



**International
Standard**

ISO 20537

**Footwear — Identification of
defects during visual inspection —
Vocabulary**

**First edition
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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 document 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).

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This document was prepared by Technical Committee ISO/TC 216, *Footwear*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 309, *Footwear*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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.

Introduction

Visual inspection is important for manufacturers, suppliers, inspection organizations and costumers as one of the quality indicators of footwear products. This document is not only intended as a basis for assessing footwear appearance defects but also as a reference material and training material for the footwear industry.

The presence of one of these defects in footwear does not automatically imply that the footwear is substandard. Suppliers and purchasers can still reach an agreement on the scope and level of acceptance for defects in the goods, based on the intended use of the footwear.

Due to the development of material and technology in the footwear industry, as well as insufficient photographic resources, it is impossible to define all terms for identification of defects during visual inspection of footwear. The list of terms given in this document is not exhaustive.

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Footwear — Identification of defects during visual inspection — Vocabulary

1 Scope

This document defines the most common terms related to defects that occur in the manufacture, storage and usage of footwear and that can be determined during visual inspection of the end product.

NOTE The photos are given as examples and do not represent all possible instances.

2 Normative references

There are no normative references in this document.

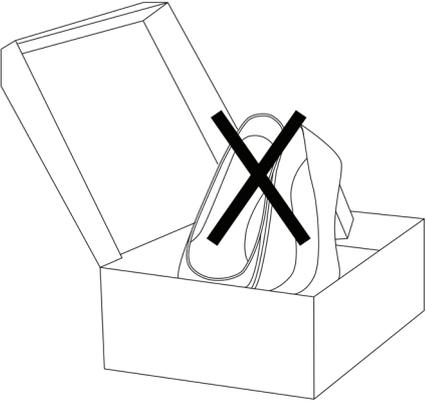
3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 General defects

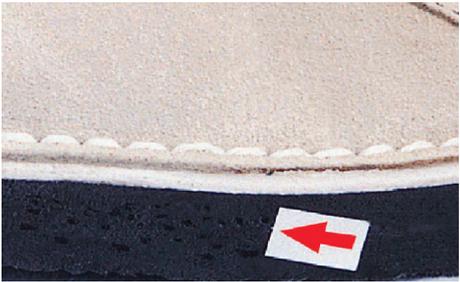
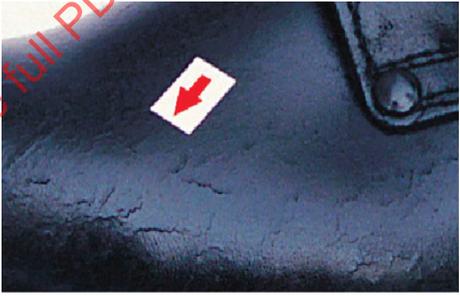
Term and definition	Examples
<p>3.1.1 colour variation obvious difference in colour that can be seen in the same area within a pair, or in one component part or in the adjacent areas of one item of footwear Note 1 to entry: Intentional designs are not included.</p>	
<p>3.1.2 damaged shoe footwear that has changed in appearance due to careless operation that adversely affects its performance</p>	

Term and definition	Examples
<p>3.1.3 inconformity with the design situation when a product does not conform to the reference sample or drawing which both parties have agreed upon</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>drawing</p> </div> <div style="text-align: center;">  <p>product</p> </div> </div>
<p>3.1.4 mildewing infecting process by microorganisms on material at any part of the footwear</p>	<div style="text-align: center;">   </div>
<p>3.1.5 non-compliant box shoe box that does not conform with the footwear inside</p>	<div style="text-align: center;">  </div>

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Term and definition	Examples
<p>3.1.6 poor printing printing on footwear that is incomplete or unclear</p>	
<p>3.1.7 soiled shoe shoe with dirt or adhesive mark on the upper, lining or sides of the sole due to careless handling or cleaning</p>	
<p>3.1.8 spue white frost-like layer that appears on the surface of footwear</p>	
<p>3.1.9 weave fault defect that reduces the expected performance of the fabric Note 1 to entry: Related defects are described in ISO 8498 and ISO 8499.</p>	

3.2 Defects in materials aspects

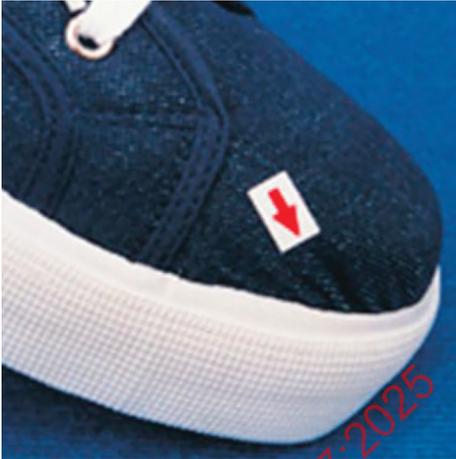
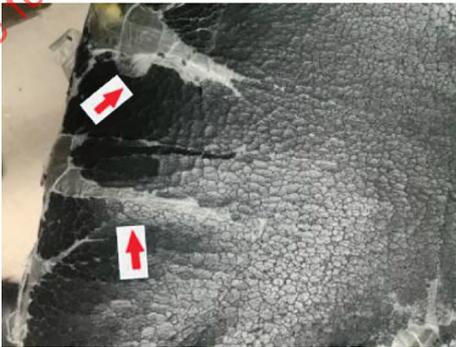
Term and definition	Examples
<p>3.2.1 air hole small hole which develops in the colloid structure of materials</p>	
<p>3.2.2 colour migration discolouration caused by movement of colour from one material to another</p>	
<p>3.2.3 crazing cracks in the coating of upper materials</p>	
<p>3.2.4 discolouration staining or fading of the original material colour, either in discrete areas or across the whole product</p>	
<p>3.2.5 impurity small particles that do not belong to the original formulation and show on the material</p>	

Term and definition	Examples
<p>3.2.6 pit small hole in the surface of footwear</p>	
<p>3.2.7 shade variation differences within materials that cause a difference in the shade of the finished footwear</p>	
<p>3.2.8 sulfur blooming yellow or white layer that appears on the surface of rubber materials</p>	

3.3 Defects in components

3.3.1 Defects in upper

Term and definition	Examples
<p>3.3.1.1 broken folding folding of upper over the edge that has broken during the making or wearing process</p>	

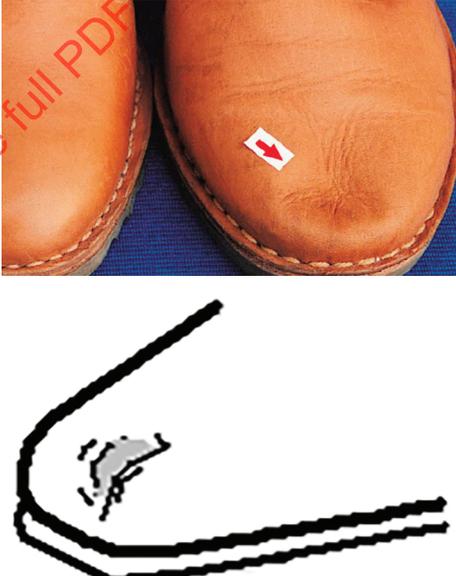
Term and definition	Examples
<p>3.3.1.2 crease on the upper wrinkles on the upper area of footwear due to poor sewing process</p>	 
<p>3.3.1.3 delamination of upper separation of upper into its constituent layers, either in whole or in part</p>	 

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Term and definition	Examples
<p>3.3.1.4 exposed lasting margin scoured lasting margin of the upper that is exposed above the lasting edge</p>	
<p>3.3.1.5 grain crack grain surface of leather in upper that is split or cracked, or on which a rupture pattern has developed</p>	
<p>3.3.1.6 wrinkled leather loose grain grain whose attachment to corium has been eroded, giving rise to pronounced wrinkles when leather is bent, grain inside [SOURCE: ISO 15115:2019, 3.55, modified — the preferred term “wrinkled leather” has been added.]</p>	

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3.3.2 Defects in counter and toe puff

Term and definition	Examples
<p>3.3.2.1 collapsed counter counter area of footwear that has collapsed due to the stiffener either becoming detached or weakened</p>	 <p>The photograph shows the interior of a dark blue suede shoe with a wooden sole. A red arrow points to the collapsed counter area. The diagram below shows a side profile of a shoe with a red arrow pointing to the collapsed counter area.</p>
<p>3.3.2.2 collapsed toe puff toe that is distorted and buckled because the reinforcement has collapsed within, leaving creases and/or dents</p>	 <p>The photograph shows the toe area of a brown leather shoe. A red arrow points to the distorted and buckled toe puff. The diagram below shows a side profile of a shoe with a red arrow pointing to the collapsed toe puff area.</p>

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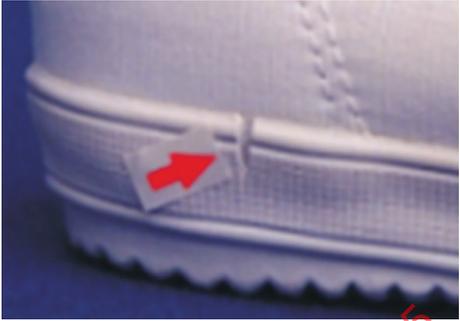
Term and definition	Examples
<p>3.3.2.3 uneven counter counter edge that has become creased Note 1 to entry: Uneven counter can be due to excessive force used during the lasting process or a poor sewing process.</p>	 <p>The photograph shows a side view of a brown suede shoe with a light-colored sole. A red arrow on the counter points to a crease. Below it is a schematic diagram of the shoe's upper, with a vertical line indicating the counter edge and several short lines representing the crease.</p>
<p>3.3.2.4 uneven toe puff toe puff of the shoe that has become creased Note 1 to entry: Uneven toe puff can be due to excessive force used during the lasting process or a poor sewing process.</p>	 <p>The schematic diagram shows a side profile of a shoe's toe area. It features a horizontal line for the sole and a curved line for the toe puff. Several short lines radiating from the toe puff indicate a crease.</p>

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3.3.3 Defects in lining and insock

Term and definition	Examples
<p>3.3.3.1 crease wrinkle permanent hard folding mark that appears in the middle of lining or insock EXAMPLE A pleat or furrow in the surface stuck together.</p>	
<p>3.3.3.2 broken insock textile on insock component that has torn during the placement or wearing process</p>	
<p>3.3.3.3 separated lining lining that has separated from the upper, leaving gaps or open areas</p>	
<p>3.3.3.4 uneven lining lining that has wrinkled or creased</p>	
<p>3.3.3.5 uneven lining edge edge of lining that is crooked</p>	

3.3.4 Defects in welt and foxing

Term and definition	Examples
<p>3.3.4.1 broken foxing foxing that has cracked Note 1 to entry: Broken foxing can be due to poor material quality or poor tension during the wearing process.</p>	
<p>3.3.4.2 foxing curling departure of foxing from physical flatness with the tendency to curve into a cylindrical shape</p>	
<p>3.3.4.3 poor foxing positioning foxing that is too high, revealing the outsole</p>	
<p>3.3.4.4 uneven welt welt surface that is uneven or welt edge that is crooked or notched</p>	

Term and definition	Examples
<p>3.3.4.5 insufficient welt welt that fails to cover the circle of the lower outer edge of footwear</p>	

3.3.5 Defects in heel

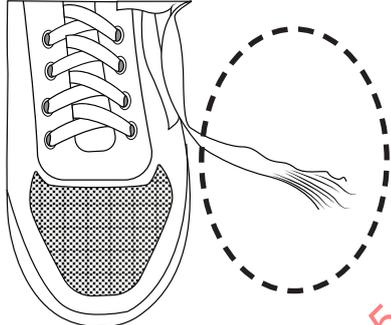
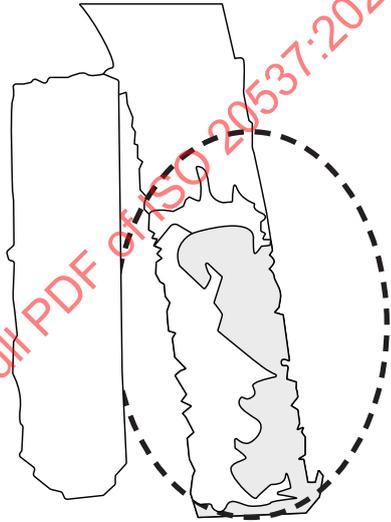
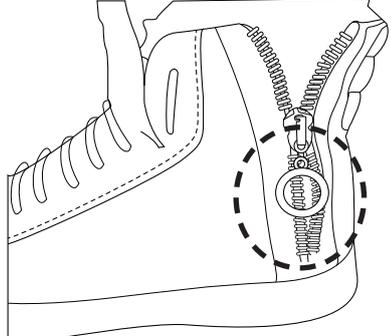
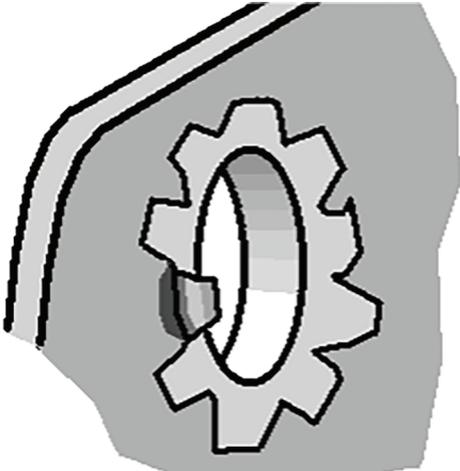
Term and definition	Examples
<p>3.3.5.1 creased heel cover heel coating that is wrinkled, not fixed tightly or not fully stretched</p>	 
<p>3.3.5.2 loose heel heel that has not been securely fastened causing it to work loose easily or come off altogether</p>	

Term and definition	Examples
<p>3.3.5.3 loose top piece top piece that has not been securely fastened to the heel, causing it to work loose easily or come off altogether</p>	
<p>3.3.5.4 slanted heel heel that does not sit on the ground flat but leans with the top piece resting on its edge</p>	
<p>3.3.5.5 uneven top piece top piece surface that is distorted</p>	

3.3.6 Defects in outsole

Term and definition	Examples
<p>3.3.6.1 blister soft area that presents an irregular surface or protuberance without a break on the surface</p>	
<p>3.3.6.2 deformed outsole outsole profile that is distorted</p>	
<p>3.3.6.3 mould spew material which has flowed into the mould gap and remains on the surface Note 1 to entry: Mould spew occurs during the injection process of moulded footwear.</p>	
<p>3.3.6.4 moulding defect structure that is incomplete or deformed</p>	

3.3.7 Defects in other components

Term and definition	Examples
<p>3.3.7.1 defective lace lace containing one or more defects which could affect its functionality Note 1 to entry: Defects can include excessive or insufficient length and damage.</p>	
<p>3.3.7.2 defective touch and close fastener touch and close fastener containing one or more defects which could affect its functionality Note 1 to entry: Defects can include frays and lack of stickiness.</p>	
<p>3.3.7.3 defective zipper zipper containing one or more defects which could affect its functionality</p>	
<p>3.3.7.4 eyelet clenching fault eyelet edge which is sticking out Note 1 to entry: An eyelet clenching fault can cause injury to the wearer.</p>	

Term and definition	Examples
<p>3.3.7.5 loose ornaments ornament not securely attached to the shoe due to poor bonding force</p>	
<p>3.3.7.6 rusty accessory metal accessory with a corrosive substance which is formed by the action of water and air</p>	

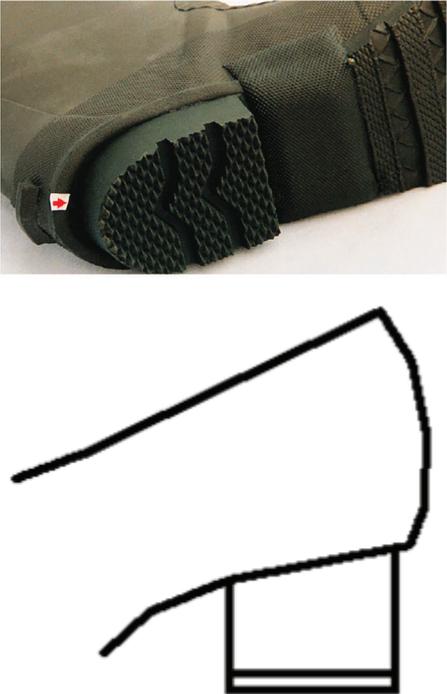
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3.4 Manufacturing defects

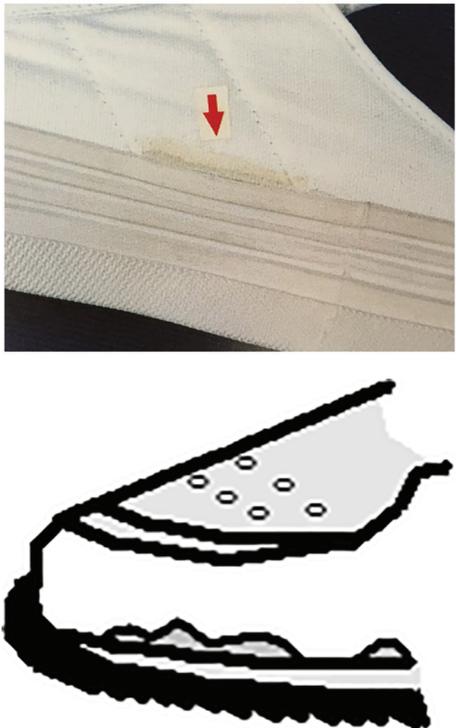
3.4.1 Defects in assembly

Term and definition	Examples
<p>3.4.1.1 insufficient insock insock that is too short to cover the heel area and sides of the insole</p>	
<p>3.4.1.2 mismatching upper and sole footwear with an upper whose size does not match with the sole size</p>	

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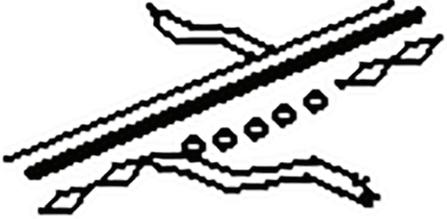
Term and definition	Examples
<p>3.4.1.3 misplaced heel heel that does not sit correctly on the seat of the footwear</p>	
<p>3.4.1.4 under-seated heel heel whose top is smaller than the area of the seat Note 1 to entry: This makes the heel seem immersed in the sole of the footwear.</p>	

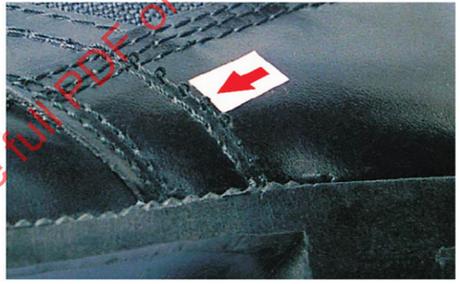
3.4.2 Gluing defects

Term and definition	Examples
<p>3.4.2.1 adhesion failure detachment of two parts connected with adhesive material Note 1 to entry: Typical adhesion failures are common between the outsole and the midsole, between the outsole and the upper and between the midsole and the upper. Note 2 to entry: An example of an adhesive material is glue.</p>	
<p>3.4.2.2 glue overflow excessive amount of adhesive that has bled from the adhesion part to the surface</p>	

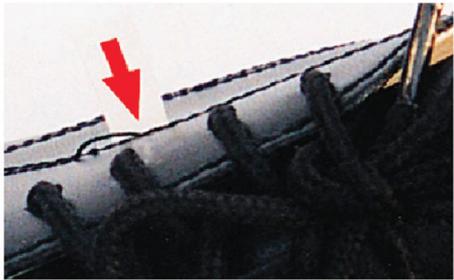
Term and definition	Examples
<p>3.4.2.3 insufficient gluing insufficient application of glue to components, causing their detachment</p>	
<p>3.4.2.4 trace of glue glue stains on the insock or upper of the finished footwear</p>	 

3.4.3 Sewing defects

Term and definition	Examples
<p>3.4.3.1 broken stitching thread breakage thread that has broken altogether, perhaps as a result of poor thread quality or poor tension in the stitching process</p>	 

Term and definition	Examples
<p>3.4.3.2 crooked stitching non-parallel stitches disordered or crooked alignment between the stitch line and the intended edge on an upper Note 1 to entry: Special stitching styles are excluded from crooked stitching.</p>	
<p>3.4.3.3 flipped thread under thread and top thread that have switched places, causing the under thread to float on the upper surface</p>	
<p>3.4.3.4 merged stitching stitch threads that overlap in some areas of a shoe</p>	

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Term and definition	Examples
<p>3.4.3.5 skewed back seam back seam that is not located in the line of heel symmetry</p>	 <p>The photograph shows the back of a brown suede shoe with a red arrow pointing to a seam that is skewed to the right of the center. Below it, a black line drawing of a shoe heel shows the same seam line skewed to the right of the vertical center line.</p>
<p>3.4.3.6 skipped stitching thread that is skipped, leading to the thread coming away from the upper in a loop alternating with stitches on both sides</p>	 <p>A close-up photograph of a shoe's stitching with a red arrow pointing to a section where the thread has skipped, creating a loop that protrudes from the surface.</p>
<p>3.4.3.7 uneven lapping upper material with a rough or/and uneven overlap</p>	 <p>A close-up photograph of a brown leather shoe's upper showing an uneven overlap of the material, with a red arrow pointing to the irregular edge.</p>

3.4.4 Defects in other process

Term and definition	Examples
<p>3.4.4.1 extruded nail nail which is used to fasten some components of footwear through the insole Note 1 to entry: Extruded nails have the potential to hurt the wearer.</p>	 
<p>3.4.4.2 poor lasting insufficient lasting that results in wrinkles due to poor process technique or the incompatibility of the upper and the last</p>	
<p>3.4.4.3 remaining staple staple, used for positioning during lasting, that has been left in the insole Note 1 to entry: Remaining staples have the potential to hurt the wearer.</p>	
<p>3.4.4.4 uneven nail nail applied to fix a heel or top piece that is unevenly distributed</p>	
<p>3.4.4.5 uneven top facing top line that varies in size</p>	

3.5 Defects within pairs

Term and definition	Examples
<p>3.5.1 different apron size size of central portion on the top of the vamp that is variable within pairs</p>	
<p>3.5.2 ornament difference difference between ornaments in the same area of two items in a pair Note 1 to entry: Intentional designs are not included.</p>	
<p>3.5.3 pair colour variation obvious difference in colour that can be seen in the same area of two items in a pair Note 1 to entry: Intentional designs are not included.</p>	

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