

This is a preview of "ISO 16345:2014". Click here to purchase the full version from the ANSI store.

First edition 2014-06-01

# Water-cooling towers — Testing and rating of thermal performance

Tours de refroidissement de l'eau — Essais et détermination des caractéristiques de performance



Reference number ISO 16345:2014(E)

#### ISO 16345:2014(E)

This is a preview of "ISO 16345:2014". Click here to purchase the full version from the ANSI store.



#### COPYRIGHT PROTECTED DOCUMENT

© ISO 2014

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office Case postale 56 • CH-1211 Geneva 20 Tel. + 41 22 749 01 11 Fax + 41 22 749 09 47 E-mail copyright@iso.org Web www.iso.org

Published in Switzerland

This is a preview of "ISO 16345:2014". Click here to purchase the full version from the ANSI store.

Contents			age	
Forev	vord		<b>v</b>	
1	Scop	е	1	
2	Term	s and definitions	1	
3		ools and abbreviations		
4	Performance tests — General			
1	4.1	Application of standard		
	4.2	Test schedule		
	4.3	Pretest agreements	11	
	4.4	Flexibility	11	
5	Objective of tests			
	5.1	General		
	5.2	Basis of guarantee		
	5.3	Form of the guarantee documents		
6	Test preparation			
	6.1	Purpose	17	
	6.2	Test scheduling and site preparation	17	
	6.3 6.4	Tower physical condition Provisions for instrumentation		
	6.5	Fan driver input power		
	6.6	Site conditions		
	6.7	Miscellaneous		
7	Instrumentation and test setup			
	7.1	Calibration		
	7.2	Flow measurements	24	
	7.3	Temperature measurements		
	7.4	Pressure measurements		
	7.5	Fan/pump driver power		
	7.6 7.7	Wind velocity (speed and direction) Tower pump head	Z /	
	7.7 7.8	Water or process fluid analysis		
8	Execution of test 28			
O	8.1	Requirements for testing type	<b>20</b> 28	
	8.2	Basic tests	28	
	8.3	Extended tests		
9	Evalı	lation of tests	34	
	9.1	General		
	9.2	Computation of test period values from test reading values		
	9.3	Basic thermal performance test evaluation (for all tower types)		
	9.4	Extended thermal performance test evaluation (applicable to natural draft towers, only required by contract)	y if	
10	Reporting of results			
	10.1	General		
	10.2	Final report		
	10.3	Security		
	10.4	Limitations		
11		shed ratings		
Anne	<b>x A</b> (no	rmative) Instruments and measurements	57	
Anne	<b>x B</b> (no	rmative) Wet-bulb determination	63	
Anne	<b>x C</b> (no	rmative) Inlet-air temperature measurement locations	68	

## ISO 16345:2014(E)

This is a preview of "ISO 16345:2014". Click here to purchase the full version from the ANSI store.

Annex D (normative) Thermodynamic properties of moist air	71
Annex E (informative) Values of crossflow correction factor	84
Annex F (informative) Example evaluation of an open-circuit, mechanical draft cooling tower t using the performance curve method	
Annex G (informative) Example evaluation of an open-circuit, mechanical draft cooling tower t using the characteristic curve method	test 95
Annex H (normative) Example evaluation of a natural draft cooling tower test using the performance curve method	102
Annex I (normative) Example evaluation of a natural draft cooling tower using the extended test method	119
Annex J (normative) Example evaluation of an open-circuit, wet/dry, mechanical draft cooling tower	125
Annex K (normative) Example evaluation of a closed-circuit cooling tower test using the performance curve method	138
Annex L (informative) Alternative measurements of test L/G	144
Annex M (informative) Precheck list	147
Bibliography	150

This is a preview of "ISO 16345:2014". Click here to purchase the full version from the ANSI store.

### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 86, *Refrigeration and air-conditioning*, Subcommittee SC 6, *Testing and rating of air-conditioners and heat pumps*.