

AICHE® Equipment Testing Procedure

TRAYED AND PACKED COLUMNS

A Guide to Performance Evaluation

Third Edition

Prepared by the Equipment Testing Procedures Committee of the
American Institute of Chemical Engineers

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AIChE Equipment Testing Procedure

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Equipment Testing Procedures Committee of the
American Institute of Chemical Engineers



WILEY

Cover and book design: Lois Anne DeLong

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Published by John Wiley & Sons, Inc., Hoboken, New Jersey

Published simultaneously in Canada

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Library of Congress Cataloging-in-Publication Data:

American Institute of Chemical Engineers

AIChE Equipment Testing Procedure : Trayed and packed columns / a guide to performance evaluation, third edition.

p. cm.

Includes index.

ISBN 978-1-118-62771-6 (paper)

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Company affiliations are shown for information only and do not imply Procedure approval by the company listed.

Acknowledgement: This procedure draws heavily on the *AIChE Tray Distillation Columns Testing Procedure, 2nd Edition, 1987* and *Packed Columns Testing Procedure, 2nd Edition, 1990*.

Second Edition

Packed Columns: Officially approved for publication by AIChE Council in 1990

Tray Distillation Columns: Officially approved for publication by AIChE Council in 1987

First Edition

Packed Columns: Officially approved for publication by AIChE Council in 1965

Tray Distillation Columns: Officially approved for publication by AIChE Council in 1962

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The rewrite committee would like to acknowledge Henry Kister for his contribution to a major portion of this work. Even though he was not officially on the re-write committee, his wording on test procedure from the second edition of AIChE's Packed Columns Equipment Testing Procedure were retained nearly word for word, as can be exemplified in pages 388-419 of his 1990 book Distillation Operation. When combining both the Tray Distillation Columns and Packed Columns testing procedures, the re-write committee purposefully retained the words generated by Henry Kister in Section 500.0 from "Packed Columns" because of its extensive content and clarity.

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100.0 PURPOSE AND SCOPE

101.0 Purpose

This testing procedure offers methods of conducting and interpreting performance tests on trayed and packed distillation columns. Such tests are intended to accumulate reliable data in one or more of the following areas of interest: mass transfer efficiency, capacity, energy consumption and pressure drop. It is intended to be used as a guideline for a column performance test and not as a substitute for a vendor's acceptance test.

Possible uses of such data include:

- Troubleshooting performance problems
- Identifying capacity bottlenecks
- Determining if column performance meets vendor guarantees ("acceptance test")
- Developing basic data for new designs
- Developing correlations
- Determining the operating range of a column
- Defining optimum operating conditions
- Calibrating computer simulations for use in optimizing, debottlenecking and design studies.

102.0 Scope

Rather than compulsory directions, this book offers a collection of techniques presented to guide the user, and emphasis is placed on principles, rather than on specific steps. It applies to columns that operate either at steady state or at total reflux. It does not apply to batch columns in which compositions are changing with time unless they are

operated at total reflux or with distillate returned to the still pot during the test.

The procedure applies to both trayed and packed columns of any type. The tests determine the composite performance of the trays, packing, and any associated distributors and other auxiliary internals inside the column. It is important to realize that capacity may be restricted by these auxiliaries, particularly for packed towers.

This procedure does not apply to external testing of distributors or other internals.