
**Protective clothing for use in
snowboarding — Wrist protectors —
Requirements and test methods**

*Habillement de protection destiné à la pratique du surf des neiges —
Protecteurs de poignets — Exigences et méthodes d'essai*



This document is a preview generated by ERS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

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
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Requirements	2
4.1 General	2
4.2 Splints	3
4.3 Ergonomics	3
4.4 Innocuousness	3
4.5 Restraint	3
4.6 Impact strength	3
4.7 Impact performance	3
4.8 Limitation of wrist extension	4
5 Testing	4
5.1 General	4
5.2 Sampling	5
5.3 Conditioning	5
5.3.1 General	5
5.3.2 Room temperature conditioning	5
5.3.3 Cold temperature conditioning	5
5.4 Ergonomics	6
5.5 Restraint	6
5.6 Impact strength	7
5.6.1 Apparatus	7
5.6.2 Procedure	7
5.7 Impact performance	8
5.7.1 Test area	8
5.7.2 Apparatus	8
5.7.3 Procedure	9
5.8 Limitation of wrist extension	9
5.8.1 Principle	9
5.8.2 Apparatus	9
5.8.3 Procedure	12
6 Marking	12
7 Information supplied by the manufacturer	12
8 Test report	13
Bibliography	14

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 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 13, *Protective clothing*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 162, *Protective clothing including hand and arm protection and lifejackets*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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.

Introduction

Snowboarding are all the pastimes and competitions in which a snowboard is used. The users range from small children to adults of all ages.

The wrist is the most frequently injured body region among snowboarders. The majority of wrist injuries are consequences of falls. The most common injury mechanism is described as a compressive load applied to a hyperextended wrist. Beginners and children have a high incidence of wrist injuries due to snowboarding. One third of injuries among beginner snowboarders are to the wrist.

Studies have shown that the risk of sustaining a wrist injury can be reduced by wearing wrist protection. Wrist protectors in snowboarding are intended to protect the wearer against fractures as well as contusions and sprains.

Wrist protectors will not prevent all wrist, forearm, hand, elbow and shoulder injuries in snowboard accidents.

A wide variety of wrist protectors is commercially available. Consumers can choose between different principal design concepts. One is the “integrated protection concept” in which the protective elements are integrated within a glove. Another one is the “separated protection concept” where the protective elements are individual components (similar to a brace or orthosis) that can be worn with or without a glove. If worn with a glove it can be foreseen to place them underneath or on top of the glove^{[3][4][5][6]}.

Protective clothing for use in snowboarding — Wrist protectors — Requirements and test methods

1 Scope

This document specifies the requirements and test methods for ergonomics, innocuousness, comfort/sizing, restraint, ability to limit wrist extension and attenuate impact force on the palm as well as provisions for marking and instructions supplied by the manufacturer for wrist protectors for all users of snowboard equipment.

It does not apply to protectors used in roller sports, alpine skiing, or other sports. This document does not address protection for the forearm due to axial forces caused by an impact on the fingers or fist. Moreover, this document does not address protection against palmar flexion (terminal flexion) caused by an impact on the dorsal side of the hand.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21420:2020, *Protective gloves — General requirements and test methods*

ISO 13999-1:1999, *Protective clothing — Gloves and arm guards protecting against cuts and stabs by hand knives — Part 1: Chain mail gloves and arm guards*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

wrist

radio-carpal joint

3.2

dorsal

pertaining to upper side or back of the hand and wrist

3.3

palmar

pertaining to the palm side of the hand and wrist

3.4

wrist protector

wrist guard

device worn on the wrist and extending onto the forearm and the hand, that is intended to reduce the risk of wrist injuries by mechanical impact