

Accepted Manuscript

Defects in composite structures: Its effects and prediction methods – A comprehensive review

K Senthil, A Arockiarajan, R Palaninathan, B Santhosh, K M Usha

PII: S0263-8223(13)00284-5

DOI: <http://dx.doi.org/10.1016/j.compstruct.2013.06.008>

Reference: COST 5209

To appear in: *Composite Structures*



Please cite this article as: Senthil, K., Arockiarajan, A., Palaninathan, R., Santhosh, B., Usha, K.M., Defects in composite structures: Its effects and prediction methods – A comprehensive review, *Composite Structures* (2013), doi: <http://dx.doi.org/10.1016/j.compstruct.2013.06.008>

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.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

Defects in composite structures: Its effects and prediction methods – A comprehensive review

K Senthil ^a, A Arockiarajan ^{b*}, R Palaninathan ^b, B Santhosh ^a, K M Usha ^a

^a Composites Entity, Vikram Sarabhai Space Centre, Thiruvananthapuram 695013, India

^b Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai 600036, India

Abstract

The principal aim of this paper is to present a comprehensive literature survey on the defects, like debonds/delamination in composite joints/structures, focusing on the effect of defects, its growth initiation and prediction methods in fibre reinforced plastics. The effects of delaminations, its size, shape and position have been extensively studied over the past few decades. Very little attention has been paid in the area of adhesively bonded joints with closed debonds. The phenomena associated with debond in adhesively bonded composite joints require additional studies in order to allow a better understanding of the behaviour of this category when subjected to uni-axial compression. Recently virtual crack closure technique (VCCT) and cohesive zone modeling (CZM) are used as promising tools for the prediction of defects onset and its growth initiation. In this paper a comprehensive review on the prediction methods and experimental techniques are carried out and presented for the application in this field of study.

Keywords: Laminate, Delamination, Adhesive joints, debond, Virtual crack closure technique, Cohesive zone model

* Corresponding author: Tel.:+91 44 22574070; Fax: +91 44 22574052

E-mail addresses: aarajan@iitm.ac.in

Download English Version:

<https://daneshyari.com/en/article/6708816>

Download Persian Version:

<https://daneshyari.com/article/6708816>

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