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Railway applications — Recyclability and recoverability calculation method for rolling stock

National foreword

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*Applications ferroviaires — Méthode de calcul de recyclabilité et
valorisabilité pour matériel roulant*





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Foreword

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Introduction

Rolling stock products are generally designed for operational safety, availability and reliability with the consideration to minimize any impact on society and environment. The treatment and environmentally sound disposal of end-of-life products are the desirable environmental priority of railway industry. This needs a common method to describe the end-of-life treatment of rolling stock products.

In order to benchmark the theoretical recyclability and recoverability of rolling stock, common calculation rules have been introduced in this document, which has been developed considering the work of UNIFE Life Cycle Assessment topical group between 2009 and 2011^[5].

The calculation approach is based on common recycling practice. Throughout a life cycle perspective, the method adopts railway specific requirements for necessary material information.

End-of-life treatment processes are divided into three stages; pre-treatment, dismantling and shredding. Pre-treatment and dismantling calculations consider recycling and recoverability properties of the materials specific to these stages. At each stage, individual material flows are split into materials for recycling and materials for recoverability, depending on the availability of appropriate technology for recycling and/or recoverability. Therefore, knowledge of materials and dismantling of rolling stock or equipment is essential. The entire supply chain needs to be involved because material information is crucial when using this calculation method. This harmonized calculation method for recyclability and recoverability for rolling stock is intended to prevent misleading data gaps and contradictions.

The primary aim of this calculation method is for the rolling stock domain and other related interfaces with other subsystems.

The calculation method introduced by this document considers different end-of-life paths such as reuse, recycling and recoverability as well as treatment efficiencies at each stage. This means that this method is developed in order to take into account the efficiencies of recycling and recoverability technologies with regard to each material at the different end-of-life treatment stages. The recyclability and recoverability rates of rolling stock are each expressed as a percentage by mass (mass fraction in percent) after applying efficiency factors for each material of the rolling stock, which can potentially be reused, recycled or recovered.

