Determining the significance of outsole wear characteristics during the forensic examination of footwear impression evidence

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Abstract

Wear found on the outsoles of shoes, in the simplest description, is the gradual abrasion of the shoe’s outsole material that occurs during contact with a substrate. This abrasion is due to friction, which in turn results in the elimination and degradation of portions of outsole material. This causes changes in appearance of shoe outsoles and consequently of impressions made by the shoes. Wear should be considered in all footwear examinations in the same manner as design, physical size and individual characteristics. In some cases general wear may allow for the exclusion of the footwear. In other cases, correspondence of general wear between the questioned impression and the shoe will contribute to reducing the population of shoes that could have made that impression.

It is also important to understand the differences in comparison value and considerations of distortion or degradation as a consequence of both the impression making and the recovery process. It is also important to understand the differences in comparative value and considerations of distortion or degradation as a consequence of both the impression making and the recovery process.

General wear changes as shoes are worn

Different shoes from the same runner worn approximately 150 miles of use over a period of 6 months later (A)

Progression of general wear on one outsole element from new (A) to 5 months of general wear on an outsole element in approximately 5 months of general use (B)

General wear can be visually similar on shoes belonging to the same person

Different shoes from the same person worn approximately the same amount of time

General wear can be visually similar on shoes belonging to different people

Different shoes of two different people, both shoes worn primarily to the same work place.

General wear can be visually similar on shoes belonging to different people

Factors to consider during evaluation of wear

1. Time interval

The possibility of additional wear having occurred to the collected shoes must be considered if there is a significant time interval between the crime and the seizure of the shoes.

2. Clarity and distortion

Substrate material, collection methods, movement during impression making, and residue (matrix) issues can limit the quality and quantity of detail available for comparison of wear characteristics.

3. Manufacturing characteristics

Manufacturing characteristics such as mold wear, fixing strip placement and design of inner sole may be mistaken for wear.

Holes and Tears

Used to individualize

Factors to consider during evaluation of wear

1. Time interval

2. Clarity and distortion

3. Manufacturing characteristics

References


We acknowledge the State of Alaska Crime Laboratory and Forensic Scientist and Runner Cheryl Duda for their assistance and support during this project.