SLING INSPECTION

Slings must be regularly and properly inspected. Even seemingly "minor" damage to a web sling can significantly reduce its capacity to hold or lift objects and increases the chance that the sling will fail during use. If you are not sure whether a sling is damaged, **DO NOT USE IT.**

How to Inspect Slings
Inspect the entire sling visually and by touch, as some damage may be easier to feel than see. See page 14 for examples of common sling damage.

What to Do If You Identify Damage In a Sling
If you identify any of these types of damage in a sling, remove it from service immediately, even if the damage you feel or see is not as extensive as shown in the pictures on page 14. Slings that are removed from service must be destroyed and rendered completely unusable.

ASME B30.9-5.9 - Frequency of Inspection

A 3 stage procedure is recommended to help ensure that web slings are inspected with appropriate frequency.

1. **Initial Inspection -** Slings must be inspected by a designated person as soon as they are received. This ensures that the correct web sling has been received, is undamaged, and meets the requirements for its intended use.

2. **Frequent Inspection -** The entire sling must be inspected before each shift or day in normal service and before each use in severe service applications.

3. **Periodic Inspection -** Every sling must be inspected "periodically" by a qualified and designated person. The frequency of periodic inspections is based on the sling's actual or expected frequency of use, severity of service conditions, and the nature of the work performed with the sling.

REMOVAL CRITERIA

ASME B30.9-5.9 - Possible Defects

A sling shall be removed from service if any defects such as the following are visible:

- Missing or illegible sling identification tag
- Acid or caustic burns
- Melting or charring of any parts of the sling surface
- Snags, punctures, holes, tears, or cuts

- Broken or worn stitches
- Excessive abrasive wear
- Distortion of fittings
- Knots in any part of the sling
- Discoloration, brittle or stiff areas
- Other apparent defects which cause doubt as to the strength of the sling should be referred to the manufacturer for determination.

While most of the foregoing standards are quite specific regarding some removal criteria, a certain amount of judgment is involved in others. The issue of wear to the sling body, the selvage or webbing, and the sling eyes creates the greatest amount of contention.

Polyester vs Nylon

- Polyester and nylon webbing should not be exposed to temperatures exceeding 180°F due to softening (or actual melting) of the fibers.
- Consult the table to the right with regard to the effects of chemicals on synthetic web slings.
- Coatings are available for longer service life and wear resistance.
- Wear pads can be provided to minimize the effects of rough surfaces or angles which can abrade or cut the sling fabric.

Chemical	Nylon	Polyester
Acid	**NO**	*
Alcohol	**OK**	**OK**
Aldehydes	**OK**	**NO**
Strong Alkalis	**OK**	**
Bleaching Agents Dry	**NO**	**OK**
Cleaning Solvents	**OK**	**OK**
Ethers	**OK**	**NO**
Halogenated Hydrocarbons	**OK**	**OK**
Ketones	**OK**	**OK**
Oil, Crude	**OK**	**OK**
Oil, Lubricating	**OK**	**OK**
Water, Seawater	**OK**	**OK**
Weak Alkalis	**OK**	**OK**

** Disintegrated by concentrated sulfuric acid*

*** Degraded by strong alkalis at elevated temperatures*

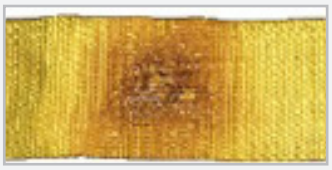
INSPECTION CRITERIA


ACID OR CAUSTIC BURNS


CUT


CRUSHED WEBBING

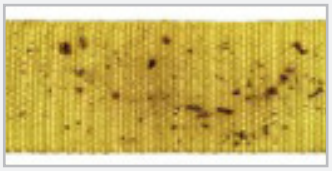

EDGE CUT


MELTING OR CHARRING


ABRASIONS


PUNCTURE


SNAG

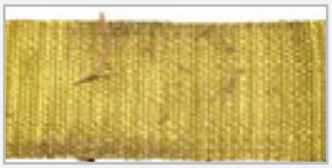

WELD SPATTER

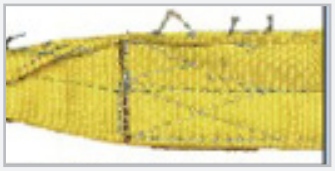
⚠ WARNING ⚠

Failure to follow the care, use, and inspection instructions of a sling could result in severe personal injury or death.

Do NOT exceed rated capacities.

DAMAGED HARDWARE


EMBEDDED MATERIALS


BROKEN OR WORN STITCHES


DAMAGED EYE


KNOT

UV DEGRADATION


TENSILE BREAK


MISSING OR ILLEGIBLE TAG


RED CORE YARN

PROTECTING SLINGS FROM DAMAGE

Environmental Considerations

Environmental factors such as sunlight, dirt, and temperature/humidity changes can accelerate web sling deterioration. The rate depends on exposure and sling thickness, with single-ply slings degrading faster than multi-ply slings. Web slings used outdoors regularly should be removed from service within 2 to 4 years and highly scrutinized during inspections. Visible signs of deterioration include the following:

- Fading of color
- Uneven or disoriented surface yarn of the webbing
- Shortening of sling length
- Reduction in elasticity and strength of the sling material due to exposure to sunlight, often evident by accelerated abrasive damage to the surface yarn of the sling
- Breakage or damage to yarn fibers, often evident by a fuzzy appearance of the web
- Stiffening of the web, which can become particularly evident when web slings are exposed to outdoor conditions without being used or cyclically tensioned

Mechanical Considerations

Avoid any action that may cause sling damage, such as:

- Dropping or dragging slings
- Pulling Slings from under loads while the load is resting on the sling
- Shortening or adjusting sling using methods not approved by the sling manufacturer
- Twisting, kinking or knotting the sling
- Exposing slings to acids, alkalis, heat damage or weld splatter
- Using slings in or allowing exposure to temperatures above 194°F (90°C) or below -40°F (-40°C)
- “Tip loading” a sling on a hook instead of centering it in the base or “bowl” of the hook
- Using hooks, shackles or other hardware that have sharp edges or surfaces
- Running/driving over slings with a vehicle or other equipment

Synthetic slings can degrade due to certain chemicals, with the extent influenced by time, temperature, and concentration. Water absorption can reduce the strength of **nylon** web slings by 10-15%, which is restored upon drying. For specific applications, consult the manufacturer.

continued

Sling Protection Considerations

Synthetic web slings can be damaged, abraded or cut as tension and compression between the sling, the connection points, and the load develops. Surfaces in contact with the sling do not have to be very abrasive or have “razor” sharp edges in order to create the conditions for sling failure. Web slings must ALWAYS be protected from being cut or damaged by corners, edges, protrusions or abrasive surfaces with materials of sufficient strength and construction to prevent sling damage.

There are many ways to protect slings from such damage. A qualified person may choose to use appropriately engineered protectors/softeners—commercially available products (e.g., sleeves, wear pads, edge wraps, body wraps, corner protectors, etc.) specifically designed to protect slings from damage. This person might also design and construct methods of protection so long as the sling is adequately protected from and/or kept off of the damaging edge surface.

No matter the method, the goal is to ensure that the sling maintains its ability to securely handle the load while avoiding contact with damaging or abrasive surfaces under tension. A qualified person must carefully consider the most appropriate means to accomplish this goal.

In any case, a qualified person must ensure that the protection method chosen is appropriate for the types of damage to which the slings will be exposed. For instance, some protection provides abrasion resistance, but offers virtually no protection against cuts.

Several “test” lifts, done in a non-consequence setting may be needed to determine the suitability of the protection device(s). After each “test” lift, the protection device(s) and the sling(s) need to be inspected for damage and suitability. You should keep in mind that no protection is “cut proof,” and you should always operate within the specified limits of the sling and its accessories (e.g., fixtures, hardware, protection, etc.).

Sling Storage and Maintenance

- Slings should be stored in a cool, dry, and dark location, away from dirt, abrasives, or contaminants serves to maintain the optimum lifting capacity.
- Cleaning slings to remove dirt, grime, and abrasives (such as sand or caliche) will help to prolong service life. These contaminants wear the fibers and reduce their strength.
- Slings should be cleaned with a mild soap. Do not pressure wash or steam clean. Capacity tags must be legible. After rinsing the sling, it should be hung to air dry.