

AS/NZS 2161.3:2020
EN 388:2016+A1:2018



Australian/New Zealand Standard™

Occupational protective gloves

Part 3: Protection against mechanical risks

This national standard is the identical adoption of EN 388:2016+A1:2018 with the permission of the European Committee for Standardization – CEN, Rue de la Science 23, B – 1040 Brussels, Belgium.



AS/NZS 2161.3:2020

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee SF-053, Protective Clothing. It was approved on behalf of the Council of Standards Australia on 27 November 2020 and by the New Zealand Standards Approval Board on 2 September 2020.

This Standard was published on 11 December 2020.

The following are represented on Committee SF-053:

- Australasian Fire and Emergency Service Authorities Council
- Australian Chamber of Commerce and Industry
- Australian Fashion Council
- Australian Industry Group
- AWTA Product Testing (Testing Interests Australia)
- Department of Defence (Australian Government)
- NCSA Foundation
- New Zealand Road Safety Manufacturers Association
- United Firefighters Union of Australia
- University of Otago New Zealand
- VicLab (Testing Interests Australia)

This Standard was issued in draft form for comment as DR AS/NZS 2161.3:2020.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

www.standards.govt.nz

ISBN 978 1 76113 110 3

Australian/New Zealand Standard™

Occupational protective gloves

Part 3: Protection against mechanical risks

Originated in Australia as part of AS Z4—1952.
Second edition 1963.
Revised and redesignated as AS 2161—1978.
Originated in New Zealand as part of NZS 1988:1965.
Revised and redesignated as NZS 5812:1982.
AS 2161—1978 and NZS 5812:1982 jointly revised, amalgamated and redesignated in
part as AS/NZS 2161.3:1998.
Previous edition 2005.

COPYRIGHT

© CEN 2020 — All rights reserved

© Standards Australia Limited/the Crown in right of New Zealand, administered by the New Zealand Standards Executive 2020

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth) or the Copyright Act 1994 (New Zealand).

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee SF-053, Protective Clothing, to supersede AS/NZS 2161.3:2005, *Occupational protective gloves, Part 3: Protection against mechanical risks*.

The objective of this document is to specify requirements, test methods, marking and information to be supplied for protective gloves against the mechanical risks of abrasion, blade cut, tear, puncture and, if applicable, impact.

This document is intended to be used in conjunction with AS/NZS 2161.2.

The test methods developed in this standard may also be applicable to arm protectors.

This document is identical with, and has been reproduced from, EN 388:2016+A1:2018, *Protective gloves against mechanical risks*.

As this document has been reproduced from an International Standard, the following applies:

- (a) In the source text “this European Standard” should read “this document”.
- (b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

NOTES

Contents	Page
European foreword.....	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 Requirements	7
4.1 General	7
4.2 Additional Protection	7
4.2.1 General	7
4.2.2 Impact protection	8
5 Sampling and conditioning	8
6 Test methods	8
6.1 Abrasion resistance	8
6.1.1 Principle	8
6.1.2 Consumables	8
6.1.3 Apparatus	9
6.1.4 Test specimens	9
6.1.5 Test procedure	9
6.1.6 Test report	11
6.2 Blade cut resistance	12
6.2.1 Principle	12
6.2.2 Equipment	12
6.2.3 Test specimen	14
6.2.4 Control specimen	15
6.2.5 Canvas	15
6.2.6 Test method	15
6.2.7 Calculation of test results	16
6.2.8 Test report	17
6.3 Cut Resistance method (EN ISO 13997)	17
6.3.1 General	17
6.3.2 Test specimen	17
6.3.3 Test report	17
6.4 Tear resistance	18
6.4.1 Principle	18
6.4.2 Equipment	18
6.4.3 Test specimen	18
6.4.4 Setting up the test specimen	18
6.4.5 Test method	19
6.4.6 Test report	19
6.5 Puncture resistance	20
6.5.1 Principle	20
6.5.2 Equipment	20
6.5.3 Test specimen	21
6.5.4 Test method	21
6.5.5 Test report	21
6.6 Impact Test	21

7	Marking	21
7.1	General	21
7.2	Pictograms	22
7.3	Marking of additional requirements	22
7.4	Examples of marking	22
8	Information supplied by the manufacturer in the user notice	23
Annex A (normative) Abradant.....		24
A.1	Definition of the abradant	24
A.2	Acceptation criteria of the abradant	24
Annex B (normative) Test results - Uncertainty of measurement.....		25
Annex C (normative) Validation test for the adhesive used in EN 388, 6.1.2.2		26
C.1	Objective	26
C.2	Apparatus and materials	26
C.3	Preparation of test specimens	27
C.4	Test procedure	28
C.5	Examples of acceptable adhesive tape	30
Annex ZA (informative) \square_{A1} Relationship between this European Standard and the essential requirements of REGULATION (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment aimed to be covered \square_{A1}.....		31

European foreword

This document (EN 388:2016+A1:2018) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 2018-10-24.

This document supersedes A1 EN 388:2016 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

A1 This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Regulation (EU) 2016/425.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document. A1

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements, test methods, marking and information to be supplied for protective gloves against the mechanical risks of abrasion, blade cut, tear, puncture and, if applicable, impact.

This standard is intended to be used in conjunction with EN 420.

The test methods developed in this standard may also be applicable to arm protectors.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 420, *Protective gloves — General requirements and test methods*

☐^{A1} EN 1049-2, *Textiles — Woven fabrics — Construction — Methods of analysis — Part 2: Determination of number of threads per unit length (ISO 7211-2:1984 modified)* ☐^{A1}

☐^{A1} EN 12127, *Textiles — Fabrics — Determination of mass per unit area using small samples* ☐^{A1}

EN 13594:2015, *Protective gloves for motorcycle riders — Requirements and test methods*

☐^{A1} EN ISO 5084, *Textiles — Determination of thickness of textiles and textile products (ISO 5084:1996)* ☐^{A1}

EN ISO 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system (ISO 7500-1)*

EN ISO 11644, *Leather — Test for adhesion of finish (ISO 11644)*

☐^{A1} CEN ISO/TR 11827, *Textiles — Composition testing — Identification of fibres* ☐^{A1}

EN ISO 12947-1, *Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 1: Martindale abrasion testing apparatus (ISO 12947-1)*

EN ISO 13934-1, *Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1)*

EN ISO 13997:1999, *Protective clothing — Mechanical properties — Determination of resistance to cutting by sharp objects (ISO 13997:1999)*

☐^{A1} ISO 1139, *Textiles — Designation of yarns* ☐^{A1}

ISO 4649:2010, *Rubber, vulcanized or thermoplastic — Determination of abrasion resistance using a rotating cylindrical drum device*

ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

☐^{A1} ISO 7211-1, *Textiles — Woven fabrics — Construction — Methods of analysis — Part 1: Methods for the presentation of a weave diagram and plans for drafting, denting and lifting*