

This is a preview of "ISO 6621-3:2021". [Click here to purchase the full version from the ANSI store.](#)

Third edition
2021-06

Internal combustion engines — Piston rings —

Part 3: Material specifications

*Moteurs à combustion interne — Segments de piston —
Partie 3: Spécifications des matériaux*



Reference number
ISO 6621-3:2021(E)

© ISO 2021



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of "ISO 6621-3:2021". [Click here to purchase the full version from the ANSI store.](#)

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Mechanical properties	1
Bibliography	4

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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain and powertrain fluids*.

This third edition cancels and replaces the second edition (ISO 6621-3:2000), which has been technically revised.

The main changes compared to the previous edition are as follows:

- a material's new subclass was added.

A list of all parts in the ISO 6621 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This is a preview of "ISO 6621-3:2021". [Click here to purchase the full version from the ANSI store.](#)

Introduction

This document is one of a number of series of International Standards dealing with piston rings for reciprocating internal combustion engines. Others are ISO 6622-1^[5] and ISO 6622-2^[6], ISO 6623^[7], ISO 6624-1^[8], ISO 6624-2^[9], ISO 6624-3^[10] and ISO 6624-4^[11], ISO 6625^[12], ISO 6626^[13], ISO 6626-2^[14], ISO 6626-3^[15], and ISO 6627^[16].

This document provides a user guide to the types of materials available for piston rings.

Many such materials are available, made by different manufacturers using different casting and machining techniques, with each suited to a particular application. In many instances, their chemical compositions differ, but the method of manufacture and the heat treatment, if any, result in materials from different manufacturers with similar mechanical properties. The performance of rings made from two different materials might be very similar; i.e. several subclasses of materials could meet a given requirement.

In ring manufacture it is convenient to group materials into classes according to their moduli, since for a ring of given dimensions, the pressure it exerts on the cylinder wall is determined only by the modulus. The material strength is also generally related to modulus, i.e. the higher the modulus, the greater the strength, although there are exceptions depending on the method of manufacture. Material hardness, on the other hand, is determined by both chemical composition and heat treatment; this is made clear by the division of classes into subclasses. Because of this, the final choice of material and subclass is agreed between the manufacturer and client.