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S.R. CWA 15846:2008

# Measuring method for Dynamic Compactness & Bearing Capacity with SP-LFWD (Small - plate Light Falling Weight Deflectometer)

## S.R. CWA 15846:2008

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**AGREEMENT**

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## Measuring method for Dynamic Compactness & Bearing Capacity with SP-LFWD (Small - plate Light Falling Weight Deflectometer)

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## **Foreword**

CWA 15846:2008 was prepared by CEN Workshop 33 - Measuring Method for Dynamic Compactness & Bearing Capacity with SP-LFWD (Small-plate Light Falling Weight Deflectometer).

The production of this CWA (CEN Workshop Agreement) specifying a test method for measuring the soil compactness rate and the bearing capacity (dynamic modulus) with a small-plate light falling weight deflectometer, was formally accepted at the Workshop's kick-off meeting on 2007-05-03 in Budapest.

The final review/endorsement round for this CWA was successfully closed on 2007-10-17. The final text of this CWA was submitted to CEN for publication on 2008-03-10

This CEN Workshop Agreement is publicly available as a reference document from the National Members of CEN: AENOR, AFNOR, ASRO, BDS, BSI, CSNI, CYS, DIN, DS, ELOT, EVS, IBN, IPQ, IST, LVS, LST, MSA, MSZT, NEN, NSAI, ON, PKN, SEE, SIS, SIST, SFS, SN, SNV, SUTN and UNI.

Comments or suggestions from the users of the CEN Workshop Agreement are welcome and should be addressed to the CEN Management Centre.

The document has been developed through the collaboration of a number of contributing partners representing academia, administration, consultants, industry and testing laboratories. This CWA has received the support of representatives of each of these sectors. A list of company experts who have supported the document's contents may be obtained from the CEN Management Centre.

## Introduction

The application of light falling weight dynamic compactness and bearing capacity measuring gauges in the qualifying measurements of civil works are more and more popular and wide-spread. The counter-weight, which is essential for the static bearing capacity measurements, here is not necessary; therefore the measurement is simpler and faster. Owing to the axle load of 15 tons permitted in the European Union, at the layers of the newly built surface pavements not having binding material, it is proposed to apply the loading range of 0,3 – 0,4 MPa and the dynamic compactness- and bearing capacity measuring method introduced in the present document in the qualifying measurements. The static bearing capacity test simulates rather the structure – weight loading considering consolidation, while the dynamic test simulates rather that compacting originating from the dynamic stress of the traffic.

Instead of the former measuring method of the dynamic modulus applying 300 mm plate diameter and 0,1 MPa under-plate loading the development of the dynamic small-plate measuring method applying higher loading range became necessary, which measures in the same 0,3 – 0,4 MPa loading range like the static bearing capacity-measurement (DIN 18134).

The small-plate light falling weight deflectometer introduced in this document facilitates the determination of the compactness rate and the dynamic modulus with a single measurement on the newly-built layers preserving the compacting water content. The advantage of the dynamic compactness measurement is that the bearing capacity of the counter surface needed for the compacting is always known and checkable. The method executes the complete compacting with the same work as the laboratory modified Proctor-test, but at site, at all measurements and it determines the original (before measurement) relative compactness of the layer of given moisture content from the calculated depression amplitudes and the compaction-depression curve.

In the theory of the compactness rate determined with the dynamic method and the density measurement (isotopic, sand filling, rubber bulb...) is the same, so no new limit value (compactness rate requirement) is necessary to prescribe for the dynamic compactness rate; only the existing requirements need to be met.

The dynamic compactness rate is not affected by the density inhomogeneity or the density anomalies. Accordingly, it is outstandingly suitable for the reliable qualifying of the layers and embankments made of fly ash, blast furnace slag and other secondary materials of inhomogeneous density. The reference density, as the measurement error of the density of the compacted layer does not charge this method, therefore it is more reliable and gives more accurate measurement result.

The dynamic compactness and bearing capacity measurement does not apply any isotope source, but an environment- and health-friend deformation-measuring method.

## 1 Scope

The present document specifies a method for measuring the dynamic compactness rate and the dynamic bearing capacity modulus with a single measurement on the newly-built layers preserving the compacting water content at road construction.

## 2 Normative references

The following referenced documents are indispensable for the application of the document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13286-1:2003 Unbound and hydraulically bound mixtures - Part 1: Test methods for laboratory reference density and water content - Introduction, general requirements and sampling

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