



PPE: Foot protection

Problems concerning the penetration resistance of safety footwear with non-metal inserts

Timeline

<u>Date</u>	<u>Measures</u>
2004	The accident statistics of the umbrella organisation for accident insurers in Germany (<i>Deutsche Gesetzliche Unfallversicherung (DGUV)</i>) show a reduction in the number of foot injuries between the years 2000 and 2005. By contrast, there has been an increase in the number of penetration injuries to feet since 2005. It was already suspected at that time that this was a result of the new "penetration resistant" non-metal inserts, which are becoming increasingly common in safety shoes.
Since 2004	In several specialist publications, the German accident insurers take the view that products which have "non-metallic penetration resistant inserts", despite undergoing a successful type-examination, do not seem to offer the same standard of safety as conventional products with steel inserts.
2008	Recommendation from the chairman of the PPE committee: "Where non-metal products have not been improved and further developed, products with tried-and-tested steel inserts should be used" (7-8 2008 <i>Sicher ist sicher – Arbeitsschutz aktuell</i> / Better safe than sorry – Health and safety in the workplace today)
2008	Several workplace accidents occur in Hessen involving S3 safety footwear (penetration injuries). The safety shoes and a new shoe of the same type were tested in accordance with DIN EN ISO 20344. All the shoes passed the test to determine whether they complied with the standard.
2009	Launch of a focus initiative in Hessen. No weak points were identified using the testing methods to determine compliance with the standard. It would appear, however, that these tests do not reflect actual conditions when the shoes are worn, i.e.: <ol style="list-style-type: none"> 1. The nail used in the test is much thicker (4.5 mm) than the nails often found on building sites (3.2 mm and/or 2.8 mm). 2. The penetration speed recorded during the test (10 mm/min) is much slower than in reality. 3. The minimum penetration power of 1100 N only corresponds to a person who weighs 80 kg and is walking. An installation engineer wearing protective clothing and possibly also carrying tools would be much heavier. 4. Factors which have a bearing on safety, such as stepping down from a ladder or jumping, are not covered by the standard.
February 2010	Information from type-examination centres, such as <i>TÜV Rheinland LGA Product GmbH</i> , has been published in specialist journals' indicating that problems are caused by textile inserts, even if the shoes pass the tests.
2010	As part of another focus initiative, the market surveillance authority in Hessen has carried out further penetration resistance tests using thin objects.

Result: None of the shoes which had non-metal inserts provided sufficient protection against the penetration of thinner nails. In some cases, the protective effect was less than 500 N. Further details can be seen in the final report published on the *Sozialnetz Hessen* website:

http://gps.sozialnetz.de/global/show_document.asp?id=aaaaaaaaaaamff

(link to German version of the final report 2010 “Penetration resistance of safety footwear”)

- 2011
- The problem was discussed by the market surveillance authority in Hessen (*Geräteuntersuchungsstelle Regierungspräsidium (RP) Kassel / Hessen Equipment Testing Office, Kassel Regional Administration*), with the involvement of the Commission for Workplace Health and Safety and Standardisation (*Kommission Arbeitsschutz und Normung (KAN)*). The following bodies were involved in the discussion: BMAS (Federal Ministry of Labour and Social Affairs), DGUV (*Deutsche Gesetzliche Unfallversicherung* [umbrella organisation for accident insurers in Germany]), KAN, IFA (*Institut für Arbeitsschutz / Institute for Health and Safety in the Workplace*), Kassel Regional Administration. Outcome of the discussion:
1. All those involved believe that the requirements for carrying out tests to determine compliance with the standard should be amended no later than when they are next revised.
 2. The IFA will start to carry out tests on safety footwear in 2011 and flesh out the points identified by Hessen regarding the requirements for tests.
 3. Until the standard is revised, consumers must be informed/warned that the safety shoes do not provide adequate protection.
- December 2011
- Ten pairs of safety shoes sold in building supply stores were provided by Kassel Regional Administration to the DGUV for testing at the IFA. The results of the tests are not currently available to us. In its annual report for 2012, the IFA advises against safety shoes with textile inserts being used in the construction sector.
- December 2011
- The new revised EN ISO 20344 is accepted by the CEN. The test method for shoes with textile inserts has been extended. However, the thickness of the nail used in the test remains unchanged. The safety requirements have not been made more stringent in this regard.
- January 2012
- Discussion at *HDS Bundesverband der Schuhindustrie e.V.* [federal association of the shoe industry] in Offenbach: joint discussion with representatives from the DGUV, IFA, HDS and Kassel Regional Administration.
- Result: The HDS agrees to provide assistance regarding manufacturer information.
- August 2012
- Discussions cancelled, further meetings did not take place.
- March 2013
- Representative of the German Länder for the PPE Directive notified by Kassel Regional Administration.

- 24.4.2013 Presentation of the subject at EU level, PPE-ADCO Meeting (see presentation)
- The market surveillance authorities in the EU Member States were informed about the subject. Some of the other Member States proposed that the findings be published in technical journals. It was also felt that the European standards organisation CEN should be instructed to ensure that the risks and lack of clarity revealed by the present findings be removed from the European standard.
- May 2013 European Commission report
- Notification of the Working Party on Market Surveillance (AAMü) and the Working Party on Product Safety (AfPS)
- July 2013 A focus initiative was carried out in Hessen, which included examining 30 safety shoes with regard to their instructions for use. Only 5 out of 20 "penetration resistant" shoes were accompanied by information on the form of penetration protection. None of the products tested were accompanied by information referring to problems associated with the use of textile inserts.
- Note According to information available to Kassel Regional Administration, *BG Bau* [statutory accident insurance body for the building industry] has been recommending for several years that its insurance contract holders in the construction sector only wear safety shoes with metal inserts where there is the risk of penetration by nails with a diameter of less than 4 mm (see information sheet "*Arbeitssicherheit und Gesundheitsschutz am Bau*" / Safety and health protection on construction sites, BGI 5081, Baustein C6).
- As at: Kassel Regional Administration
24.7.2013 Hessen Equipment Testing Office