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Railway applications — Acoustics — Measurement of noise emitted by railbound vehicles

Applications ferroviaires — Acoustique — Mesurage du bruit émis par les véhicules circulant sur rails

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Foreword

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This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*,in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 256, *Railway applications*,in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 3095:2013), which has been technically revised.

The main changes are as follows:

— the alignment of measurement conditions with ISO 3381:2021[6];

— an improvement of the tonality assessment;

— the introduction of specific measurement conditions for hybrid vehicles;

— a new informative Annex C providing guidance information on the track influence on pass-by test results;

— an improved specification for additional noise measurements on bridges and other elevated structures in concrete bridge sections (see Annex F);

— a new informative Annex H specifying the measurement method for noise from parked trains to support a potential regulation aiming at taking into account annoyance produced in that situation.

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

Railway exterior noise is encountered both along open track and in and around depots, stops, stations and other holding locations. It includes a number of different physical sources such as rolling noise,[20][28][29][30] impact noise, traction noise, aerodynamic noise, curving noise, braking noise, horn noise and noise from auxiliary equipment and other components. The noise for any given train type strongly depends on the rolling stock design, operating conditions and the track type and condition.

Rolling noise is one of the main sources from vehicle running on open track. It contains a significant and sometimes dominant noise contribution from the track. This document is intended to characterize the noise emission from the unit, minimizing the influence of the track.

These conditions are relevant for type testing of rollingstock, enabling comparisons of rolling stock noise emission levels for train operating and test conditions to comply with regulatory or contractual sound level limits. Where measurements are undertaken on other track designs or with different rolling stock operating conditions, noise levels can differ from the type test conditions described herein.

When project proponents are specifying project noise limits for rolling stock, they should include consideration of what is appropriate to their network / environment, temperature ranges, track type (ballast/slab/tunnel, light rail, etc.), and note that the limit values will be dependent on the network conditions, track decay rates, wheel/rail maintenance expectations, speed range, curves, and so on.

Railway environments carry particular safety risks. The measurement procedures specified in this document need to take into account relevant safe work methods applicable to each network.