Designation: D6256/D6256M – 99 (Reapproved 2005)

Standard Specification for Wood-Cleated Shipping Boxes with Skidded, Load-Bearing Bases[1]

This standard is issued under the fixed designation D6256/D6256M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the fabrication of new wood-cleated boxes with skidded, load-bearing bases. Boxes covered by this specification are designed for nonregulated domestic and overseas shipment of loads less than 2500 lb [1134 kg] and not greater than 16 ft [4877 mm] in length (see 9.1). Regulated commodities shipments may require better boxes than those specified herein (see 9.2).

1.2 The performance of wood-cleated boxes with skidded, load-bearing bases is dependent on their fabricated components; therefore, a variety of types, styles, and classes reflecting varied performance are specified. This specification, however, does not cover box performance under all atmosphere, handling, shipping and storage conditions.

1.3 If the use of other construction methods or techniques are acceptable and permitted (see 5.1.18), the resulting packaging systems shall be of equal or better performance than would result from the use of these specified materials and procedures. The appropriate distribution cycle specified in Practice D4169 can be used to develop comparative procedures and criteria.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the standard. See IEEE/ASTM SI 10 for conversion of units.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of the standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D996 Terminology of Packaging and Distribution Environments

D1990 Practice for Establishing Allowable Properties for Visually-Graded Dimension Lumber from In-Grade Tests of Full-Size Specimens

D3951 Practice for Commercial Packaging

D3953 Specification for Strapping, Flat Steel and Seals

D4169 Practice for Performance Testing of Shipping Containers and Systems

D4727/D4727M Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes

D6251/D6251M Specification for Wood-Cleated Panelboard Shipping Boxes

D6039/D6039M Specification for Open and Covered Wood Crates

D6199 Practice for Quality of Wood Members of Containers and Pallets

F1667 Specification for Driven Fasteners: Nails, Spikes, and Staples

IEEE/ASTM SI 10 Standard for Use of the International System of Units (SI): The Modern Metric System

2.2 *Federal Specifications:*[3]

TT-W-572 Wood Preservative: Water-Repellent

PPP-B-601 Boxes, Wood, Cleated-Plywood

2.3 *Code of Federal Regulations:*[4]

CFR Parts 107–180 Title 49, Hazardous Materials Regulations

[1] This specification is under the jurisdiction of ASTM Committee D10 on Packaging and is the direct responsibility of Subcommittee D10.12 on Shipping Containers, Crates, Pallets, Skids and Related Structures.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from the Federal Supply Service Bureau, Specification Section, Suite 8100, 480 L'Enfant Plaza, SW, Washington, DC 20408.

[4] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

2.4 *APA—The Engineered Wood Association Standard:*[5]
PS1-95 Construction and Industrial Plywood
2.5 *American Society of Mechanical Engineers (ASME) Standards:*[6]
B18.2.1 Square and Hex Bolts and Screws—Inch Series
B18.2.2 Square and Hex Nuts (Inch Series)
B18.2.3.8M Metric Hex Lag Screws
B18.2.4.2M Metric Hex Nuts, Style 2
B18.5 Round Head Bolts (Inch Series)
B18.5.2.2M Metric Round Head Square Neck Bolts
B18.22M Metric Plain Washers
B18.22.1 Plain Washers
2.6 *Hardwood Plywood and Veneer Association Standard:*[7]
HPVA HP-1-1994 Hardwood and Decorative Plywood
2.7 *National Motor Freight Traffic Association Standard:*[8]
National Motor Freight Classification
2.8 *Uniform Classification Committee Standard:*[9]
Uniform Freight Classification

3. Terminology

3.1 *Definitions*—General definitions for packaging and distribution environments are found in Terminology D996.

4. Classification

4.1 *Type*:
4.1.1 *Type I*—Plywood base (see Fig. 1).
4.1.2 *Type II*—Lumber base (see Fig. 1).
4.2 *Class*:
4.2.1 *Class 1*—Domestic.
4.2.2 *Class 2*—Overseas.
4.3 *Style*:

[5] Available from APA–The Engineered Wood Association, 7011 S. 19th St., P.O. Box 11700, Tacoma, WA 98411–0700.
[6] Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, American National Standard Institute (ANSI) adopted.
[7] Available from Hardwood Plywood and Veneer Association, P.O. Box 2789, Reston, VA 22090–0789, American National Standards Institute (ANSI) adopted.
[8] Available from National Motor Freight Traffic Association, 2200 Mill Rd., Alexandria, VA 22302.
[9] Available from the Uniform Classification Committee, Tariff Publishing Officer, 151 Ellis St. N.E., Suite 200, Atlanta, GA 30335.

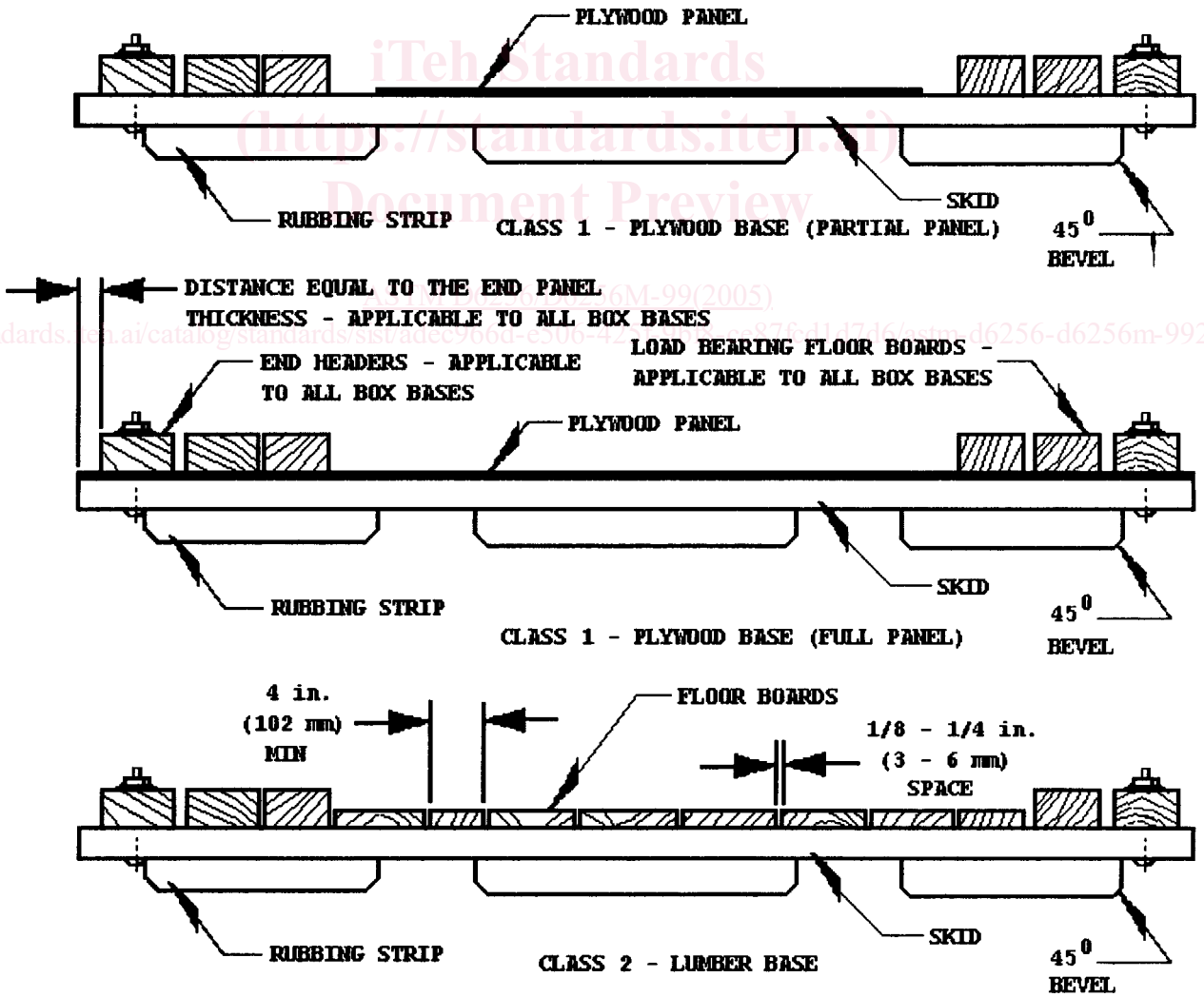


FIG. 1 Base Types

4.3.1 *Style A*—Regular cleating arrangement (see Fig. 2).

4.3.2 *Style B*—Lock corner cleating arrangement (see Fig. 2).

4.4 *Treatment*:

4.4.1 *Treatment A*—Without preservative treatment.

4.4.2 *Treatment B*—With preservative treatment.

5. Ordering Information

5.1 Purchasers should select the preferred permitted options and include the following information in procurement documents:

5.1.1 Specification title, number, and date.

5.1.2 Box type, style, and class required (see Section 4).

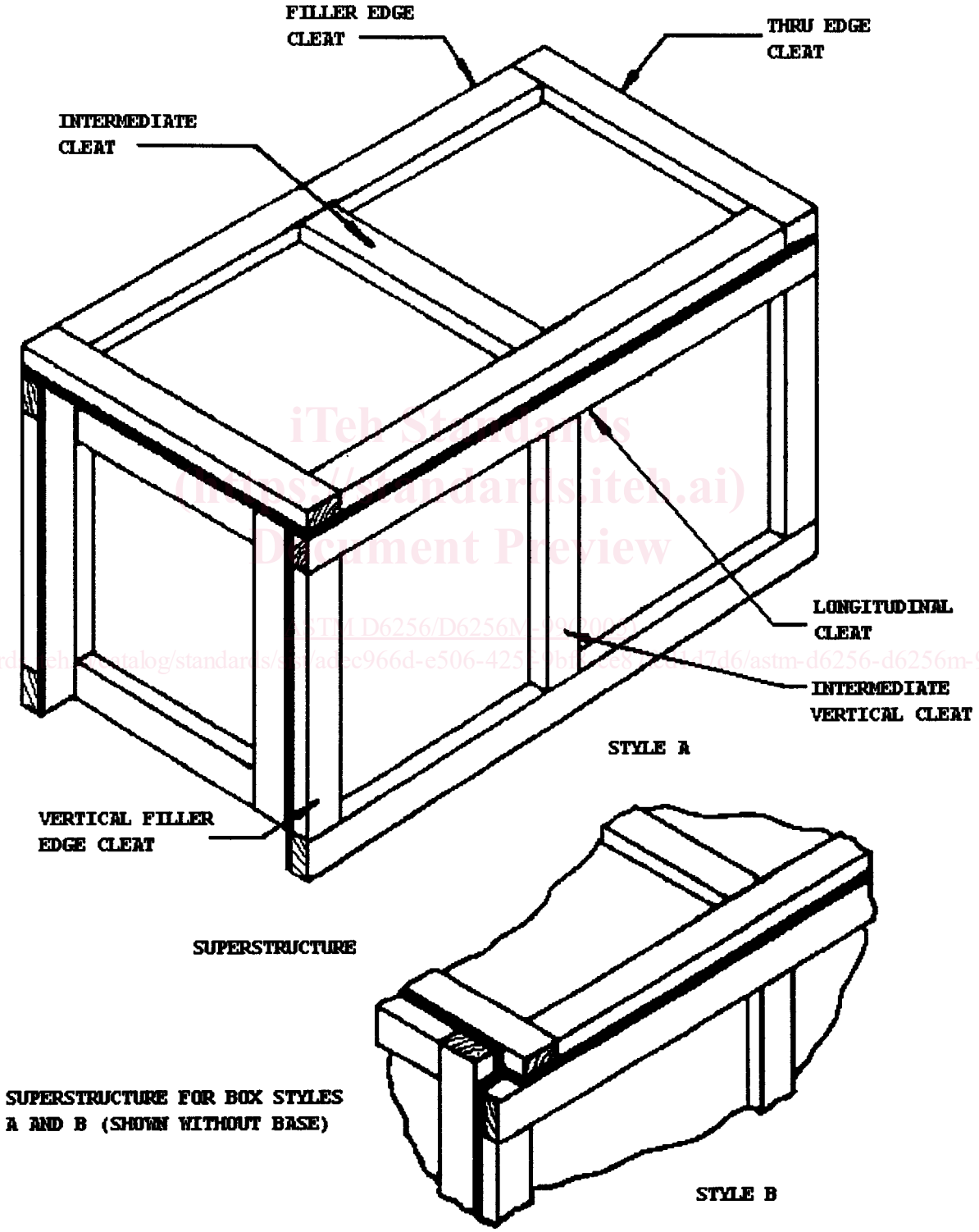
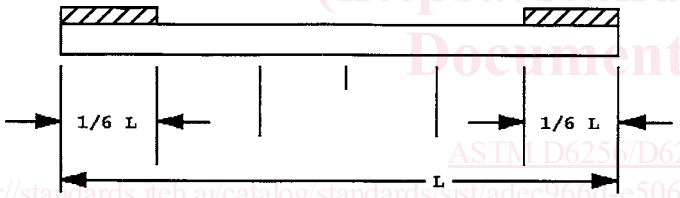
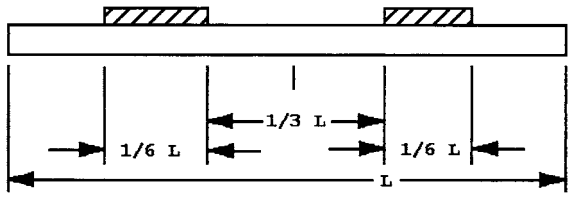


FIG. 2 Box Styles

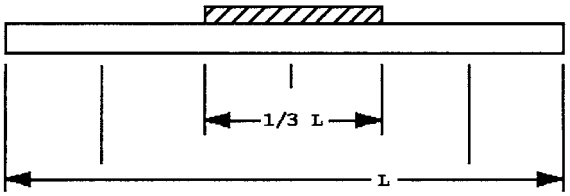
5.1.3 Type of base flooring (see Section 4).
5.1.4 When plywood is sanded or treated (see 4.4 and 6.1.2).
5.1.5 If beveling of skids is required (see 6.2).
5.1.6 Contents weight (see Table 1).
5.1.7 If rubbing strips are required (see 6.2.4).
5.1.8 Type of superstructure (see 6.2.5).
5.1.9 Joist requirement (see 6.2.5.2).
5.1.10 Box inside dimensions specified in inches [millimeters] to the nearest ½ in. [13 mm] in order of length by width by height (see 7.1).
5.1.11 Whether boxes are to be shipped assembled or knocked-down (see 7.4.2 and 8.1).
5.1.12 When corner straps are required (see 7.4.2.4).
5.1.13 Whether ventilation holes or slots are required (see 7.5).
5.1.14 Whether special packing is required (see 8.3).
5.1.15 Whether special marking is required (see 8.3).
5.1.16 Load condition (see Figs. 3 and 4).
5.1.17 Whether a regulated materials box is required (see 9.2).
5.1.17.1 Physical characteristics of load, including contents dimensions, weight, and density.
5.1.17.2 Whether a test report is required.
5.1.18 Whether other construction methods or techniques are acceptable and permitted (see 1.3).
5.1.18.1 Whether proof that other construction methods or techniques are acceptable (see 1.3) is required.



LOAD CONDITION A
LOAD BEARING POINTS ON OUTER ONE-SIXTHS OF SKID LENGTH

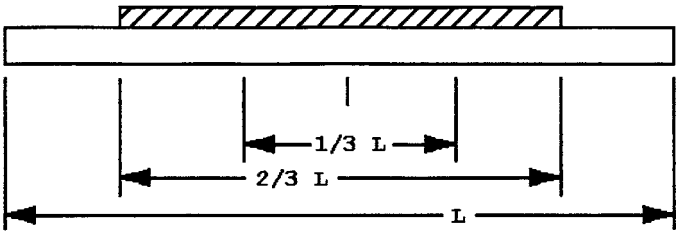


LOAD CONDITION B
LOAD BEARING POINTS OUTSIDE OF CENTRAL ONE-THIRD OF SKID LENGTH BUT NOT IN OUTER ONE-SIXTHS OF SKID LENGTH

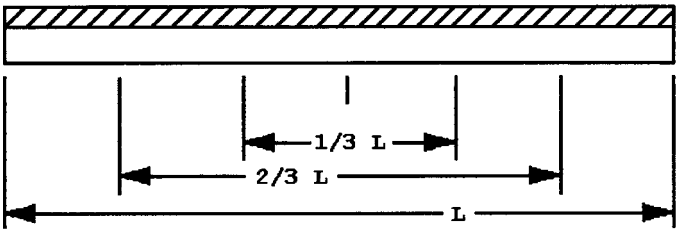


LOAD CONDITION C
LOAD BEARING POINTS WITHIN CENTRAL ONE-THIRD OF SKID LENGTH OR LOAD EVENLY DISTRIBUTED WITHIN CENTRAL ONE-THIRD OF SKID LENGTH

FIG. 3 Load Conditions A, B, and C



LOAD CONDITION D
LOAD EVENLY DISTRIBUTED OVER MORE THAN CENTRAL ONE-THIRD OF SKID LENGTH BUT NOT OVER MORE THAN CENTRAL TWO-THIRDS OF SKID LENGTH



LOAD CONDITION E
LOAD EVENLY DISTRIBUTED OVER MORE THAN CENTRAL TWO-THIRDS OF SKID LENGTH

FIG. 4 Load Conditions D and E

6. Materials and Manufacture

6.1 *Materials*—It is encouraged that recycled material be used when practical. All recovered, recycled, or virgin materials used in box manufacturing shall meet the requirements of this specification and the referenced documents. In addition, materials shall not affect or be affected by the product being packed. Fiberboard panelboard shall have no more than 40 % post-consumer recovered material.

6.1.1 *Lumber*—Lumber for all components shall conform to Practice D6199. Lumber for superstructure components shall conform to the requirements for cleated panel boxes, Specification D6251/D6251M, and lumber for base components to those for crates, Specification D6039/D6039M, and shall conform to commercial standards in accordance with Practice D1990.

6.1.2 *Plywood*—Unless otherwise specified, plywood used in the fabrication of Class 1 boxes shall conform to ANSI/HPVA HP-1-1994, Type II, Grade 3-4; or APA PS1-95, Interior, Grade C-D. Plywood used to fabricate Class 2 boxes shall conform to ANSI/HPVA HP-1-1994, Type I, Grade 3-4; APA PS1-95, Interior with Exterior Glue; or APA PS1-95, Exterior, Grade C-C. Plywood is furnished unsanded and untreated (see 5.1.4). Water repellent conforming to TT-W-572, or a commercial equivalent, shall be used when treatment is specified (see 4.4 and 5.1.4).

6.1.3 *Fiberboard*—Unless otherwise specified, fiberboard shall conform to Specification D4727/D4727M. Class 1 boxes shall be fabricated from Type SF, Class – Domestic, Grade 500 or 600. Class 2 boxes shall be fabricated from Type SF, Class – Weather-Resistant, Grade V2s, V3s, or V4s.

6.1.4 *Fasteners*—Nails and staples shall be steel and conform to Specification F1667. Unclinched nails shall be cement-coated or chemically etched. Lag bolts shall be in accordance

with ASME B18.2.1 (B18.2.3.8M). Round head square neck bolts, black oxide-coated, shall be in accordance with ASME B18.5 (B18.5.2.2M). Mating nuts shall be ASME B18.2.2 (B18.2.4.2M). Lag and round head square neck bolt washers shall conform to ASME B18.22.1 (B18.22M).

TABLE 1 Skid Nominal Sizes[A] and Maximum Lengths

Contents Weight lb [kg]	Load[B] Condition	Nominal Sizes[A] in. [mm]					
		2 by 4 [38 by 89]	2 by 6 [38 by 140]	2 by 8 [38 by 184]	4 by 4 [89 by 89]	4 by 6 [89 by 140]	6 by 6 [140 by 140]
		Skid Max Length ft [mm]					
0–100 [0–45]	A	16 [4877]	. . .	. . .	. . .	. . .	. . .
	B	16 [4877]	. . .	. . .	. . .	. . .	. . .
	C	16 [4877]	. . .	. . .	. . .	. . .	. . .
	D	16 [4877]	. . .	. . .	. . .	. . .	. . .
	E	16 [4877]	. . .	. . .	. . .	. . .	. . .
101–200 [45.8–90.7]	A	16 [4877]	. . .	. . .	. . .	. . .	. . .
	B	16 [4877]	. . .	. . .	. . .	. . .	. . .
	C	16 [4877]	. . .	. . .	. . .	. . .	. . .
	D	16 [4877]	. . .	. . .	. . .	. . .	. . .
	E	16 [4877]	. . .	. . .	. . .	. . .	. . .
201–400 [91.2–181.4]	A	11 [3353]	15 [4572]	16 [4877]	. . .	. . .	. . .
	B	13 [3962]	16 [4877]	. . .	. . .	. . .	. . .
	C	8 [2438]	12 [3658]	16 [4877]	. . .	. . .	. . .
	D	10 [3048]	15 [4572]	16 [4877]	. . .	. . .	. . .
	E	13 [3962]	16 [4877]	. . .	. . .	. . .	. . .
401–600 [181.9–272.2]	A	8 [2438]	11 [3353]	14 [4267]	16 [4877]	. . .	. . .
	B	9 [2743]	14 [4267]	16 [4877]	. . .	. . .	. . .
	C	5 [1524]	8 [2438]	11 [3353]	16 [4877]	. . .	. . .
	D	7 [2134]	10 [3048]	14 [4267]	16 [4877]	. . .	. . .
	E	9 [2743]	14 [4267]	16 [4877]	. . .	. . .	. . .
601–800 [272.6–363]	A	7 [2134]	9 [2743]	11 [3353]	16 [4877]	. . .	. . .
	B	7 [2134]	10 [3048]	14 [4267]	16 [4877]	. . .	. . .
	C	4 [1219]	6 [1829]	8 [2438]	16 [4877]	. . .	. . .
	D	5 [1524]	8 [2438]	10 [3048]	16 [4877]	. . .	. . .
	E	7 [2134]	10 [3048]	14 [4267]	16 [4877]	. . .	. . .
801–1000 [363.3–453.6]	A	6 [1829]	8 [2438]	10 [3048]	16 [4877]	. . .	. . .
	B	5 [1524]	8 [2438]	11 [3353]	16 [4877]	. . .	. . .
	C	3 [914]	5 [1524]	7 [2134]	16 [4877]	. . .	. . .
	D	4 [1219]	6 [1829]	8 [2438]	16 [4877]	. . .	. . .
	E	5 [1524]	8 [2438]	11 [3353]	16 [4877]	. . .	. . .

TABLE 1 *Continued*

Contents Weight lb [kg]	Load[B] Condition	Nominal Sizes[A] in. [mm] — Skid Max Length ft [mm]: 2 by 4 [38 by 89]	2 by 6 [38 by 140]	2 by 8 [38 by 184]	4 by 4 [89 by 89]	4 by 6 [89 by 140]	6 by 6 [140 by 140]
1001–1200 [454–544.3]	A	6 [1829]	7 [2134]	8 [2438]	16 [4877]	...	...
	B	4 [1219]	7 [2134]	9 [2743]	16 [4877]	...	...
	C	3 [914]	4 [1219]	5 [1524]	13 [3962]	16 [4877]	...
	D	3 [914]	5 [1524]	7 [2134]	16 [4877]	...	...
	E	4 [1219]	7 [2134]	9 [2743]	16 [4877]	...	...
1201–1400 [544.8–635]	A	5 [1524]	7 [2134]	8 [2438]	14 [4267]	16 [4877]	...
	B	5 [1524]	6 [1829]	8 [2438]	16 [4877]	...	...
	C	0 [0]	4 [1219]	5 [1524]	11 [3353]	16 [4877]	...
	D	3 [914]	4 [1219]	6 [1829]	14 [4267]	16 [4877]	...
	E	5 [1524]	6 [1829]	8 [2438]	16 [4877]	...	...
1401–1600 [635.5–725.7]	A	5 [1524]	6 [1829]	7 [2134]	13 [3962]	16 [4877]	...
	B	3 [914]	5 [1524]	7 [2134]	16 [4877]	...	...
	C	0 [0]	3 [914]	4 [1219]	18 [5486]	15 [4572]	16 [4877]
	D	3 [914]	4 [1219]	5 [1524]	12 [3658]	16 [4877]	...
	E	3 [914]	5 [1524]	7 [2134]	16 [4877]	...	...
1601–1800 [726.2–816.5]	A	5 [1524]	6 [1829]	7 [2134]	12 [3658]	16 [4877]	...
	B	3 [914]	5 [1524]	6 [1829]	15 [4572]	16 [4877]	...
	C	0 [0]	3 [914]	4 [1219]	9 [2743]	14 [4267]	16 [4877]
	D	0 [0]	3 [914]	4 [1219]	11 [3353]	16 [4877]	...
	E	3 [914]	5 [1524]	6 [1829]	15 [4572]	16 [4877]	...
1801–2000 [816.9–907.2]	A	4 [1219]	5 [1524]	6 [1829]	11 [3353]	15 [4572]	16 [4877]
	B	3 [914]	4 [1219]	5 [1524]	13 [3962]	16 [4877]	...
	C	0 [0]	0 [0]	3 [914]	8 [2438]	12 [3658]	16 [4877]
	D	0 [0]	3 [914]	4 [1219]	10 [3048]	15 [4572]	16 [4877]
	E	3 [914]	4 [1219]	5 [1524]	13 [3962]	16 [4877]	...
2001–2200 [907.6–997.9]	A	4 [1219]	5 [1524]	6 [1829]	10 [3048]	14 [4267]	16 [4877]
	B	0 [0]	4 [1219]	5 [1524]	12 [3658]	16 [4877]	...
	C	0 [0]	0 [0]	3 [914]	7 [2134]	11 [3353]	16 [4877]
	D	0 [0]	3 [914]	4 [1219]	9 [2743]	14 [4267]	16 [4877]
	E	0 [0]	4 [1219]	5 [1524]	12 [3658]	16 [4877]	...
2201–2400 [998.4–1088.6]	A	4 [1219]	5 [1524]	6 [1829]	10 [3048]	13 [3962]	16 [4877]
	B	0 [0]	3 [914]	4 [1219]	11 [3353]	16 [4877]	16 [4877]
	C	0 [0]	0 [0]	3 [914]	7 [2134]	10 [3048]	16 [4877]