

§ 56.19024 Retirement criteria.

Unless damage or deterioration is removed by cutoff, wire ropes shall be removed from service when any of the following conditions occurs:

(a) The number of broken wires within a rope lay length, excluding filler wires, exceeds either—

(1) Five percent of the total number of wires; or

(2) Fifteen percent of the total number of wires within any strand.

(b) On a regular lay rope, more than one broken wire in the valley between strands in one rope lay length.

(c) A loss of more than one-third of the original diameter of the outer wires.

(d) Rope deterioration from corrosion.

(e) Distortion of the rope structure.

(f) Heat damage from any source.

(g) Diameter reduction due to wear that exceeds six percent of the baseline diameter measurement.

(h) Loss of more than ten percent of rope strength as determined by non-destructive testing.

§ 56.19025 Load end attachments.

(a) Wire rope shall be attached to the load by a method that develops at least 80 percent of the nominal strength of the rope.

(b) Except for terminations where use of other materials is a design feature, zinc (spelter) shall be used for socketing wire ropes. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(c) Load end attachment methods using splices are prohibited.

§ 56.19026 Drum end attachment.

(a) For drum end attachment, wire rope shall be attached—

(1) Securely by clips after making one full turn around the drum spoke;

(2) Securely by clips after making one full turn around the shaft, if the drum is fixed to the shaft; or

(3) By properly assembled anchor bolts, clamps, or wedges, provided that the attachment is a design feature of the hoist drum. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(b) A minimum of three full turns of wire rope shall be on the drum when the rope is extended to its maximum working length.

§ 56.19027 End attachment retermination.

Damaged or deteriorated wire rope shall be removed by cutoff and the rope reterminated where there is—

(a) More than one broken wire at an attachment;

(b) Improper installation of an attachment;

(c) Slippage at an attachment; or

(d) Evidence of deterioration from corrosion at an attachment.

§ 56.19028 End attachment replacement.

Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

§ 56.19030 Safety device attachments.

Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

HEADFRAMES AND SHEAVES

§ 56.19035 Headframe design.

All headframes shall be constructed with suitable design considerations to allow for all dead loads, live loads, and wind loads.

§ 56.19036 Headframe height.

Headframes shall be high enough to provide clearance for overtravel and safe stopping of the conveyance.

§ 56.19037 Fleet angles.

Fleet angles on hoists installed after November 15, 1979, shall not be greater than one and one-half degrees for smooth drums or two degrees for grooved drums.

§ 56.19038 Platforms around elevated head sheaves.

Platforms with toeboards and handrails shall be provided around elevated head sheaves.

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CONVEYANCES

§ 56.19045 Metal bonnets.

Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline-shaft with an angle of inclination of forty-five degrees from the horizontal, shall be covered with a metal bonnet.

§ 56.19049 Hoisting persons in buckets.

Buckets shall not be used to hoist persons except during shaft sinking operations, inspection, maintenance, and repairs.

§ 56.19050 Bucket requirements.

Buckets used to hoist persons during vertical shaft sinking operations shall—

(a) Be securely attached to a cross-head when traveling in either direction between the lower and upper crosshead parking locations;

(b) Have overhead protection when the shaft depth exceeds 50 feet;

(c) Have sufficient depth or a suitably designed platform to transport persons safely in a standing position; and

(d) Have devices to prevent accidental dumping where the bucket is supported by a bail attached to its lower half.

§ 56.19054 Rope guides.

Where rope guides are used in shafts other than in shaft sinking operations, the rope guides shall be a type of lock coil construction.

HOISTING PROCEDURES

§ 56.19055 Availability of hoist operator for manual hoists.

When a manually operated hoist is used, a qualified hoistman shall remain within hearing of the telephone or signal device at all times while any person is underground.

§ 56.19056 Availability of hoist operator for automatic hoists.

When automatic hoisting is used, a competent operator of the hoist shall be readily available at or near the hoisting device while any person is underground.

§ 56.19057 Hoist operator's physical fitness.

No person shall operate a hoist unless within the preceding 12 months he has had a medical examination by a qualified, licensed physician who shall certify his fitness to perform this duty. Such certification shall be available at the mine.

§ 56.19058 Experienced hoist operators.

Only experienced hoistmen shall operate the hoist except in cases of emergency and in the training of new hoistmen.

§ 56.19061 Maximum hoisting speeds.

The safe speed for hoisting persons shall be determined for each shaft, and this speed shall not be exceeded. Persons should not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.

§ 56.19062 Maximum acceleration and deceleration.

Maximum normal operating acceleration and deceleration shall not exceed 6 feet per second per second. During emergency braking, the deceleration shall not exceed 16 feet per second per second.

§ 56.19063 Persons allowed in hoist room.

Only authorized persons shall be in hoist rooms.

§ 56.19065 Lowering conveyances by the brakes.

Conveyances shall not be lowered by the brakes alone except during emergencies.

§ 56.19066 Maximum riders in a conveyance.

In shafts inclined over 45 degrees, the operator shall determine and post in the conveyance or at each shaft station the maximum number of persons permitted to ride in a hoisting conveyance at any one time. Each person shall be provided a minimum of 1.5 square feet of floor space.