



# SURFACE VEHICLE RECOMMENDED PRACTICE

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Automotive Brake Noise and Vibration Standard Nomenclature

## RATIONALE

The technical report is being stabilized because the technical committee cannot find users for the technical report.

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## FOREWORD

Over the years a variety of terms have come into use to describe a particular vehicle brake noise or vibration event. Some of these have come to be accepted as definitions. Sometimes a certain type of noise has picked up several different definitions that cause confusion amongst engineers. Other engineers, when hearing a noise or sensing a brake vibration that is new to them, often struggle to adequately explain it to other persons for lack of terminology. This becomes even more critical in global communications within the engineering community. This document is directed towards standardizing terminology.

### 1. SCOPE

This document defines various vehicular noises and vibrations that are attributed to being created by the foundation brake components of the vehicle, particularly on passenger cars and light trucks. These definitions cover both disc and drum brakes. The frequency ranges from near zero Hz (tactile sensations) all the way up to 17 kHz, or the upper limit of normal hearing. These noises and vibrations may either directly radiate off the brake system or provide the excitation energy that causes other vehicle components to react.

#### 1.1 Purpose

Establish standard terminology and definitions that can be used to classify or more adequately define a particular vehicular noise or vibration event that is caused by the vehicle foundation brake system.

### 2. REFERENCES

There are no referenced publications specified herein.

### 3. BRAKE SQUEAL

The general definition for brake squeal is an audible noise radiating from the brake system components. The brake squeal heard coming from a given brake corner of the vehicle normally is a fixed frequency or single pure tone; however in some instances, it may contain higher order harmonics of this frequency. The brake squeal frequency typically ranges from 900 Hz to 17 kHz. Under variations in brake stopping parameters (such as temperature, pressure, speed, deceleration), the frequency of the brake squeal can jump to a different frequency. According to theory, the specific allowable squeal frequencies are controlled by the resonant modes of the brake components. Brake squeals can exhibit a wide range of variation in time duration or where the noise occurs during the stop. The following definitions can help to further describe particular types of squeals in terms of their frequency content and when the noise occurs during the stop.