

American National Standard



**National
Waste & Recycling
AssociationSM**

Collect. Recycle. Innovate.

*for Equipment Technology and
Operations for Wastes and
Recyclable Materials ---*

***Mobile Wastes and Recyclable
Materials Collection,
Transportation, and
Compaction Equipment •
Safety Requirements***

NATIONAL WASTE & RECYCLING ASSOCIATION
1550 CRYSTAL DRIVE • SUITE 804 • ARLINGTON, VA 22202
TELEPHONE: 202-244-4700 • FAX: 202-966-4824

Z245.1-2017

American National Standard
for Equipment Technology and Operations for Wastes and
Recyclable Materials-

Mobile Wastes and Recyclable Materials
Collection, Transportation, and
Compaction Equipment –

Safety Requirements

Secretariat
National Waste & Recycling Association

Approved January 9, 2017
American National Standards Institute, Inc.

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

Approval of an American National Standard requires verification by the American National Standards Institute (ANSI) that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

ANSI does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the ANSI. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, 11 W. 42nd Street, New York, New York, 10036, Phone: 212-642-4900, Fax: 212-398-0023.ANSI.

Published by
National Waste and Recycling Association
1550 Crystal Drive, Suite 804
Arlington, Virginia 22202

Copyright © 2017 by National Waste and Recycling Association
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission from the publisher.

Printed in the United States of America

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

Contents

Foreword	(This foreword is not part of American National Standard Z245.1)	iii
0	Introduction.....	1
1	Scope.....	2
2	Normative references	3
3	Definitions	4
4	Manufacture, mounting, installation, reconstruction, and modification	20
5	Instructions for operation and maintenance.....	22
6	Operational requirements – employer responsibilities	24
7	Operational requirements – employee responsibilities	28
8	Safety signs for mobile equipment.....	34
9	General mobile equipment safeguards and features	46
10	Specific mobile equipment safeguards and features	55
11	Vehicle conspicuity	59
12	Minimum requirements for a dual drive position.....	66
13	Safety program and employee training	68
Annex A	(Informative)	70
Annex B	(Informative)	71
Annex C	(Informative)	72

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

Table of Figures

Figure 1	Front Loading Compaction Equipment	11
Figure 2	Hoist-type equipment	11
Figure 3	Mechanized side-loader.....	12
Figure 4	Recycling collection vehicles	12
Figure 5	Rear-loading compacting equipment	13
Figure 6	Hydraulic cart lifter	13
Figure 7a	Winch System	14
Figure 7b	Hydraulic (reeving) system	14
Figure 7c	Container operation of rear-loading compacting equipment.....	15
Figure 7d	Hydraulic dumping system	15
Figure 7e	Rear-loader container latchup mechanism	16
Figure 8	Side-loading compaction equipment.....	16
Figure 9	Automated side-loader	17
Figure 10	Tilt-frame equipment	18
Figure 11	Refuse transfer trailer.....	19
Figure 12	Grapple loader and grapple truck.....	19
Figure 13	Mobile compactor rear-riding step configuration.....	50
Figure 14	Static Vertical Load.....	52
Figure 15	Toe Clearance	53
Figure 16	Horizontal Step-Across Distance.....	53
Figure 17	Handhold Designs	54
Figure 18	Front-loader conspicuity markings	60
Figure 19	Side-loader (rectangular) conspicuity markings	61
Figure 20	Side-loader (cylindrical) conspicuity markings	62
Figure 21	Rear-loader conspicuity markings.....	63
Figure 22	Roll-off (hoist-type) vehicle markings	64
Figure 23	Hoist-type (“lugger”) conspicuity markings	65
Figure 24	Grapple loader truck conspicuity markings.....	65
Figure B1	Front-loader Hopper and Fork Compatibility Dimensions	71

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

Foreword (This foreword is not part of American National Standard Z245.1)

This revised American National Standard (ANS) applies to the construction, reconstruction, modification, care, maintenance, operation, and use of mobile waste or recyclable materials collecting, transportation and compacting equipment. This standard identifies requirements for refuse collecting and compacting equipment mounted on refuse truck chassis: rear-loading, front-loading, and side-loading compacting equipment; roll-off and hoist-type equipment; grapple vehicles; satellite vehicles; waste transfer trailers; recycling collection vehicles; and mobile equipment with container and cart lifting equipment.

This standard does not apply to the truck chassis/cab upon which the waste or recyclable materials collecting and compacting equipment is mounted except for certain provisions as stated in Section 10.1.1 and Section 12.

The first and second revisions of this standard (ANSI Z245.1-1975 and ANSI Z245.1-1984) addressed mobile collecting and compacting equipment and stationary compacting equipment. The third, fourth, fifth, sixth (including the provisional amendment), and current revision ((ANSI Z245.1-1992, ANSI Z245.1 –1999, ANSI Z245.1 –2008, ANSI Z245.1-2012, ANSI Z245.1-2012 (PA)) contain requirements for mobile collecting and mobile compacting equipment only. Requirements for newly manufactured and remanufactured stationary compactors are contained in *American National Standard for - Stationary Compactors - Safety Requirements*, ANSI Z245.2-1992 and later revisions, and pertain to stationary compactors manufactured after the effective date of that standard. Stationary compactors manufactured before that date are still covered by ANSI Z245.1-1975 and ANSI Z245.1-1984.

This standard revises ANSI Z245.1-2012. Provisions of ANSI/NW&RA Z245.1 (PA) approved August 2, 2014 remain in effect and are immediately applicable to all new mobile collecting and compacting equipment.

Effective dates for ANSI Z245.1-2017:

24 months after the approval date of this standard for all new mobile collecting and mobile compacting equipment.

Sections 4.5, 4.6, 5.1.2, and Sections 6, 7 and 13 shall apply for all existing mobile equipment 24 months after the approval date of this standard regardless of the date of manufacture.

Requests for interpretation and suggestions for improvement of this American National Standard are invited. They should be sent to the Secretary, ASC Z245, c/o National Waste and Recycling Association, 1550 Crystal Drive, Suite 804, Arlington, Virginia 22202 or emailed to secretary@wasterecycling.org.

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

This revised American National Standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Equipment Technology and Operations for Wastes and Recyclable Materials, Z245. Committee approval of this standard does not necessarily imply that all committee members voted for its approval. Two Z245 Committee's approved this revised standard, or portions thereof. At the time it approved this revised standard, the Z245 Committee had the following members:

Susan Eppes, Chairman
Jerald Zanzig, Vice-chair
Bret Biggers, Secretary

Alan Bortnick	Big Stuff, Inc.
Nathan Brainard	Insurance Office of America
Ed Correale	PTR Baler & Compactor Company
Steve David	Palfinger Omaha Standard, LLC
Ralph Ford	Waste Industries USA
Denny Gill	Ameri-Kan
John Gilstrap	Institute of Scrap Recycling Industries, Inc.
Mark Johnson	Republic Services, Inc.
J Roger Lackore	Oshkosh Corporation
David Malter	Malter Associates, Inc.
Shawn Mandel	Waste Connections
Morris Marlow	Schaefer Systems International, Inc.
W.A. (Billy)Martin	Waste Management, Inc.
Chaz Miller	National Waste & Recycling Association
Paul Moore	NIOSH
Garry Mosier	Alliance Wireless Technologies
George Paturalski	Heil Environmental
Denny Pool	SP Industries, Inc.
Mike Schwalbach	Rehrig Pacific Company
Karon Simoni	City of Rochester
John Wayhart	Assurance Agency, Ltd.

At the time the right hand side drive position changes were approved, the Z245 Committee had the following members:

Susan Eppes, Chairman
Jerald Zanzig, Vicechair
Bret Biggers, Secretary

Robert Bartee	WCA
Alan Bortnick	Big Stuff, Inc.
Nathan Brainard	Insurance Office of America
Paul Campbell	Solid Waste Association of North America (SWANA)
Ed Correale	PTR Baler & Compactor Company
Steve David	Palfinger Omaha Standard, LLC
Cristine Fargo	International Safety Equipment Association (ISEA)

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

Ralph Ford	Waste Industries USA
Anne Germain	National Waste & Recycling Association
John Gilstrap	Institute of Scrap Recycling Industries, Inc.
Brian Haney	Leadpoint Business Services
Mark Johnson	Republic Services, Inc.
J Roger Lackore	Oshkosh Corporation
David Malter	Malter Associates, Inc.
Shawn Mandel	Waste Connections
Morris Marlow	Schaefer Systems International, Inc.
W.A. (Billy)Martin	Waste Management, Inc.
Paul Moore	NIOSH
Garry Mosier	Alliance Wireless Technologies
George Paturalski	Heil Environmental
Jerry Peters	Rumpke Waste & Recycling Corporation
Denny Pool	SP Industries, Inc.
Mike Schwalbach	Rehrig Pacific Company
David Stafford	Big Truck Rental Inc.
John Wayhart	Assurance Agency, Ltd.
Jim Webb	Bulk Handling Systems

The ASC Z245 Subcommittee 1 (Mobile Equipment) that drafted this revised American National Standard had the following members:

Roger Lackore, Chairman
Shannon Harrop, Vicechair
Bret Biggers, Secretary

Tim Ackman
Brad Agoston
Louis Andersen
Ken Arms
Brad Avery
Joe Balbi
Robert Bartee
Pat Bartlett
Angela Beres
Elmer Bischoff
Gaetan Bolduc
Janice Bradley
Tony Cardamone
Ed Correale
Josh Densberger
Pete Desjardins
Jane Dolezal
Curtic Dorwart
John Downing
Barry Duffy
Susan Eppes
Chris Flood

Ralph Ford
Phillippe Garneau
Ann Germain
Denny Gill
Philip Hagan
Shannon Harrop
Corey Heniser
Jody Hurley
Ron Jackson
Bill Johnson
Kyle Kummer
Bruno LaChance
Roger Lackore
Dave Lewis
David Loder
Dave Malter
Shawn Mandell
Billy Martin
Steve Martin
Paul Moore
Gary Mosier
John Nowak

AMERICAN NATIONAL STANDARD

Jim Ober
Brian Parker
George Paturalski
Gerry Peters
Milo Pipkin
Teresa Prisbrey
James Robbins
Tony Romano
Don Ross
M.J. Schmidt
Mike Schmidt

ANSI Z245.1-2017

Gavin Schoepp
Tom Shearer
Don Stark
Larry Stone
Brenda Westover
Bill Wilkenson
Craig Williams
Don Woerdehoff
Alethea Wofford
Jerry Zanzig

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

American National Standard for Equipment Technology and Operations for
Wastes and Recyclable Materials —

Mobile Wastes and Recyclable Materials Collection, Transportation, and Compaction
Equipment — Safety Requirements

0 Introduction

This standard was developed by American National Standards Institute Accredited Standards Committee Z245 Subcommittee 1 on Mobile Collection Equipment and approved by Accredited Standards Committee Z245.

This standard revises the collection, transportation and compaction equipment safety requirements found in ANSI Z245.1-2012 by providing specific requirements for construction, maintenance and operation necessary to ensure the safe manufacture and operation of the mobile equipment. Provisions of ANSI/NW&RA Z245.1 (PA) approved August 2, 2014 remain in effect and are immediately applicable to all new mobile collecting and compacting equipment.

The requirements contained in this standard pertain to new mobile collection equipment as produced by the manufacturer. New requirements and revisions are not intended to be retroactive for waste collection vehicles manufactured to comply with earlier revisions of this standard.

AMERICAN NATIONAL STANDARD

ANSI Z245.1-2017

1 Scope

1.1 This American National Standard is applicable to all persons engaged in the manufacture, reconstruction, modification, operation, cleaning, maintenance, service, or repair of mobile collecting, transporting, and compacting equipment.

Exception: This standard does not address equipment used for the collection, transportation, or disposal of hazardous or flammable materials regulated by Title 40 Code of Federal Regulations (CFR) Part 263 or 49 CFR Parts 171 through 180.

1.2 Sections 8 to 12 provide equipment safeguards and features and dual drive configuration requirements that shall apply to:

- a) mobile rear-loading, side-loading, front-loading, and mechanized container collecting equipment used to receive, compact, transport, and unload waste or recyclable materials;
- b) mobile tilt-frame and hoist-type equipment commonly used to pick up, transport, unload, and set down open top or enclosed waste or recyclable materials containers;
- c) vehicles used to receive, separate, densify, transport, and unload recyclable wastes;
- d) grapple loaders that pick up, load and transport bulky un-containerized special waste like wood waste or white goods;
- e) trailers used to transfer waste from one waste processing or disposal facility to another;
- f) satellite vehicles commonly used to receive and transport waste or recyclable materials for unloading into other mobile waste or recyclable materials collecting equipment; and
- g) container and cart lifting devices used to lift, dump, and return containers.