INTERNATIONAL STANDARD

ISO 20349-1

First edition
2017-07

AMENDMENT 1
2020-09

Personal protective equipment — Footwear protecting against risks in foundries and welding —

Part 1: Requirements and test methods for protection against risks in foundries

AMENDMENT 1

Équipement de protection individuelle — Chaussures de protection contre les risques dans les fonderies et lors d'opérations de soudage —

Partie 1: Exigences et méthode d'essai pour la protection contre les risques dans les fonderies

AMENDEMENT 1

Reference number
ISO 20349-1:2017/Amd.1:2020(E)

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

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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety — Personal protective equipment*, Subcommittee SC 3, *Footwear protection*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 161, *Foot and leg protectors*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 20349 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.

Personal protective equipment — Footwear protecting against risks in foundries and welding —

Part 1: Requirements and test methods for protection against risks in foundries

AMENDMENT 1

Clause 8

Add the following note after Figure 2 above the title:

"NOTE For more information on protection against heat and flame, see Annex B."

New Annex B

Insert the following new Annex B.

Annex B
(informative)

Heat and flame protection

B.1 General

PPE designed to protect all or a part of the body against the effects of heat and/or fire should possess thermal insulation capacity and mechanical strength appropriate to the foreseeable conditions of use.

This annex provides the reader with information on heat and flame resistance in relation to footwear for foundries. When specifying and selecting footwear, heat and flame resistance should be given a high priority.

In this context heat and flame resistance are specific terms referring to the real work condition in foundries to prevent such risks like of spontaneous ignition and heat flux in contact with hot surfaces or molten metal.

Even though the number of accidents in foundries caused by contact with hot surfaces or molten metal is negligible, the personal costs of these accidents, the resultant injuries may bring about great financial costs and have life-threatening consequences for humans.

Footwear for foundries alone cannot protect against all risks as found in foundries. It should be worn always in conjunction with heat and flame resistant PPE (clothing, gloves, hoods, aprons, gaiters) according to the risk assessment of the work place.

Foundry boots do not provide protection against defective equipment or incorrect use of equipment. They are not suitable in cases where safety footwear should be worn in accordance with EN 50321.

It is important that heat- and flame-resistant footwear for foundries is in use at all times when there is a potential risk of heat or flame; comfortable and specific designed footwear will encourage this.

B.2 Explanation of heat and flame resistant properties

B.2.1 General

The test conditions and performance requirements of this document are considered basic requirements for footwear for foundries. Footwear for foundries are used for short-term in environments with high temperatures or molten metal. Often it is found that footwear for foundries in combination with other suitable PPE can achieve a higher protection or longer remain time in hazardous environments.

B.2.2 Resistance to effects of molten metal

Slag can flow out in melting and casting operations. If they get into the shoes, severe foot burns can occur. When handling fire-liquid masses, foundry footwear with high upper and either trousers falling over them and made of flame-retardant material, aprons or at least gaiters should be worn.

The footwear alone is resistant against molten iron and/or aluminium, if it is marked with the following symbols:

Symbol Fe	indicates the footwear complies using iron as test metal
Symbol Al	indicates the footwear complies using aluminium as test metal

In case of an injury caused by splashes of hot metal, it is necessary to remove the shoes as quickly as possible, even with gloves with a worst dexterity. The maximum removal time required by the standard is 5 s per shoe.

B.2.3 Resistance of upper and outsole to hot environment

Safety footwear for foundries is flame resistant. It does not burn or glow longer than 2 s after a contact time of 10 s with a specified test flame.

The pain threshold for the human skin is at 42 °C. The heat resistance of this footwear allows the wearer to stand for at least 10 min on a floor at 250 °C before reaching 42 °C. The outsole of this footwear resist damage for 40 min on a floor of 250 °C.

The outsole material does not collapse after a contact time of 1 min at 300 °C. The upper remains dimensionally stable up to 5 min heat influence at a temperature of 180 °C. It is heat resistant for a short time of at least 6 s at 500 °C.

B.3 Additional protection

In addition to high temperatures or molten metal, foundries also have mechanical hazards that require additional protection.

These may be among others e.g.:

— Perforation resistance (Symbol P);

— Energy absorption of seat region (Symbol E);

— Metatarsal protection (Symbol M);

— Cut resistance (Symbol CR).

Bibliography

Add the following:

"[7] EN 50321, *Live working — Footwear for electrical protection*"

ICS 13.340.50

Price based on 3 pages