

ESDU Technical Memorandum

Pressures under wet footprint

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The preparation of this Technical Memorandum

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PRESSURES UNDER WET FOOTPRINT

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1. NOTATION AND DEFINITIONS

1.1 Notation

		Dimensions
A^*	modified Anderson-Darling statistic (see Reference 1)	—
M^2	speed number conditioned by resilience	—
N^2	speed number	—
p_B	bearing pressure	$ML^{-1}T^{-2}$
$Pr[\]$	probability of event in []	—
q	kinetic pressure (Zone 1)	$ML^{-1}T^{-2}$
q_V	pressure in “viscous zone” (Zone 2)	$ML^{-1}T^{-2}$
R_I	effective rebound resilience of interface material	—
R_J	effective joint rebound resilience of interface and surface material	—
R_S	effective rebound resilience of surface material	—
T_G	surface temperature	—
V	ground speed	LT^{-1}
Z	vertical load on tyre	$ML^{-1}T^{-2}$
Δ	difference between estimated and measured value of pressure	$ML^{-1}T^{-2}$
$E[\]$	estimated value for quantity in []	—
Φ_1	parameters associated with q and q_V	$ML^{-1}T^{-2}$
η	constant derived from experimental measurement	—
$M[\]$	measured value for quantity in []	—
π	Archimedes constant	—
ρ_C	density of contaminant	ML^{-3}
$\sigma[\]$	standard deviation of quantity in []	—

1.2 Definition

Rebound resilience is the ability of a substance (or object) to return to its former shape after *elastic* deformation.

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