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# Nonvisible Contaminants on Railcar Surfaces

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2014-08: Approved by NACE International Task Group (TG) 271, “Railcar Surface Decontamination Procedures for Nonvisible Contamination.”

AMPP values your input. To provide feedback on this standard, please contact standards@ampp.org

## Foreword

The purpose of this technical committee report is to increase railcar industry awareness of nonvisible surface contamination (NVSC), its impact, and its removal before coating application to the railcar. For the purpose of this report, NVSC is defined as any substance that may affect coating performance and does not leave a visible deposit on a bare or previously coated carbon steel surface. This report discusses how NVSC may have a harmful effect on the performance and lifespan of a coating system. This report also identifies types of NVSC and methods for its removal.

This report is intended for use by asset owners, specifiers, coating manufacturers, inspectors, and applicator contractors.

This NACE technical committee report was prepared in 2014 by Task Group (TG) 271, "Railcar Surface Decontamination Procedures for Nonvisible Contamination." TG 271 is administered by Specific Technology Group (STG) 43, "Land Transportation." This technical committee report is issued by NACE under the auspices of STG 43.

NACE technical committee reports are intended to convey technical information or state-of-the-art knowledge regarding corrosion. In many cases, they discuss specific applications of corrosion mitigation technology, whether considered successful or not. Statements used to convey this information are factual and are provided to the reader as input and guidance for consideration when applying this technology in the future. However, these statements are not intended to be recommendations for general application of this technology, and must not be construed as such.

## Introduction

Coating manufacturers and the contracting authority have an interest in establishing the parameters that define satisfactory performance of specified coatings. Therefore, soluble-salt removal requirements sometimes are included in the job specification.

The fact that no field method is considered to capture 100% of the salts from a surface continues to hamper efforts to establish acceptable levels of salt contamination under coatings. It is beyond the scope of this report to designate specific numeric levels. Coating manufacturers may be able to give some insight as to what nonvisible salt levels are acceptable for their products.

Shortened coating life has often been attributed to errors in the selection of material, formulation, surface preparation, coating application, or an additional contributor such as nonvisible surface contaminants (NVSC).

New and used steel surfaces can become contaminated during manufacture, transport, storage, and fabrication, from the environment, or surface preparation, or by lading in the case of railcars. Also, a railcar's prior service is often a key contributor to surface contamination and corrosion.

NACE and SSPC[(1)] joint surface preparation standards[1-9] are based on visual examination without magnification. Visible contaminants are not addressed in this report. Surfaces typically are prepared to an appropriate visible standard; however, they may still contain a level of NSVC.

The components usually considered key to determining the potential or rate of failure for coatings applied to railcar steel surfaces as a result of NSVC are as follows:

- The contaminant and the quantity of contaminant remaining on the surface to be coated;
- The coating system to be applied; and
- The future exposure to contaminants as a result of services (lading).

[(1)] The Society for Protective Coatings (SSPC), 40 24th Street, 6th Floor, Pittsburgh, PA 15222-4656.