

Road restraint systems — Guidelines for computational mechanics of crash testing against vehicle restraint system

Part 4: Validation Procedures

National foreword

This Published Document is the UK implementation of CEN/TR 16303-4:2012.

The UK participation in its preparation was entrusted by Technical Committee B/509, Road equipment, to Subcommittee B/509/1, Road restraint systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2012

Published by BSI Standards Limited 2012

ISBN 978 0 580 75313 8

ICS 13.200; 93.080.30

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 29 February 2012.

Amendments issued since publication

Amd. No.	Date	Text affected
----------	------	---------------

TECHNICAL REPORT
RAPPORT TECHNIQUE
TECHNISCHER BERICHT

CEN/TR 16303-4

January 2012

ICS 13.200; 93.080.30

English Version

**Road restraint systems - Guidelines for computational
mechanics of crash testing against vehicle restraint system -
Part 4: Validation Procedures**

Dispositifs de retenue routiers - Recommandations pour la
simulation numérique d'essai de choc sur des dispositifs
de retenue des véhicules - Partie 4: Procédures de
validation

Rückhaltesysteme an Straßen - Richtlinien für
Computersimulationen von Anprallprüfungen an Fahrzeug-
Rückhaltesysteme - Teil 4: Validierungsverfahren

This Technical Report was approved by CEN on 7 November 2011. It has been drawn up by the Technical Committee CEN/TC 226.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2012 CEN All rights of exploitation in any form and by any means reserved
worldwide for CEN national Members.

Ref. No. CEN/TR 16303-4:2012: E

AVA Documents
Document Sharing Hub

Contents

Foreword.....3

Introduction 4

1 Scope 5

2 Normative references 5

3 General.....5

4 Validation Process.....6

5 Standard report and Output parameters 9

Annex A Validation report.....10

Bibliography 16

Foreword

This document (CEN/TR 16303-4:2012) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document consists of this document divided in five Parts under the general title: Guidelines for Computational Mechanics of Crash Testing against Vehicle Restraint System:

- *Part 1: Common reference information and reporting*
- *Part 2: Vehicle Modelling and Verification*
- *Part 3: Test Item Modelling and Verification*
- *Part 4: Validation Procedures*
- *Part 5: Analyst Qualification¹*

¹ In preparation

Introduction

In order to improve safety the design of roads may require the installation of vehicle restraint systems, which are intended to contain errant vehicles safely for the benefit of the occupants and other road users, on sections of road and at particular locations defined by the National or Local Authorities. The EN 1317 standard identifies test methods and impact test acceptance criteria that need to be met to demonstrate compliance with the essential requirements for CE marking. This document allows in some cases the use of computational mechanics in order to obtain CE certification. That is why it becomes necessary to develop a methodology to verify and validate the result obtained with computational mechanics work and guarantee the reliability of the simulation itself.

CEN/TR 16303-2 and CEN/TR 16303-3 give informative guideline to develop a complete and efficient numerical model of a vehicle and a test item in order to properly simulate a crash event. These parts address the user in the creation of a reliable and efficient model both for finite element (FE) methodology and multi-body (MB) approach.

The purpose of this document, "Validation Procedures", is to define the validation and verification process for the use as defined and regulated within EN 1317 and provides support in the application of simulation for studies of real life installations.

This part includes procedures and acceptance criteria for the use of computational mechanics in approval process of products for roads safety design and a scheme that can be applied to any simulation in order to certify its reliability.