

IEEE Recommended Practice for the Selection, Field Testing, and Life Expectancy of Molded-Case Circuit Breakers for Industrial Applications

IEEE Industry Applications Society

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Approved 28 September 2017

IEEE-SA Standards Board

Abstract: A recommended procedure for the selection, application, and determination of the remaining life in molded-case circuit breaker is provided.

Keywords: available fault values, circuit breaker testing, IEEE 1458, insulated-case circuit breakers, molded-case circuit breakers, molded-case circuit breakers basics, molded-case circuit breakers life, safety

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

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PDF: ISBN 978-1-5044-4268-8 STD22745
Print: ISBN 978-1-5044-4269-5 STDPD22745

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Introduction

This introduction is not part of IEEE Std 1458-2017, IEEE Recommended Practice for the Selection, Field Testing, and Life Expectancy of Molded-Case Circuit Breakers for Industrial Applications.

This recommended practice provides in one document the information necessary to select, apply, and estimate the remaining life of molded-case circuit breakers. This standard is intended to be used by para-professionals and is not a high-level engineering document.

The 2017 revision of this document includes several additions from the original 2005 publication, including:

- Inspection and testing procedures for insulated-case circuit breakers
- Guidelines on re-use of low-voltage circuit breakers
- Application of molded-case breakers on dc power systems
- Application of molded-case breakers on ac power systems with frequencies above 60 Hz
- Fault characteristics of static converters and the impact on circuit breaker interrupting rating

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IEEE Recommended Practice for the Selection, Field Testing, and Life Expectancy of Molded-Case Circuit Breakers for Industrial Applications

1. Overview

1.1 Scope

This document provides a recommended practice for the selection, application, and determination of the remaining life in molded-case circuit breakers used in industrial applications.

1.2 Purpose

Molded-case circuit breakers are one of the most widely used circuit protection devices in low-voltage (less than 1000 V [ac], 1500 V [dc]) applications. In spite of their wide use in industry, the average person specifying, installing, operating, and maintaining these devices has less than a complete understanding of them. The purpose of this document is to provide people who purchase or maintain molded-case circuit breakers with a single document that includes the following information:

- How molded-case circuit breakers operate
- How to correctly size and select molded-case circuit breakers
- How to safely maintain molded-case circuit breakers
- How to determine when a molded-case circuit breaker must be replaced

1.3 The installation code in the United States is the National Electrical Code® (NEC®)

For simplicity this recommended practice will refer to requirements in the NEC.^{1,2}

¹The NEC is published by the National Fire Protection Association (<http://www.nfpa.org/>). Copies are also available from The Institute of Electrical and Electronics Engineers (<http://standards.ieee.org/>).

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