

HIGH-TENSION STEEL BANDS:

Corresponding AAR Open Top Loading Rule 17

All banding used in securement of open top loads must be AAR approved. In addition, 1-1/4 in. and 2 in. banding must be marked with an identification number or name. Shippers must be in a position to show that banding used for securement meets AAR requirements.

High-tension bands less than .031-inch thickness must have a percentage of elongation in 6 inches from 5 to 12 percent inclusive. High-tension bands, .031-inch thickness or over, must have a percentage of elongation in 6 inches from 6.5 to 12 percent inclusive and ductility as contained in the ASTM Specification D3953 (latest edition).

High-tension bands encircling pile must be machine tensioned and sealed on top of the load, when possible, and located as far away from end of load as practical.

High-tension bands attached to stake pockets must be sealed no closer than 18 inches from top of stake pockets.

Free ends of bands must not extend more than 12 inches from seals.

When a long free span exists between points of attachment of high-tension bands, a dampening arrangement to prevent excessive vibration of bands must be applied midway between points of contact, by tying bands to sides of box, crate, lading, etc., with common annealed wire.

High-tension bands must be applied to packages and/or loads with markings facing outward.

The welding of high-tension bands is prohibited except where required in the process of manufacturing.

The use of second hand or reclaimed high-tension bands for such items specified in the rules and detailed figures are prohibited. A high-tension band that has been tensioned and is cut or broken becomes a secondhand band and must not be reused in the preparation of new loading or in the readjusting of loads.

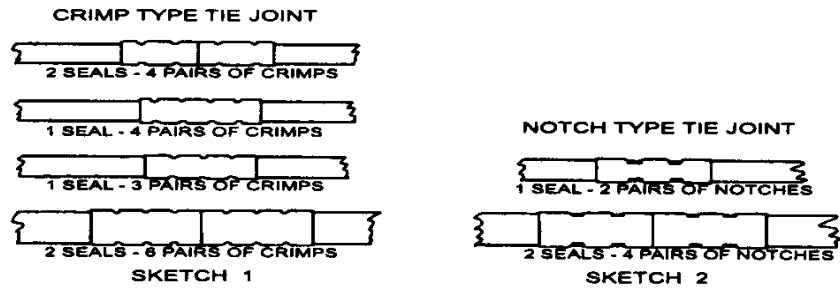
1-1/4 in. x .031 in. punched steel anchor banding, minimum breaking strength 3500 lbs. may be used to secure loose or boxed materials to car floors.

Effective October 1, 2008, notch-type joints may be used only for packaging, unitizing, interlacing, layer, or encircling band applications and may not be used to secure loads to the car or on bands encircling the entire load of a floating load design. Unless otherwise specified, applicable crimp-type joints may be used for all seal-joint banding applications for open top loading.

| HIGH TENSION BANDS | | | | | | | | | | |
|---|-------------------------------|----------------------------------|-------------------------------|--|---|------------------|------|-------|------|------|
| BREAKING STRENGTH AND SEALING | | | | | | | | | | |
| http://www.aar.com/standards/OpenTop.html | | | | | | | | | | |
| Width & Thickness Inches | Width & Thickness Millimetres | Minimum Breaking Strength-Pounds | Minimum Joint Strength-Pounds | Recommended Minimum No. of Pairs of Notches On Joint (except see note 2) | Recommended Minimum No. of Pairs of Crimps On Joint (except see note 2) | | | | | |
| Packages Bands | | | | Surface Finish All Types | Surface Finish | | | | | |
| | | | | | Uncoated Dry | Coated Not Waxed | | Waxed | | |
| 1/2 x .020 | | 1280 | 960 | 2 | NIL | NIL | | NIL | | |
| 5/8 x .020 | | 1600 | 1200 | 2 | NIL | NIL | | NIL | | |
| 3/4 x .020 | | 2000 | 1390 | 2 | NIL | NIL | | NIL | | |
| 3/4 x .022 | | 2280 | 1710 | 2 | NIL | NIL | | NIL | | |
| 3/4 x .023 | 19 x .56 | 2280 | 1710 | 2 | NIL | NIL | | NIL | | |
| 3/4 x .025 | | 2280 | 1710 | 2 | NIL | NIL | | NIL | | |
| 3/4 x .028 | | 2280 | 1710 | 2 | NIL | NIL | | NIL | | |
| 3/4 x .029 | | 2850 | 2140 | 2 | 2 | 3 | | 4 | | |
| 3/4 x .031 | 19 x .75 | 2850 | 2140 | 2 | 2 | 3 | | 4 | | |
| 3/4 x .035 | | 2850 | 2140 | 2 | 2 | 3 | | 4 | | |
| 1 1/4 x .020 | | 3200 | 2400 | 2 | NIL | NIL | | NIL | | |
| 3/4 x .044 | | 4050 | 3040 | 2 | 2 | 4 | | 4 | | |
| 3/4 x .050 | | 4050 | 3040 | 2 | 2 | 4 | | 4 | | |
| Securement Bands | | | | | | | | | | |
| 1 1/4 x .029 | | 4750 | 3565 | 2 | 3 | 3 | | 4 | | |
| 1 1/4 x .031 | 32 x .75 | 4750 | 3565 | 2 | 3 | 3 | | 4 | | |
| 1 1/4 x .035 | | 4750 | 3565 | 2 | 3 | 3 | | 4 | | |
| 1 1/4 x .044 | | 6750 | 5065 | 4 | 4 | 4 | | 6 | | |
| 1 1/4 x .050 | | 6750 | 5065 | 4 | 4 | 4 | | 6 | | |
| 1 1/4 x .065 | | 8900 | 6675 | NIL | 4 | 4 | | 6 | | |
| | | | | | Std. | Grit | Std. | Grit | Std. | Grit |
| 2 x .044 | | 10600 | 7950 | 4 | 4 | 4 | 4 | 4 | 6 | 4 |
| 2 x .050 | | 10600 | 7950 | 4 | 4 | 4 | 4 | 4 | 6 | 4 |
| 2 x .065 | | 13800 | 10350 | 4 | 4 | 4 | 4 | 4 | 6 | 4 |

Table of approved steel band manufacturers may be found on the AAR Web site at <http://www.aar.com/otlr.htm>

A sufficient number of seals must be applied to accommodate the recommended number of pairs of notches or crimps, see sketch 1 & 2.



The recommended minimum number of notches or crimps recommended in the above table is based on current general recommendations of high-tension banding manufacturers on the basis of tensioning and sealing tools being in proper operating condition.