

Accepted Manuscript

Title: Thermal behavior and dynamic fragility in amorphous carisoprodol. Correlation between the dynamic and thermodynamic fragilities

Authors: Hermínio P. Diogo, Joaquim J. Moura Ramos, M. Fátima M. Piedade



PII: S0040-6031(18)30081-9
DOI: <https://doi.org/10.1016/j.tca.2018.03.012>
Reference: TCA 77962

To appear in: *Thermochimica Acta*

Received date: 6-12-2017
Revised date: 16-3-2018
Accepted date: 17-3-2018

Please cite this article as: Hermínio P. Diogo, Joaquim J. Moura Ramos, M. Fátima M. Piedade, Thermal behavior and dynamic fragility in amorphous carisoprodol. Correlation between the dynamic and thermodynamic fragilities, *Thermochimica Acta* <https://doi.org/10.1016/j.tca.2018.03.012>

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.

Thermal behavior and dynamic fragility in amorphous carisoprodol. Correlation between the dynamic and thermodynamic fragilities.

Hermínio P. Diogo^{1,*}, Joaquim J. Moura Ramos^{1,2}, M. Fátima M. Piedade^{1,3}

1 – Introduction

2 – Experimental

2.1 – Materials

2.2 – Techniques

2.2.1 – Differential scanning calorimetry (DSC)

2.2.2 – Thermally stimulated depolarization currents (TSDC)

2.2.3 – Hot-Stage Optical Microscopy (HSM)

2.2.4 – X-Ray Powder Diffraction (XRPD)

3 – Results and discussion

3.1 – Polymorphism in carisoprodol

3.1.1 – Estimation of the enthalpy of fusion of polymorph B

3.1.2 – Qualitative information on the kinetics of the phase transformations

3.2 – Dynamic analysis of the glass transition by DSC

3.3 – Molecular mobility in amorphous carisoprodol studied by TSDC

3.3.1 – Estimation of the dynamic fragility from TSDC data

3.4 – Dynamic and thermodynamic fragility

4 – Conclusions

Appendix – The calculation of the temperature dependent relaxation time, $\tau(T)$, from TSDC data.

¹ CQE – Centro de Química Estrutural, Complexo I, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal.

² CQFM – Centro de Química-Física Molecular, Complexo I, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal.

³ CQB – Centro de Química e Bioquímica, Faculdade de Ciências, Universidade de Lisboa, 1649-016 Lisboa, Portugal.

* Author for correspondence. *E-mail adress:* hdiogo@tecnico.ulisboa.pt (H. P. Diogo).

Download English Version:

<https://daneshyari.com/en/article/7061956>

Download Persian Version:

<https://daneshyari.com/article/7061956>

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