight of the load must not exceed the rated capacity of the sling.
- The slings must not be shortened or altered by any means unless approved by the manufacturer.
- Slings must be inspected for damage and defects prior to use. Inspection at the start and end of each shift as well as prior to a big lift is the routine in many workplaces.
- Correct hitching is required to maintain control of the load.
- A load should be padded if necessary to prevent damage to the sling.
- Chains and other sling equipment must not be dragged over the floor or the ground.
- You should not pull on a kinked chain because this will weaken it.



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Employee Handout

- Chains and other slings must be stored in proper racks, not left on the floor where they can be run over.
- Shock loading—a sudden drop of the load—should be avoided because it can damage the sling.
- Workers should not ride on a sling. Only approved personnel lifts should be used for this purpose.
- All portions of the worker's body must be kept from between the sling and the hook, and from between the sling and the load.

If you use hoisting equipment of any type, there is a lot to learn about safe work practices. Be sure you get the training you need. No matter what your job, don't get underneath or near a suspended load because it could strike you or fall on you.



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Employee Quiz

Answer the following questions to see what you know about Ropes, Chains, and Slings safety.

1. It's safe to work beneath an elevated sling load.
True or False
2. Choosing the right lifting equipment is an important safety consideration.
True or False
3. Wire rope, chain, and web are some of the types of slings used in industry.
True or False
4. You need special training if you are involved in using or storing slings, ropes, chains or other lifting equipment.
True or False
5. When choosing a sling you must consider the load, the kind of hitch and the work environment.
True or False
6. You can safely load as much as you want into a sling without worrying about the rated load capacity.
True or False
7. Slings should be inspected regularly for damage and defects.
True or False
8. Chains and other slings are indestructible and you can drive over them, drag them and leave them out in the weather without worrying about damage.
True or False
9. If an approved person lift is not handy, a material sling makes a safe substitute for a worker to ride on.
True or False
10. Sling safety is nothing more than common sense with no training necessary.
True or False

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11. Slings should be inspected once a week for damage or defects.
True or False
12. Abrasion is not sufficient reason to replace a sling.
True or False
13. When indicator threads are visible, it's a sign that a sling has lost its rated capacity.
True or False
14. You can learn the weight of a load from which two of the following?
 - a. Documents on the load
 - b. By using proven engineering principles
 - c. By guessing
15. The hitch is the connection to the lifting hook and how the sling grips the load.
True or False
16. When choosing a sling, its load rating and compatible hitches are important.
True or False
17. When you inspect the sling before use, you should also inspect the fittings.
True or False
18. It's a good plan to cut up defective slings before throwing them out.
True or False
19. You should never place your hands between the sling and load while tightening the sling.
True or False
20. To control movement you should do which of the following:
 - a. Use a tagline or tether
 - b. Use brute strength



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Meeting Sign In Sheet

LOCATION _____

MEETING DATE _____ MEETING CONDUCTED BY _____

CONTENTS OF MEETING _____
 (Attach Handouts, etc.) _____

ATTENDEES:

Name (Print)	Signature	Name (Print)	Signature
1 _____	_____	22 _____	_____
2 _____	_____	23 _____	_____
3 _____	_____	24 _____	_____
4 _____	_____	25 _____	_____
5 _____	_____	26 _____	_____
6 _____	_____	27 _____	_____
7 _____	_____	28 _____	_____
8 _____	_____	29 _____	_____
9 _____	_____	30 _____	_____
10 _____	_____	31 _____	_____
11 _____	_____	32 _____	_____
12 _____	_____	33 _____	_____
13 _____	_____	34 _____	_____
14 _____	_____	35 _____	_____
15 _____	_____	36 _____	_____
16 _____	_____	37 _____	_____
17 _____	_____	38 _____	_____
18 _____	_____	39 _____	_____
19 _____	_____	40 _____	_____
20 _____	_____	41 _____	_____
21 _____	_____	42 _____	_____



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Employee Puzzle

K N T Z F A T I G U E G V Y H
F B O K I K L O K F I B E R H
B L R I S K N I K C D L J H I
E I P C S P T H I A L Y E Q U
G A R E G O Y R J M C I C L L
A A F D M E R T V P H H N S G
M W N U C B M R U T T M A T S
A I B J K A D H O N G T T R N
D R S V I W G B Y C N R S E I
R E G L R R C E Z D E X I T A
M Y C O I E R C S W R Q S C H
V J P I M N X V X R T N E H C
H E G F V D G O X W S Y R L B
R C O D K U M S Q V W R Q M X
D X C Z S T R A N D S M V E E

BIRD CAGES
CHAINS
CORROSION
DAMAGE
FATIGUE
FIBER
KINKS

RESISTANCE
ROPE
SLINGS
STRANDS
STRENGTH
STRETCH
WIRE