شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

STRESS DISTRIBUTION IN CRAZE REGION USING CAUSTIC TECHNIQUE IN POLYMERIC MATERIALS

By

Eng. Mohamed Abdel Aziz Mohamed Shaban

A Thesis Submitted To Cairo University
In Partial Fulfillment For The Requirements Of
The Degree Of Master Of Science
In
Mechanical Engineering
Mechanical Design and Production

Faculty of Engineering, Cairo University
GIZA, EGYPT
February 2008

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ABSTRACT

The fracture of polymeric material in the presence of liquid environment always proceeded by craze region due to stress concentration in this area. Study of stress state in this region is of a prim important for understanding failure mechanism of polymers. The present work aim to study the stress distribution in craze region. Experiments were carried out on PMMA and PC with SEN specimens. Methanol, ethanol, butanol and kerosene were used as a crazing agent. The specimens stressed under tension at specific stress calculated by LFM. The shadow optical method (caustic) was found to be a suitable method for stress analysis at stress concentrated areas and was used to detect stress state at crack craze tips. The stress at crack and craze tip was evaluated. It may be concluded that the stress reduce with increasing craze length at different environments and loading conditions at both crack and craze tip. The stress field along PMMA and PC craze is not uniform but has the maximum at crack tip for all environments except for PMMA methanol.