



IICRC S500

Standard and Reference Guide for Professional Water Damage Restoration



Second Edition



Disclaimer

This Standard and Reference Guide are intended to provide current and accurate information about the restoration of water-damaged structures and their contents. The document is designed to assist individuals and entities working in the restoration industry to maintain their professional competence. This publication is being distributed with the understanding that IICRC does not render any professional, medical or legal advice. Users of this document must keep abreast of developments in the field of water damage restoration, implement changes in technology and procedures as appropriate, and follow applicable federal, state, provincial and local laws and regulations. Finally, many jobs are unique and common sense may, in extenuating circumstances, justify a deviation from this Standard and Reference Guide.

No express or implied representation or warranty is made by IICRC or its agents concerning the interpretation, use, or application of the practices or procedures set forth in this document.

Important Definitions

Throughout this document the terms “must,” “highly recommend” and “recommend” are used to compare and contrast the different levels of importance attached to certain practices. It is impractical to issue blanket rules intended to apply to every water damage situation. In extenuating circumstances, deviation from portions of this standard may be appropriate. Carelessness is never acceptable and common sense should prevail in all cases.

must: when the term *must* is used in this document, it means that the practice or procedure is required or mandatory.

highly recommended: when the term *highly recommended* is used in this document, it means the practice or procedure is the generally accepted method to be followed.

recommended: when the term *recommended* is used in this document, it means that the practice or procedure is advised or suggested.

IICRC Standard and Reference Guide for Professional Water Damage Restoration S500

*Second Edition
Published 1999*

This document supercedes the IICRC Standards and Reference Guide for Professional Water Damage Restoration S500-94.

Copyright © 1999 by the Institute of Inspection, Cleaning and Restoration Certification (IICRC). All rights reserved. Printed in the United States of America. No part of this publication may be used or reproduced in any manner whatsoever without written permission from the IICRC except in the case of brief quotations embodied in articles, reports or critical reviews.

**Institute of Inspection, Cleaning and Restoration Certification (IICRC)
2715 East Mill Plain Blvd.
Vancouver, Washington 98661 USA
Phone (360) 693-5675 • www.iicrc.org**

Printed in USA

This is a preview of "IICRC S500-1999". [Click here to purchase the full version from the ANSI store.](#)

Letter from the Water Damage Restoration Standard Task Force

The IICRC Standard and Reference Guide for Professional Water Damage Restoration (IICRC S500) is the result of ongoing collaborative efforts in the development of the science of water damage restoration. The first edition, IICRC S500-94, was a major advance for the industry when published in 1994. That document served as the written body of knowledge in the water damage restoration industry.

IICRC S500 was designed as a living document. Improvements in the technology of water damage restoration coupled with research and testing necessitate periodic updates. In fact, research, testing and other work to further advance water restoration started soon after the first edition was published. The second edition therefore contains significant revisions and supercedes the 1994 publication. The second edition of S500 is the result of five years of collaborative efforts on the part of industry experts, microbiologists, public health experts, industrial hygienists, and other scientists and professionals.

IICRC S500 includes a procedural standard for use by those involved in the water damage restoration industry, as well as a supplementary reference guide. The standard is printed first within this book, followed by the longer reference guide section. Although material contained within the reference guide does not carry the official status of a standard, the two sections compliment one another and should always be considered in tandem.

As the science of water damage restoration has evolved over the last two decades, IICRC has taken a leadership role in setting industry standards. This work is performed primarily by volunteers who donate their technical knowledge and practical expertise to make this standard and reference guide as complete as possible. Through their hard work and dedication, the second edition of the standard includes substantial changes, especially in the areas of microbiology and inspection. The standard has been updated and totally reformatted.

This standard and reference guide was written with two groups of users in mind. The first group includes professional restorers, the insurance community, material and equipment manufacturers, and product retailers, among others. The second group – and motivation behind the continued development of this standard – is the occupants of the damaged structure whose health and well being are of primary concern. The procedures outlined in the standard do not allow for shortcuts or partial remedies. This standard is technically consistent with the knowledge we have to date.

The restoration industry's international standard setting and certification organization, the IICRC, welcomes your comments and suggestions toward the improvement of this document.

Members of the IICRC S500 Task Force

The publication of this document was made possible through the boundless contributions of a dedicated group of experts. The IICRC Board and the Water Damage Restoration Standard Task Force members genuinely appreciate the time and effort contributed by these individuals. They exhibit the true volunteer spirit that has been the driving force behind the IICRC since its inception.

IICRC INDUSTRY TASK FORCE FOR WATER DAMAGE RESTORATION STANDARDS

Task Force Chairman

Larry Cooper, Chairman, Water Damage Restoration Standards Task Force and Editing Committee;
Honorary Board Member, IICRC;
President, Textile Consultants, Denver, CO

Darrell Paulson, Treasurer, IICRC;
President, Advanced Restoration Specialists, Inc., Gardena, CA

Cliff Zlotnik, Director, IICRC;
President, II Rep Z, West Homestead, PA

Task Force Secretary

Barry Costa, Secretary, Water Damage Restoration Standards Task Force;
Chairman, IICRC Examinations and Technical Standards Committee;
President, Costa Group, Inc., Peterborough, NH

Editing Committee Members

Jeff Bishop, Co-chair Water Damage Restoration Standards Inspection Sub-Committee;
Chairman, IICRC Certification Board;
President, Clean Care Seminars, Inc. Dothan, AL

Jim Holland, Chairman, IICRC Health and Safety Technical Advisory Committee;
President, Restoration Consultants, Sacramento, CA

Task Force Members

Dan Bernazzani, Vice Chairman, IICRC Certification Board;
President, Liberty Consulting, West Windsor, VT

Claudia Ramirez, President, Integrated Solutions, Baltimore, MD

Jeff Bishop, Co-chair Water Damage Restoration Standards Inspection Sub-Committee;
Chairman, IICRC Certification Board;
President, Clean Care Seminars, Inc., Dothan, AL

Ron Reese, President, Mr. Steam/Ree-Construction, Hailey, ID

Claude Blackburn, Chairman, Water Damage Restoration Technical Advisory Committee;
President, Dri-Eaz Products, Burlington, WA

Members At Large

Michael Berry, Ph.D., Research Professor, University of North Carolina at Chapel Hill;
Senior Scientist, Research Triangle Institute, Research Triangle Park, NC

Pete Consigli; Co-chair, Water Damage Restoration Standards Inspection Sub-Committee;
President, Restoration PathFinders, Brisbane, CA

Eugene Cole, Dr. PH, Director, DynCorp Health Research Services, Durham, NC

Dane Gregory, Chairman Water Damage Restoration Standards Microbiology Sub-Committee;
President, IICRC;
President, The Dirt Doctor, Stevens Point, WI

CONTRIBUTORS TO IICRC S500-99

David Bierman, Safe Environments, Berkeley, CA
Felicia Cianciarulo, Ph.D., FLC Scientific/Technical Consulting, Coraopolis, PA
Robert Cooper, Esq., Cooper and Tanis, PC, Broomfield, CO
Mark Hansen, Esq., IICRC Legal Counsel, Hawkins and Hansen, Oak Harbor, WA
Elliot Horner, Ph.D., Air Quality Sciences, Atlanta, GA
Sidney Lunday, Dri-Eaz Products, Burlington, WA
Tony Macaluso, Chairman, IICRC Odor Control Technician Technical Advisory Committee;
TM Cleaning and Restoration Schools, Austin, TX
Mike McGuinness, RK Occupational and Environmental Analysis, Phillipsburg, NJ
Steve Miller, Great Lakes Restorative Drying, Grand Haven, MI
Patrick Moffett, Environmental Management and Engineering, Huntington Beach, CA
Philip Morey, Ph.D., AQS Services, Gettysburg, PA
McGregor Pearce, Mold Sampling and Diagnostic Service, St. Paul, MN
Joey Pickett, Joey's Carpet Care, Lexington, KY
Michael Pinto, Ph.D., Wonder Makers, Kalamazoo, MI
Peter Sierck, Environmental Testing and Technology, Encinitas, CA
Terry Smith, Freezedry Specialties, Bellevue, WA
Will Spates, Indoor Environmental Technologies, Clearwater, FL
Nathan Suazo, Carpet Rescue Services, San Diego, CA
Steve Swan, Swan's Clean Care and Restoration, Bellingham, WA
Davidge Warfield, Tri-Dim Filter Corp, Wilmington, DE
Chin Yang, Ph.D., P&K Microbiology Services, Cherry Hill, NJ

TECHNICAL EDITOR

Glenn Fellman, President, Fellman Business Consulting, LLC, Kensington, MD

This page intentionally left blank.

IICRC Standard for Professional Water Damage Restoration S500

***Second Edition
Published 1999***

***Institute of Inspection, Cleaning
and Restoration Certification***

***2715 East Mill Plain Blvd.
Vancouver, WA 98661 USA
(360) 693-5675 • www.iicrc.org***

**Copyright © 1999 by the Institute of Inspection, Cleaning
and Restoration Certification (IICRC). All rights reserved.**

*No part of this publication may be used or reproduced in any manner
whatsoever without written permission from the IICRC, except in the
case of brief quotations embodied in articles, reports or critical reviews.*

Printed in the United States of America.

Table of Contents

Contents	Page
Foreword	ii
1 Scope, Purpose and Application	1
2 References	1
3 Definitions	1
4 Loss Assessment and Evaluation	2
5 Categories of Water in Water Damage	3
6 Principles of Drying	3
7 Structural and Contents Restoration	4
8 Monitoring	4
9 Final Inspection and Completion	4
10 Procedures for Professional Water Damage Restoration - General	4
11 Category 1 Water Source Restoration Procedures	5
12 Category 2 Water and Category 3 Water Source Restoration Procedures	8
Figures	
1 Categories of Water Damage; The Effect of Time on Microbial Growth; The Effect of Time on Microbial Growth by Category	15

Foreword

The IICRC Standard for Professional Water Damage Restoration (IICRC S500) is a procedural standard. It is based on reliable restoration principles, research and practical experience. In addition, there has been extensive consultation and information obtained from numerous sources. These include, but are not necessarily limited to, the scientific community, the international, national and regional trade associations serving the professional disaster restoration industry, chemical formulators and equipment manufacturers, cleaning and restoration training schools, restoration service companies, the insurance industry, allied trades persons and others with specialized experience. It is subject to further revision as developments occur in technology, testing and processing procedures.

IICRC S500 provides a specific set of practical standards for water damage restoration. It does not attempt to teach comprehensive water damage restoration procedures; rather it provides the foundation for and basic principles of proper restoration practices. There are numerous training programs available to teach specific details of restoration.

IICRC S500 is presented using a two-part format: the standard itself and a supplementary reference guide. The procedural standard is featured in this first section, supported by the reference guide in the second section. The intent is to use the principles outlined in the reference guide as a tool to better understand and apply the standard itself. However, the reference guide is not considered part of this standard.

IICRC S500 does not attempt to include exhaustive performance characteristics or standards for the manufacture or installation of structural components, materials and contents (personal property). Prior to specifying the job scope and procedures, this standard must be reviewed. This is important so that the individual circumstances of each restoration job are taken into account. Users of this document must keep abreast of changes in technology and procedures, and follow applicable federal, provincial, state and local laws and regulations. Users of this document assume all risks and liability resulting from use of and reliance upon this standard and reference guide. Finally, many jobs may be unique and common sense may require a deviation from this standard and its reference guide.

This standard was created by the IICRC Industry Task Force for Water Damage Restoration Standards. At the time it approved this standard, the Task Force consisted of the following members:

Task Force Chairman

Larry Cooper, Chairman, Water Damage Restoration Standards Task Force and Editing Committee;
Honorary Board Member, IICRC;
President, Textile Consultants, Denver, CO

Jeff Bishop, Co-chair, Water Damage Restoration Standards Inspection Sub-Committee;
Chairman, IICRC Certification Board;
President, Clean Care Seminars, Inc., Dothan, AL

Task Force Secretary

Barry Costa, Secretary, Water Damage Restoration Standards Task Force;
Chairman, IICRC Examinations and Technical Standards Committee;
President, Costa Group, Inc. Peterborough, NH

Claude Blackburn, Chairman, Water Damage Restoration Technical Advisory Committee;
President, Dri-Eaz Products, Burlington, WA

Task Force Members

Dan Bernazzani, Vice Chairman, IICRC Certification Board;
President, Liberty Consulting, West Windsor, VT

Pete Consigli, Co-chair, Water Damage Restoration Standards Inspection Sub-Committee;
President, Restoration PathFinders, Brisbane, CA

Dane Gregory, Chairman, Water Damage Restoration Standards Microbiology Sub-Committee;
President, IICRC;
President, The Dirt Doctor, Stevens Point, WI

Darrell Paulson, Treasurer, IICRC;
CEO, Advanced Restoration Specialists, Inc., Gardena, CA
Cliff Zlotnik, Director, IICRC;
President, II Rep Z, West Homestead, PA

Editing Committee Members

Jeff Bishop, Co-chair, Water Damage Restoration Standards Inspection Sub-Committee;
Chairman, IICRC Certification Board;
President, Clean Care Seminars, Inc. Dothan, AL

Jim Holland, Chairman, IICRC Health and Safety Technical Advisory Committee;
President, Restoration Consultants, Sacramento, CA

Claudia Ramirez, President, Integrated Solutions, Baltimore, MD

Ron Reese, President, Mr. Steam/Ree-Construction, Hailey, ID

Members At Large

Michael Berry, Ph.D., Research Professor, University of North Carolina at Chapel Hill; Senior Scientist, Research Triangle Institute, Research Triangle Park, NC

Eugene Cole, Dr. PH, Director, DynCorp Health Research Services, Durham, NC

Contributors to IICRC S500-99

Publication of this standard would not have been possible without the valuable contributions of the following individuals:

David Bierman, Safe Environments, Berkeley, CA

Felicia Cianciarulo, Ph.D., FLC Scientific/Technical Consulting, Coraopolis, PA

Robert Cooper, Esq., Cooper and Tanis, PC, Broomfield, CO

Mark Hansen, Esq., IICRC Legal Counsel, Hawkins and Hansen, Oak Harbor, WA

Elliot Horner, Ph.D., Air Quality Sciences, Atlanta, GA

Sidney Lunday, Dri-Eaz Products, Burlington, WA

Tony Macaluso, Chairman, IICRC Odor Control Technician Technical Advisory Committee; TM Cleaning and Restoration Schools, Austin, TX

Mike McGuinness, RK Occupational and Environmental Analysis, Phillipsburg, NJ

Steve Miller, Great Lakes Restorative Drying, Grand Haven, MI

Patrick Moffett, Environmental Management and Engineering, Huntington Beach, CA

Philip Morey, Ph.D., AQS Services, Gettysburg, PA

McGregor Pearce, Mold Sampling and Diagnostic Service, St. Paul, MN

Joey Pickett, Joey's Carpet Care, Lexington, KY

Michael Pinto, Ph.D., Wonder Makers, Kalamazoo, MI

Peter Sierck, Environmental Testing and Technology, Encinitas, CA

Terry Smith, Freezedry Specialties, Bellevue, WA

Will Spates, Indoor Environmental Technologies, Clearwater, FL

Nathan Suazo, Carpet Rescue Services, San Diego, CA

Steve Swan, Swan's Clean Care and Restoration, Bellingham, WA

Davidge Warfield, Tri-Dim Filter Corp, Wilmington, DE

Chin Yang, Ph.D., P&K Microbiology Services, Cherry Hill, NJ

Technical Editor

Glenn Fellman, President, Fellman Business Consulting, LLC, Kensington, MD

Institute of Inspection, Cleaning and Restoration Certification

Standard for Professional Water Damage Restoration S500

1 Scope, Purpose and Application

1.1 Scope

This standard describes the procedures to be followed and the precautions to be observed when performing water damage and sewage backflow restoration of homes, buildings and other structures, and their contents.

Water damage restoration consists of the following components for which procedures are described in this standard:

- Loss Assessment and Evaluation;
- Categorization of Water in Water Damage;
- Principles of Drying;
- Structural and Contents Considerations;
- Monitoring; and
- Final Inspection and Completion.

1.2 Purpose

It is the purpose of this standard to define criteria and methods to be used for assessing water damage and establishing restoration procedures.

Because of the unique circumstances of every water damage restoration project, it is impractical to issue blanket rules intended to apply to every water damage situation. In extenuating circumstances, deviation from portions of this standard may be appropriate. Carelessness is never acceptable and common sense should prevail in all cases.

1.3 Application

This standard was created for use by professional restorers, the insurance community, material and equipment manufacturers, product retailers and others involved in the assessment and restoration of water-damaged structures and their contents.

2 References

The following standards and documents contain provisions that, through reference in this text, constitute provisions of this Institute of Inspection, Cleaning and Restoration Certification Standard. At the time of publication, the editions indicated were valid. All standards and publications are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards and publications indicated below.

AS/NZS 2455.1, *Textile Floor Covering Installation Practice Part 1: General*, Standards Australia.

AS/NZS 2455.2, *Textile Floor Covering Installation Practice Part 2: Carpet Tiles*, Standards Australia.

BS5325, *Code of Practice for Installation of Textile Floor Coverings*, British Standards Institute.

CRI 104, *Standard for Installation of Commercial Carpet*, The Carpet and Rug Institute, 1996.

CRI 105, *Standard Industry Reference Guide for Installation of Residential Textile Floorcovering Materials*, The Carpet and Rug Institute, 1995.

S001, *IICRC Carpet Cleaning Standard*, Institute of Inspection, Cleaning and Restoration Certification, 1994.

3 Definitions

Certain terms and definitions associated with water damage restoration exist. The following are definitions of terms used in this standard:

black water: see "category 3 water" definition.

category 1 water: water originating from a source that does not pose substantial harm to humans. Also referred to as "clean water."

category 2 water: water containing a significant degree of chemical, biological and/or physical contamination and having the potential to cause discomfort or sickness if consumed by or exposed to