

# Specification for Bolted Tanks for Storage of Production Liquids

API SPECIFICATION 12B  
SIXTEENTH EDITION, NOVEMBER 2014

EFFECTIVE DATE: MAY 1, 2015



AMERICAN PETROLEUM INSTITUTE

## Special Notes

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be utilized. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Any manufacturer marking equipment or materials in conformance with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard. API does not represent, warrant, or guarantee that such products do in fact conform to the applicable API standard.

Classified areas may vary depending on the location, conditions, equipment, and substances involved in any given situation. Users of this Specification should consult with the appropriate authorities having jurisdiction.

Users of this Specification should not rely exclusively on the information contained in this document. Sound business, scientific, engineering, and safety judgment should be used in employing the information contained herein.

All rights reserved. No part of this work may be reproduced, translated, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Contact the Publisher, API Publishing Services, 1220 L Street, NW, Washington, DC 20005.

*Copyright © 2014 American Petroleum Institute*

## Foreword

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

Shall: As used in a standard, “shall” denotes a minimum requirement in order to conform to the specification.

Should: As used in a standard, “should” denotes a recommendation or that which is advised but not required in order to conform to the specification.

This document was produced under API standardization procedures that ensure appropriate notification and participation in the developmental process and is designated as an API standard. Questions concerning the interpretation of the content of this publication or comments and questions concerning the procedures under which this publication was developed should be directed in writing to the Director of Standards, American Petroleum Institute, 1220 L Street, NW, Washington, DC 20005. Requests for permission to reproduce or translate all or any part of the material published herein should also be addressed to the director.

Generally, API standards are reviewed and revised, reaffirmed, or withdrawn at least every five years. A one-time extension of up to two years may be added to this review cycle. Status of the publication can be ascertained from the API Standards Department, telephone (202) 682-8000. A catalog of API publications and materials is published annually by API, 1220 L Street, NW, Washington, DC 20005.

Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, [standards@api.org](mailto:standards@api.org).



# Contents

Page

<b>1</b>	<b>Scope</b> .....	<b>1</b>
<b>2</b>	<b>Normative References</b> .....	<b>1</b>
<b>3</b>	<b>Material</b> .....	<b>2</b>
<b>3.1</b>	<b>General</b> .....	<b>2</b>
<b>3.2</b>	<b>Plates</b> .....	<b>2</b>
<b>3.3</b>	<b>Sheets</b> .....	<b>2</b>
<b>3.4</b>	<b>Structural Shapes</b> .....	<b>3</b>
<b>3.5</b>	<b>Piping</b> .....	<b>3</b>
<b>3.6</b>	<b>Flanges</b> .....	<b>3</b>
<b>3.7</b>	<b>Couplings</b> .....	<b>3</b>
<b>3.8</b>	<b>Finish</b> .....	<b>3</b>
<b>3.9</b>	<b>Bolting</b> .....	<b>3</b>
<b>4</b>	<b>Design</b> .....	<b>3</b>
<b>4.1</b>	<b>General</b> .....	<b>3</b>
<b>4.2</b>	<b>Size</b> .....	<b>4</b>
<b>4.3</b>	<b>Tank Bottoms</b> .....	<b>5</b>
<b>4.4</b>	<b>Staves (Shell Plates/Sheets)</b> .....	<b>5</b>
<b>4.5</b>	<b>Tank Roof</b> .....	<b>5</b>
<b>4.6</b>	<b>Roof Supports</b> .....	<b>11</b>
<b>4.7</b>	<b>Bolted Joints</b> .....	<b>12</b>
<b>4.8</b>	<b>Joint Gaskets</b> .....	<b>12</b>
<b>4.9</b>	<b>Bolting</b> .....	<b>12</b>
<b>4.10</b>	<b>Cleanouts</b> .....	<b>12</b>
<b>4.11</b>	<b>Inlet and Outlet Connections</b> .....	<b>14</b>
<b>4.12</b>	<b>Bolting Patterns for the Gauge Hatches and Relief Valve</b> .....	<b>15</b>
<b>5</b>	<b>Venting Requirements</b> .....	<b>18</b>
<b>5.1</b>	<b>Normal Venting</b> .....	<b>18</b>
<b>5.2</b>	<b>Emergency Venting</b> .....	<b>18</b>
<b>6</b>	<b>Walkways, Stairways, Ladders, and Platforms</b> .....	<b>19</b>
<b>7</b>	<b>Erection and Clean Up</b> .....	<b>19</b>
<b>8</b>	<b>Marking</b> .....	<b>19</b>
<b>9</b>	<b>Inspection and Rejection</b> .....	<b>20</b>
<b>9.1</b>	<b>Inspection Notice</b> .....	<b>20</b>
<b>9.2</b>	<b>Inspection by Purchaser</b> .....	<b>20</b>
<b>9.3</b>	<b>Rejection</b> .....	<b>20</b>
<b>9.4</b>	<b>Compliance</b> .....	<b>20</b>
	<b>Annex A (normative) Specification for Tank Bolting</b> .....	<b>21</b>
	<b>Annex B (normative) Walkways, Stairways, and Ladders</b> .....	<b>25</b>
	<b>Annex C (informative) Suggestions for Ordering Bolted Tanks</b> .....	<b>27</b>
	<b>Annex D (informative) Use of the API Monogram by Licensees</b> .....	<b>29</b>

## Contents

Page

### Figures

1	Cone Bottoms .....	5
2	Bottom Elements .....	7
3	Bottom Elements .....	8
4	Stave Elements .....	9
5	Roof Elements .....	10
6	Flush-type Cleanout .....	13
7	Extended-neck Type Cleanout .....	14
8	Bolted Piping Flanges .....	16
9	Bolting Pattern for 8-in. Circular Gauge Hatches and Pressure-relief and Vacuum-relief Valves .....	17
10	Bolting Pattern for 8-in. x 18-in. Oblong Gauge Hatches and Pressure-relief and Vacuum-relief Valves .....	17
11	Bolting Pattern for 8-in. x 22-in. Oblong Gauge Hatches and Pressure-relief and Vacuum-relief Valves .....	18
12	Nameplate Format .....	19

### Tables

1	Sizes and General Dimensions .....	4
2	Details of Bottoms, Shells, and Roofs .....	6
3	Bolted Pipe Flanges .....	15

# Specification for Bolted Tanks for Storage of Production Liquids

## 1 Scope

**1.1** This specification covers material, design, fabrication, and testing requirements for vertical, cylindrical, aboveground, closed and open top, bolted steel storage tanks in various standard sizes and capacities for internal pressures approximately atmospheric, not to exceed those listed in Section 4.1.

**1.2** This specification is designed to provide the oil production industry with safe and economical bolted tanks for use in the storage of crude petroleum and other liquids commonly handled and stored by the production segment of the industry. This specification is for the convenience of Purchasers and Manufacturers in ordering and fabricating tanks.

NOTE See Annex C for a list of items that should be specified by the tank Purchaser and conveyed to the tank Manufacturer. See Annex D information related to the API Monogram program for tank Manufacturers.

## 2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Recommended Practice 12R1, *Recommended Practice for Setting, Maintenance, Inspection, Operation and Repair of Tanks in Production Service*

API Specification 5L, *Specification for Line Pipe*

API Specification 6A, *Specification for Wellhead and Christmas Tree Equipment*

API Standard 650, *Welded Steel Tanks for Oil Storage*

API Standard 2000, *Venting Atmospheric and Low-pressure Storage Tanks*

ASCE 7 <sup>1</sup>, *Minimum Design Loads for Buildings and Other Structures*

ASME B1.1 <sup>2</sup>, *Unified Inch Screw Threads, (UN and UNR Thread Form)*

ASME B16.11, *Forged Fittings, Socket-Welding and Threaded*

ASME B18.2.1, *Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)*

ASME B18.2.2, *Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)*

ASTM A6 <sup>3</sup>, *Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling*

ASTM A36, *Standard Specification for Carbon Structural Steel*

<sup>1</sup> American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, Virginia 20191, [www.asce.org](http://www.asce.org)

<sup>2</sup> ASME International, 2 Park Avenue, New York, New York 10016-5990, [www.asme.org](http://www.asme.org).

<sup>3</sup> ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, [www.astm.org](http://www.astm.org).