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Standard Guide for Selection of Certain Walkway Surfaces When Considering Footwear Traction[1]

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1. Scope

1.1 This guide is intended to assist in the selection of walkway surfaces where the presence of foreign materials may produce the danger of a slip or a fall.

2. Summary of Guide

2.1 Foreign material on a walkway surface often causes slip and fall accidents. A slip can occur because foreign material presents an additional interface between the shoe bottom and a walkway surface. The interface between the shoe bottom and the walkway is replaced by an interface between the shoe bottom and the foreign material, and another between the foreign material and the walkway. Although the foreign material should be removed, it is not always easy to remove prior to use of the walkway or as the foreign material is spilled. In very few cases can shoe bottoms be designed to provide adequate slip resistance to foreign materials. Instead, walkway surfaces should be self-cleaning as they are used by pedestrians.

2.2 This guide sets forth factors to consider in the design of walkway surfaces likely to be affected by foreign materials that may result in slips. These considerations concern metal walkway materials, abrasive materials used on walkways, and climbing systems.

3. Significance and Use

3.1 When the conditions are such that foreign materials can come between shoe bottoms and a walkway surface, efforts should be made to design the walkway surface to remove the foreign material from between shoe bottoms and the walkway surface.

3.2 This type of slip hazard is often found in manufacturing and maintenance processes where foreign materials are frequently present on walkway surfaces. Examples are: food preparation and processing areas, rendering operations, transportation and cargo handling activities.

4. Procedure

4.1 The presence of foreign materials on walkway surfaces often causes people to slip. Most foreign materials, if present on a walkway, will lower slip resistance. A foreign material in contact with a shoe and a walkway presents two additional surfaces: the top of the foreign material mating with the bottom of the shoe sole, and the bottom of the foreign material mating with the walkway surface. Obviously, keeping the walkway surface clean of foreign materials is the best method to eliminate this potential hazard. This is not always possible, however, while routine operations are being performed.

4.2 Treatment of the walkway surface with an abrasive material is a frequently used remedy when the foreign substance is soft or of low viscosity. The function of an abrasive walkway surface is often misunderstood. The ideal approach to reduce slipping on walkways is to eliminate the two additional surfaces caused by the presence of the foreign material. A sharp abrasive incorporation into the walkway surface will allow foot pressure to break up the foreign material and force it into voids between peaks of the abrasive. This process retains two surfaces: the walkway and the shoe bottom. Important considerations in the selection of an abrasive treatment are: wear resistance, resilience of abrasive material, density of abrasive treatment, means of attachment of treatment to the walkway surface, sanitary conditions, and appropriate abrasive size.

4.2.1 The type of abrasive used is also an important factor to consider. For instance, sand, bonded to a floor surface, works well when first applied because sand is a relatively soft material. However, the sharp edges of the sand particles are easily rounded by wear, and foreign material tends to remain on top of the abrasive particles. Proper selection of abrasive material depends upon the particular circumstances of the problem area.

4.2.2 Because some abrasive particles are brittle, they break off during use and become ineffective.

4.2.3 If an insufficient number of abrasive particles are used for treatment of a walkway surface, the viscous foreign material will not be broken up sufficiently. As a result, the treatment will be ineffective because the walkway surface will not contain enough voids to receive the foreign material.

[1] This guide is under the jurisdiction of ASTM Committee F-13 on Safety and Traction for Footwear and is the direct responsibility of Subcommittee F13.10 on Traction.

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