



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 20653-2020

**Protective clothing--High visibility warning clothing for
professional use**

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB 20653-2006 "High visibility warning clothing for professional use". Compared with GB 20653-2006, the main changes in this Standard are as follows.

- Change the standard's name from "High visibility warning clothing for professional use" to "Protective clothing - High visibility warning clothing for professional use";
- Add and modify some terms and definitions;
- Add requirements for area measurement and grade assessment of warning clothing;
- Modify the design requirements for warning clothing;
- Modify the ergonomic requirements for warning clothing;
- Modify the technical requirements for color fastness to perspiration of background materials and non-fluorescent materials;
- Modify the technical requirements for the color fastness of background materials and non-fluorescent materials to water washing, dry cleaning, hypochlorite bleaching and heat pressing;
- Modify the technical requirements for dimensional changes in background materials and non-fluorescent materials. Add test method for dimensional changes;
- Modify the technical requirements for the mechanical properties of background

materials and non-fluorescent materials;

- Add the chemical safety performance requirements and test methods for background materials and non-fluorescent materials;
- Modify the reflective performance requirements for single-performance retroreflective materials. Delete 3 ratings. Unify technical requirements;
- Modify the test methods for water washing and dry cleaning;
- Modify the graphical symbol for high visibility warning clothing. Delete the retroreflective material level identifier in the original graphic symbol;
- Add normative Annex D "Arrangement of reflective tapes during industrial washing";
- Add informative Annex F "Environmental risk level and visibility clothing design guidance" to provide reference information to guide the application and design of high visibility warning clothing.

This Standard uses redrafting method to modify and adopt ISO 20471.2013 "High visibility clothing - Test methods and requirements". The main differences between this Standard and ISO 20471.2013 are as follows.

- Modify the standard's name;
- Delete the "Introduction" of ISO 20471.2013;
- Regarding the normative reference documents, this Standard has been adjusted with technical differences to adapt to the technical conditions in China. The adjustments are reflected in Chapter 2 "Normative references". The specific adjustments are as follows.
- Replace ISO 105-A02 and ISO 105-A03.1993 respectively with GB/T 250 and GB/T 251, which are equivalent to ISO 105-A02 and ISO 105-A03.1993 (see 5.3);
- Add references to GB/T 1335.1 (see 4.3), GB/T 1335.2 (see 4.3), GB 5296.4 (see 8.3), GB/T 12704.1 (see 5.6) and GB 18401-2010 (see 5.7);
- Replace ISO 105-X12 with GB/T 3920, which modified ISO 105-X12 (see 5.3);

- Replace ISO 105-E04 with GB/T 3922, which is modified ISO 105-E04 (see 5.3);
- Replace ISO 13934-1 with GB/T 3923.1, which modified ISO 13934-1 (see 5.5.1);
- Replace CIE 15 and CIE S 005 with GB/T 3978, which non-equivalently adopted CIE 15 and CIE S 005 (see 7.2);
- Replace CIE 15 with GB/T 3979, which non-equivalently adopted CIE 15 (see 7.2);
- Replace ISO 105-D01 with GB/T 5711, which modified ISO 105-D01 (see 5.3.3);
- Replace ISO 105-X11 with GB/T 6152, which equivalently adopted ISO 105-X11 (see 5.3.3);
- Replace ISO 105-N01 with GB/T 7069, which equivalently adopted ISO 105-N01 (see 5.3.3);
- Replace ISO 13938-1 with GB/T 7742.1, which modified ISO 13938-1 (see 5.5.2);
- Replace ISO 105-B02 with GB/T 8427-2008, which modified ISO 105-B02 (see 5.2.2);
- Replace ISO 3759 with GB/T 8628-2013, which modified ISO 3759 (see 7.3);
- Replace ISO 6330.2012 with GB/T 8629-2017, which modified ISO 6330.2012 (see 7.3 and 7.5.5.3);
- Replace ISO 3758.2005 with GB/T 8685, which modified ISO 3758.2005 (see 8.2);
- Replace ISO 105-C06.2010 with GB/T 12490-2014, which modified ISO 105-C06.2010 (see 5.3.3);
- Replace ISO 4675 with GB/T 18426, which equivalently adopted ISO 4675 (see 7.5.3);
- Replace ISO 3175-2 with GB/T 19981.2, which modified ISO 3175-2 (see 7.3

and 7.5.5.3);

- Replace ISO 12947-2 with GB/T 21196.2, which modified ISO 12947-2 (see 7.5.1);

- Replace ISO 4674-1:2003 with HG/T 2581.1-2009, which modified ISO 4674-

1.2003 (see 5.5.3);

- In terms and definitions, add "retro reflection" and "non-fluorescent material"; delete "torso", "long sleeve (1/1 arm)", "road", "active road user", "passive road user", "outer shell";

- Modify the design requirements and typical design styles of warning clothing.

Adjust the minimum width of reflective tape for level 1 warning clothing from 50 mm to 25 mm. Add the requirements for the design of shoulder reflective tape;

- Add 4.4 "Ergonomic requirements for warning clothing";

- Modify 5.6 "Physiological performance - Water vapour and thermal resistance" of ISO 20471:2013 to "Moisture permeability";

- Add 5.7 "Chemical safety performance requirements";

- ISO 20471:2013 has a total of 9 chapters, and this Standard has a total of 8 chapters.

Chapter 8 and 9 in ISO 20471:2013 are modified and merged as Chapter 8 of this Standard "Marks, maintenance labels and instructions for use";

- Compared with the 4 annexes of ISO 20471:2013 (Annex A ~ Annex D), this Standard has been increased to 6 annexes (Annex A ~ Annex F);

- Modified the design legend of warning clothing in Chapter 4 of ISO 20471:2013 as informative Annex A "Typical design style of warning clothing";

- Add informative Annex B "Chromaticity diagram of background material and combined-performance material";

- Add normative Annex C "Method for determination of retro reflection coefficient";

- Adjust Annex B of ISO 20471:2013 as the normative Annex D of this Standard "Arrangement of reflective tapes during industrial washing";

- Adjust Annex C of ISO 20471:2013 as normative Annex E of this Standard