



NON-METALLIC STRAPPING:

Corresponding AAR Open Top Loading Rule 19

All non-metallic strapping used in the securement of packages and/or load securement must be AAR approved and marked accordingly.

Table 19.1 Approved Type IV polyester strapping

(For the latest update to this table, go to the TTCI Web Site at <http://www.aar.com/standards/OpenTop.html>)

AAR ID	Manufacturer/ Distributor	Approved Through (Mo/Yr)	Approved Size in. (mm)								Approved Joint Type
			5/8 (15.9)	3/4 (19.1)	1 (25.4)	1 1/4 (32.0)					
			.035	.040	.040	.050	.040	.050	.032	.040	.050
11	Acme ^{a/}	5/13	X	X	X	X	X ^{b/}	X ^{b/}			H, F
11	Acme ^{a/}	12/15	X ^{c/}	X ^{c/}	X ^{c/}				X ^{b/}		H, F
11	Acme ^{a/}	5/15								X	F
82	Allstrap Strapping Systems LLC	2/14								X	F
58	DuBose Strapping Inc.	6/15	X	X	X	X	X ^{b/}	X ^{b/}		X ^{b/}	H, F
58	DuBose Strapping Inc.	6/15	X ^{c/}	X ^{c/}	X ^{c/}					X ^{b/c/}	H, F
59	Cyklop—Brazil	1/15	X	X	X						F, S
59	Cyklop—Germany	1/15	X	X	X						F, S
53	Polychem Corp.	9/13	X	X							H, F
53	Polychem Corp.	2/15			X	X					F
22	Samuel Strapping Sys. ^{d/}	9/15	X	X	X	X					H, F
22	Samuel Strapping Sys. ^{d/}	11/14			X ^{c/}		X ^{b/}			X ^{b/}	H, F
22	Samuel Strapping Sys. ^{d/}	1/13	X ^{c/}					X ^{b/}			H, F
22	Samuel Strapping Sys. ^{d/}	10/13		X ^{c/}							H, F
11	Signode ^{a/}	5/15								X	F
11	Signode ^{a/}	5/13	X	X	X	X	X ^{b/}	X ^{b/}			H, F
11	Signode ^{a/}	12/15	X ^{c/}	X ^{c/}	X ^{c/}					X ^{b/}	H, F
11	Strapex ^{a/}	5/13	X	X	X						H, F
11	Strapex ^{a/}	12/15	X ^{c/}	X ^{c/}	X ^{c/}					X ^{b/}	H, F
11	Strapex ^{a/}	5/15								X	F
14	Itistrap S.r.l.	12/14	X		X	X					F
57	Mallis Strapping Systems—USA	12/15	X	X	X						F
57	Mallis Strapping Systems—USA	7/14	X ^{e/}	X ^{e/}		X ^{b/}		X ^{b/}			H, F
51	Gerrard-Ovalstrapping ^{d/}	9/15	X	X	X	X					H, F
51	Gerrard-Ovalstrapping ^{d/}	11/14			X ^{c/}		X ^{b/}			X ^{b/}	H, F
51	Gerrard-Ovalstrapping ^{d/}	1/13	X ^{c/}					X ^{b/}			H, F
51	Gerrard-Ovalstrapping ^{d/}	10/13		X ^{c/}							H, F
60	Teufelberger GesmbH—Austria	10/12	X	X	X						H, F
63	Hangzhou Fuyang Hua Chen Plastic Co. Ltd. —China	12/15	X	X							F
64	Interpet S.A.	2/15	X ^{b/}	X	X	X ^{b/}	X ^{b/}	X ^{b/}			H, F
64	Interpet S.A.	3/15		X ^{c/}	X ^{c/}						H
65	U.S. Strapping Company	12/15	X	X	X ^{b/}						H, F
66	Strapack Embalagens Ltda.	1/14	X	X	X						F
67	NHXXL Synthetic Fibre Inc.	7/13	X	X							F
67	NHXXL Synthetic Fibre Inc.	2/15			X					X	F
68	Fromm Plastics GmbH Germany	2/15	X ^{b/}	X ^{b/}	X	X		X ^{b/}	X ^{b/}	X ^{b/}	H, F
68	Fromm Plastics Asia Co., LTD.	2/15	X ^{b/}	X ^{b/}	X	X		X ^{b/}	X ^{b/}	X ^{b/}	H, F
27	Green Span Packaging System - Indonesia	12/12	X								F
12	Haining Tricot Plastic	1/13	X	X							F
40	Yongheng Polyester Strap Co. - China	9/14	X								F

H = Heat-sealed (hot knife) joint

F = Friction-welded joint

S = Seal, approved metal (metal seal joints must be approved systems)

Strapping in the table above may be used only where specified in an approved figure or as an allowable substitution for steel banding under the applicable figures in Sect. 5.

Strapping in the table above is for smooth-sided polyester plastic type strap only unless otherwise denoted.

^{a/}Associated with Illinois Tool Works (ITW) as a manufacturer employing common production procedures and specifications

^{b/}Friction-weld only approved joint type

^{c/}Embossed-type strap

^{d/}Associated with Samuel Manutech Strapping Companies as a manufacturer employing common production procedures and specifications.

^{e/}Heat-sealed only approved joint type

Breaking strength of type IV polyester (PET) strapping

<http://www.aar.com/standards/OpenTop.html>

Nominal Width		Nominal Thickness		Minimum Break Strength (lb) ^{a/}	Minimum Joint Strength (lb)
in.	(mm)	in.	(mm)		
5/8	(15.9)	.035	(0.89)	1300	975
5/8	(15.9)	.040	(1.02)	1500	1125
3/4	(19.1)	.040	(1.02)	1750	1313
3/4	(19.1)	.050	(1.27)	2250	1688
3/4	(19.1)	.055	(1.40)	2400	1800
3/4	(19.1)	.060	(1.53)	2500	1875
1	(25.4)	.040	(1.02)	2300	1725
1	(25.4)	.050	(1.27)	2800	2100
1 1/4	(32.0)	.032	(0.82)	2250	1688
1 1/4	(32.0)	.040	(1.02)	2800	2100

Allowable range of elongation at break is from 5% to 25%.

19.2 Approved Type 1A bonded/woven polyester cord strapping

For the latest update to this table, go to the TTCI Web site at
<http://www.aar.com/standards/OpenTop.html>

Manufacturer/ Distributor	Approved through (Mo/Yr)	Width in. (mm) and Grade						Approved Joint Type
		Grade 3 ^{a/}		Grade 4 ^{b/}		Grade 5 ^{a/, b/}		
		AAR ID (Part No.)		AAR ID (Part No.)		AAR ID (Part No.)		
		MBS (lb) 1,585	MBS (lb) 2,100	MBS (lb) 3,285	MBS (lb) 4,400	MBS (lb) 4,200	MBS (lb) 5,400	
Caristrap Weatherguard	04/15	CW-60 WGHD		CW-105 WOJ			CW-125 WOJ	Buckle
Caristrap Weatherguard	05/15			CW-105 WGSD				Buckle
Carolina Strapping GatorSTRAP	06/13	AAR-80 CS-2025		AAR-80 CS-2400 ^{c/}				Buckle
Carolina Strapping MakoSTRAP	06/15			AAR-80 CS-5080				Buckle
ITW/Signode Avistrap	05/14	AAR-11		AAR-11			AAR-11	Buckle
Pacific Strapping	06/13			AAR-79 (P104)				Buckle
Southern Strapping	07/15			AAR-78 (AW-105)				Buckle
Southern Strapping	07/15			AAR-78 (TY-105)			AAR-78 (AW-125)	Buckle
TAPEX American Corp.	07/14	AAR-1 (65WLMD)						Buckle (170) B6-OT
TAPEX American Corp.	07/14			AAR-1 (105WXH)				Ladder Buckle FCT-10 (FLB)
TAPEX American Corp.	07/14						AAR-1 (125WXH)	Ladder Buckle FCT-12 (FLB)
Cordstrap USA Inc.	08/14			AAR-77 (CC105)				Buckle CB10
R.C. Packaging Systems Inc.	01/15	AAR-38		AAR-38			AAR-38	Buckle
R.C. Packaging Systems Inc.	12/15			AAR-38 (RC105)				Buckle

Approved joint type

Non-metallic Strapping is acceptable for use as a substitution for steel package bands up to and including 3/4 in. × .028 in. only where substitution is specifically permitted in lumber figures.

Strapping is acceptable for use as a substitution for steel bands up to and including 1 1/4 in. × .031 in. under applicable lumber figures where substitution is specifically permitted, unless otherwise specified.

Carolina Strapping CS-2040 is approved only as a substitution for steel package bands up to and including 1 1/4 in. × .025 in. where substitution is specifically permitted in lumber figures.

19.3 Approved Type 1A polyester strapping Grades 6 and 7
For the latest update to this table, go to the TTCI Web site at
<http://www.aar.com/standards/OpenTop.html>

Manufacturer/ Distributor	Approved through (Mo/Yr)	Width in. (mm) and Grade				Approved Joint Type Hook/Buckle	Approved Joint Type Buckle
		1 5/8 (41.3) Grade 6		1 5/8 (41.3) Grade 7			
		AAR ID	MBS lb (N) 7,700 (34,265)	AAR ID	MBS lb (N) 11,000 (48,930)		
Cordstrap USA Inc.	3/14	AAR-77	X	AAR-77	X	CDBH12 or CDBH12- Extended	HDB12N, DLB12N, or DLB12N200
Carolina Strapping	9/13	AAR-80	X	AAR-80	X	CSB9075	CSB9090
ITW/Signode Avistrap	10/13	AAR-11	X	N/A	N/A	FCH-13 (HKB)	FCT-15
Southern Strapping	5/14	AAR-78	X	AAR-78	X	-	SSLB 40
TAPEX American Corp.	7/14	AAR-1 (135WXH)	X	N/A	N/A	FCH-13 (HKB)	FCT-13 (FLB)
Caristrap Int'l	1/15	Carilash AG40	X	N/A	N/A	-	BN1431
Caristrap Int'l	12/15			Carilash AG50	X	-	BN1431

Strapping in this table is acceptable for use as substitution for ALL 2-in. x 0.044-in. and smaller steel bands indicated in ALL pipe loading figures in Section 2 and for ALL concrete loading figures in Section 4. It also is acceptable for use as substitution for steel bands up to and including 1 ¼ in. x .031 in. under applicable lumber figures in Section 5, unless otherwise specified.

Nonmetallic strapping may not be used on a General Rules load.

Strapping must be applied, tensioned, and sealed consistent with AAR rules and approved items and in accordance with the recommendations and requirements of the manufacturer of the strapping and strapping equipment.

Strapping must be applied with AAR markings facing away from the load to which it is applied.

Except as indicated in Table above, 1 1/4-in. high tension bands may be substituted by an equal number of Type 1A, Grade 6, non-metallic strapping for all figured loads.

Except as indicated in Table above, 2-in. high-tension bands may be substituted by an equal number of Type 1A, Grade 7, non-metallic strapping for all figured loads

Ladder Joints—Type 1A Strap Grades 6 and 7

Strapping listed in Table above must be tensioned with the proper tensioning tool and sealed with the appropriate buckle in accordance with the manufacturer's recommendations. Illustration below shows the proper application of the HDB12N or DBL-12N (1 5/8 in.) buckle.



Step 1. Feed strapping up through center gap

Step 2. Fold strapping over end and up through bottom gap

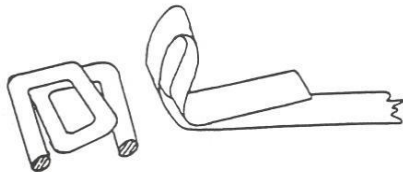
Step 3. Fold end of strap back down through center gap

Buckle Joints—Type 1A Strap Grades 3, 4, and 5

Strapping must be tensioned with the proper tensioning tool and sealed with the appropriate buckle in accordance with the manufacturer's recommendations. Following are illustrations depicting the proper application of the CB-10 (1-1/4 in.) buckle.

STEP 1

Form a loop in one end of strap. Buckle must be applied with flat surface toward load



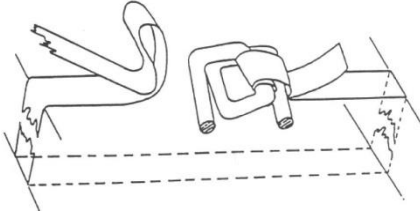
STEP 2

Pass loop through center of buckle. Pass doubled loop over inner bar and slip loop over outer arm.



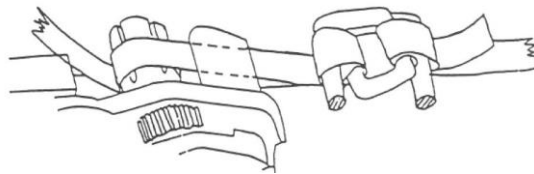
STEP 3

Position strap around lading and attach free end of strap to buckle as shown in STEP 2.



STEP 4

Pull end of strap by hand to remove slack. Complete tensioning of strap using the proper tensioning tool.



STEP 5

Strapping must be tensioned with the proper tensioning tool and sealed with the appropriate buckle in accordance with the manufacturer's recommendations. Strapping may not be reused.

METHOD OF IDENTIFICATION AND MARKING

All bands used for load securements or packaging, as specified under appropriate figures or in the General Rules, are to be marked to indicate manufacturer's or supplier's name and the letters "AAR" to show compliance with the requirements of the AAR Rules Governing the Loading of Commodities on Open Top Cars.

Markings shall consist of the letters "AAR", the manufacturer or distributor's name, or abbreviated name, or registered trademark, or symbol, or AAR code consisting of two digits. Markings shall be clearly legible with characters not less than 1/8 in. high for steel die imprint and not less than 1/4 in. high for paint, ink surface printing or embossing.

Markings applied to high-tension bands manufactured to metric dimensions must be followed by the letter "M" of the same size as the original marking.

The Committee shall have the authority to require retesting of any AAR approved banding if and when it is considered necessary.