

SUBJECT: Citing Improper Steel Chain Slings that do not use "Alloy" Steel Chain

Purpose: To clarify the application of 1910.184(a) and (e).

Scope: This instruction applies MNOSHA-wide.

References:

- A. 1910.184: Slings
- B. Memorandum, Directorate of Compliance Programs, dated June 11, 1992, "Slings Used in Conjunction with Other Material Handling Equipment for the Movement of Materials by Hoisting in the Workplace."
- C. Memorandum, Chief of Occupational Safety Programming Division, dated May 18, 1978, "Only Alloy Steel Chain is recommended by Chain Manufacturers for Overhead Hoisting."
- D. ANSI B30.9 2006, Slings
- E. ASTM A391/A391M – 2007 Specification for Grade 80 Alloy Steel Chain

Cancellation: This instruction replaces STD 1-11.11 "Citing Improper Steel Chain Slings that do not use 'Alloy' Steel Chain" dated December 29, 2005.

Background:

- A. 1910.184(a) defines the scope of this section and states: "The types of slings covered are those made from alloy steel chain..." Alloy steel chain is a specific type of chain defined in ASTM Specifications for Alloy Chain A391-65. Because of the wording in 1910.184(a), carbon steel chain such as proof-coil, high test, and high tensile transport chains, would be excluded from the requirements of this section, even though they do not possess the strength, hardness, and quality required of alloy chain. Furthermore, 1910.184(e) relates to sling use and indicates that slings not listed in Table N-184-1 (for alloy chain) shall be used only in accordance with the manufacturer's recommendations.

The wording of 1910.184(a) was modified from that of the parent ANSI B30.9, which supports the use of only alloy chain in chain slings used for overhead lifting. This appears to have been an unintentional oversight. The FEDERAL REGISTER, Volume 40, No. 125, Friday, June 24, 1975, which adopted the 1910.184 standards, states in the preamble: "To the extent that slings of these five types are not covered by the tables on rated capacities provided in these paragraphs, the standard requires that they be used in accordance with the manufacturer's recommendations." (NOTE: Overhead lifting was intended to mean lifting from an overhead source, such as an overhead bridge crane, and not lifting over a person's head.)

- B. ANSI B30.9-2006 allows chain or components made from materials other than Grade 80 and Grade 100 chain to be used for slings. However, ANSI B30.9-2006, section 9.1.2.3, requires the manufacturer or a qualified person to provide specific data. ANSI B30.9-2006 also requires the manufacturer and user to comply with all other requirements of ANSI B30.9-2006, Chapter 9-1.

- C. Alloy chain has greater strength, quality, and resistance to abrasion, wear, and deformation. (One manufacturer subjects their alloy chain to 64 separate quality checks compared to 10-15 checks for proof-coil chain.)
- D. Most alloy chain is marked every 10 inches with the letter "A" and the manufacturer's symbol alternating. This marking is to be done with raised, not indented (or stamped) letters, per ASTM Specification A391-65. Some older alloy chain may not have the "A" marked on the chain links. In this case, it would be acceptable to have the grade of chain and rated capacity indicated on the sling identification tag required by 1910.184(e)(1), provided that a certificate of proof-test is retained by the employer and is available for inspection as required by 1910.184(e)(4).

(NOTE: New alloy chain, if marked with the letter "A", should be proof-tested by the manufacturer before shipping. In this case, we would not normally require the proof-test certificate unless welding or heat testing is performed on the sling, or if there is a question regarding the adequacy of attachments.)

When materials other than those listed in section 9.1.2 of ANSI B30.9-2006 are used those slings shall comply with all other requirements of Chapter 9.1. Those slings would be required to be marked in accordance with section 9.1.7.1 of ANSI B30.9-2006. The following identifications would be required: manufacturer, grade, chain size, number of legs, rated loads, length, and individual identification.

- F. Manufactured chains, connectors and hooks, clamps, etc., which have been tested by the manufacturer, shall be used per the manufacturer's recommendations and must not exceed the maximum rated load of any component part.

Action:

- A. Steel chain slings made of alloy chain are to be cited under the appropriate paragraph of 1910.184.
- B. Steel chain slings not identified as alloy chain are to be cited under the general duty clause to get the sling brought up to the minimal requirements of 1910.184. This would include the need for proof-testing with certificates, identification tags, annual inspections, and proper attachments. Employee exposure, use of the chain, weight and height of the lift, condition and size of the chain, and working conditions should be carefully documented to support the violation.

James Krueger, Director MNOSHA Compliance
For the MNOSHA Management Team

Distribution: OSHA Compliance and OSHA Consultation

NOTICE: Minnesota OSHA Directives are used exclusively by MNOSHA personnel to assist in the administration of the OSHA program and in the proper interpretation and application of the occupational safety and health statutes, regulations, and standards. They are not legally binding declarations, and they are subject to revision or deletion at any time without notice