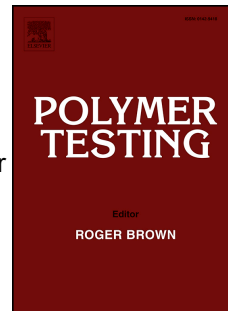


Accepted Manuscript

Experimental assessment of sound velocity and bulk modulus in high damping rubber bearings under compressive loading

Violaine Tinard, Michel Brinster, Pierre Francois, Christophe Fond



PII: S0142-9418(17)31496-4

DOI: [10.1016/j.polymertesting.2017.12.010](https://doi.org/10.1016/j.polymertesting.2017.12.010)

Reference: POTE 5262

To appear in: *Polymer Testing*

Received Date: 16 October 2017

Revised Date: 5 December 2017

Accepted Date: 6 December 2017

Please cite this article as: V. Tinard, M. Brinster, P. Francois, C. Fond, Experimental assessment of sound velocity and bulk modulus in high damping rubber bearings under compressive loading, *Polymer Testing* (2018), doi: 10.1016/j.polymertesting.2017.12.010.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Experimental assessment of sound velocity and bulk modulus in high damping rubber bearings under compressive loading

TINARD Violaine^a (corresponding author: vtinard@unistra.fr)

BRINSTER Michel^a (brinsterm@hotmail.com)

FRANCOIS Pierre^a (pierre.francois@unistra.fr)

FOND Christophe^a (christophe.fond@unistra.fr)

^a ICube, Université de Strasbourg, CNRS, 2 rue Boussingault, F-67000

STRASBOURG, FRANCE

ABSTRACT

The present paper deals with the non-destructive evaluation of stressed High Damping Rubber Bearings (HDRB) in civil engineering. Such bearings are commonly made with alternating thin horizontal layers of High Damping Rubber (HDR) bonded to steel laminates. The influence of uniaxial compressive loading on pressure waves' velocity and bulk modulus is investigated for two types of bearings (with and without laminates). In the presence of laminates, bulk modulus increases with the applied compressive loading (e.g. $\Delta K = 20\%$ at a mean stress $\sigma = 16$ MPa). In the absence of laminates, slipping on walls is visually observed in spite of their roughness and is thus confirmed by limitation in the increase of sound velocity. The feasibility of stress measurements using ultrasonic methods in HDRB is proved.

Download English Version:

<https://daneshyari.com/en/article/7825482>

Download Persian Version:

<https://daneshyari.com/article/7825482>

[Daneshyari.com](https://daneshyari.com)