

Cranes, Hoists & Slings – Appendix E: Natural and Synthetic Fiber Rope Slings

Sling use: Employers must use natural and synthetic fiber-rope slings that have permanently affixed and legible identification markings stating the rated capacity for the type(s) of hitch(es) used and the angle upon which it is based, type of fiber material, and the number of legs if more than one.

Safe Operating Temperatures: Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from minus 20°F to plus 180 °F without decreasing the working load limit. For operations outside this temperature range and for wet frozen slings, the sling manufacturer's recommendations shall be followed.

Splicing: Spliced fiber rope slings shall not be used unless they have been spliced in accordance with the following minimum requirements and in accordance with any additional recommendations of the manufacturer:

- In manila rope, eye splices shall consist of at least three full tucks, and short splices shall consist of at least six full tucks, three on each side of the splice center line.
- In synthetic fiber rope, eye splices shall consist of at least four full tucks, and short splices shall consist of at least eight full tucks, four on each side of the center line.
- Strand end tails shall not be trimmed flush with the surface of the rope immediately adjacent to the full tucks. This applies to all types of fiber rope and both eye and short splices. For fiber rope under 1-inch in diameter, the tail shall project at least six rope diameters beyond the last full tuck. For fiber rope 1-inch in diameter and larger, the tail shall project at least 6 inches beyond the last full tuck. Where a projecting tail interferes with the use of the sling, the tail shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).
- Fiber rope slings shall have a minimum clear length of rope between eye splices equal to 10 times the rope diameter.
- Knots shall not be used in lieu of splices.
- Clamps not designed specifically for fiber ropes shall not be used for splicing.
- For all eye splices, the eye shall be of such size to provide an included angle of not greater than 60 degrees at the splice when the eye is placed over the load or support.

End Attachments: Fiber rope slings shall not be used if end attachments in contact with the rope have sharp edges or projections.

Removal from Service: Natural and synthetic fiber rope slings shall be immediately removed from service if any of the following conditions are present:

- Abnormal wear
- Powdered fiber between strands
- Broken or cut fibers
- Variations in the size or roundness of strands
- Discoloration or rotting
- Distortion of hardware in the sling

Repairs: Only fiber rope slings made from new rope shall be used. The use of repaired or reconditioned fiber rope slings is prohibited.