

High-visibility safety apparel



Legal Notice for Standards

Canadian Standards Association (operating as “CSA Group”) develops standards through a consensus standards development process approved by the Standards Council of Canada. This process brings together volunteers representing varied viewpoints and interests to achieve consensus and develop a standard. Although CSA Group administers the process and establishes rules to promote fairness in achieving consensus, it does not independently test, evaluate, or verify the content of standards.

Disclaimer and exclusion of liability

This document is provided without any representations, warranties, or conditions of any kind, express or implied, including, without limitation, implied warranties or conditions concerning this document’s fitness for a particular purpose or use, its merchantability, or its non-infringement of any third party’s intellectual property rights. CSA Group does not warrant the accuracy, completeness, or currency of any of the information published in this document. CSA Group makes no representations or warranties regarding this document’s compliance with any applicable statute, rule, or regulation.

IN NO EVENT SHALL CSA GROUP, ITS VOLUNTEERS, MEMBERS, SUBSIDIARIES, OR AFFILIATED COMPANIES, OR THEIR EMPLOYEES, DIRECTORS, OR OFFICERS, BE LIABLE FOR ANY DIRECT, INDIRECT, OR INCIDENTAL DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES, HOWSOEVER CAUSED, INCLUDING BUT NOT LIMITED TO SPECIAL OR CONSEQUENTIAL DAMAGES, LOST REVENUE, BUSINESS INTERRUPTION, LOST OR DAMAGED DATA, OR ANY OTHER COMMERCIAL OR ECONOMIC LOSS, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR ANY OTHER THEORY OF LIABILITY, ARISING OUT OF OR RESULTING FROM ACCESS TO OR POSSESSION OR USE OF THIS DOCUMENT, EVEN IF CSA GROUP HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES.

In publishing and making this document available, CSA Group is not undertaking to render professional or other services for or on behalf of any person or entity or to perform any duty owed by any person or entity to another person or entity. The information in this document is directed to those who have the appropriate degree of experience to use and apply its contents, and CSA Group accepts no responsibility whatsoever arising in any way from any and all use of or reliance on the information contained in this document.

CSA Group is a private not-for-profit company that publishes voluntary standards and related documents. CSA Group has no power, nor does it undertake, to enforce compliance with the contents of the standards or other documents it publishes.

Intellectual property rights and ownership

As between CSA Group and the users of this document (whether it be in printed or electronic form), CSA Group is the owner, or the authorized licensee, of all works contained herein that are protected by copyright, all trade-marks (except as otherwise noted to the contrary), and all inventions and trade secrets that may be contained in this document, whether or not such inventions and trade secrets are protected by patents and applications for patents. Without limitation, the unauthorized use, modification, copying, or disclosure of this document may violate laws that protect CSA Group’s and/or others’ intellectual property and may give rise to a right in CSA Group and/or others to seek legal redress for such use, modification, copying, or disclosure. To the extent permitted by licence or by law, CSA Group reserves all intellectual property rights in this document.

Patent rights

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. CSA Group shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

Authorized use of this document

This document is being provided by CSA Group for informational and non-commercial use only. The user of this document is authorized to do only the following:

If this document is in electronic form:

- load this document onto a computer for the sole purpose of reviewing it;
- search and browse this document; and
- print this document if it is in PDF format.

Limited copies of this document in print or paper form may be distributed only to persons who are authorized by CSA Group to have such copies, and only if this Legal Notice appears on each such copy.

In addition, users may not and may not permit others to

- alter this document in any way or remove this Legal Notice from the attached standard;
- sell this document without authorization from CSA Group; or
- make an electronic copy of this document.

If you do not agree with any of the terms and conditions contained in this Legal Notice, you may not load or use this document or make any copies of the contents hereof, and if you do make such copies, you are required to destroy them immediately. Use of this document constitutes your acceptance of the terms and conditions of this Legal Notice.



This is a preview. [Click here to purchase the full publication.](#)

Revision History

Z96-15, High-visibility safety apparel

Errata — February 2016	Revision symbol (in margin)
Clause 5.2.1	Δ

Standards Update Service

Z96-15

November 2015

Title: *High-visibility safety apparel*

To register for e-mail notification about any updates to this publication

- go to store.csagroup.org
- click on **Product Updates**

The **List ID** that you will need to register for updates to this publication is **2423828**.

If you require assistance, please e-mail techsupport@csagroup.org or call 416-747-2233.

Visit CSA Group's policy on privacy at www.csagroup.org/legal to find out how we protect your personal information.

Z96-15

High-visibility safety apparel



®A trademark of the Canadian Standards Association, operating as "CSA Group"

*Published in November 2015 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3*

*To purchase standards and related publications, visit our Online Store at store.csagroup.org
or call toll-free 1-800-463-6727 or 416-747-4044.*

ISBN 978-1-4883-0005-9

*© 2015 Canadian Standards Association
All rights reserved. No part of this publication may be reproduced in any form whatsoever
without the prior permission of the publisher.*

[This is a preview. Click here to purchase the full publication.](#)

Contents

Technical Committee on High Visibility Apparel	3
Preface	7
1 Scope	9
2 Reference publications	10
3 Definitions	13
4 Garment class and design	14
4.1 Classes of high-visibility safety apparel (HVSA)	14
4.2 Garment design	15
4.2.1 Retroreflective or combined-performance stripes/bands	15
4.2.2 Coloured stripes/bands — Configurations	16
4.2.3 Background material	16
4.2.4 Optional ID patches and lettering	16
4.2.5 Tear-away capability	17
4.3 Apparel design considerations for emergency first-responder HVSA	17
4.4 Special allowances for FR garment design	17
4.4.1 FR-application background material	17
4.4.2 FR-application stripes/bands	17
5 Requirements for background and combined-performance retroreflective materials	18
5.1 Colour of background and combined-performance materials	18
5.2 Colourfastness properties for background materials	18
5.2.1 Colourfastness to light (Xenon)	18
5.2.2 Colourfastness to crocking	18
5.2.3 Colourfastness to perspiration	18
5.2.4 Colourfastness properties related to care labeling	18
5.3 Dimensional change for background materials	18
5.4 Mechanical properties of background materials	19
5.4.1 Bursting strength of knitted and other nonwoven materials	19
5.4.2 Tear resistance of woven materials (uncoated, coated, or laminated)	19
5.5 Performance under wet conditions	19
5.5.1 Water repellency	19
5.5.2 Water resistance	19
5.5.3 Water penetration	19
5.6 Water vapour permeability for background materials classified as breathable	19
5.7 Ergonomics	20
6 Photometric and physical performance requirements for retroreflective materials	20
6.1 Performance of retroreflective material prior to test exposures	20
6.2 Performance of retroreflective material after test exposures	21
7 Test methods	21
7.1 Sampling and conditioning	21