Test plan report of TG1

OB_TG1_R003 rev. 1

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OPTIMAT BLADES

TG 1

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Change record

Issue/revision	date	Pages	Summary of changes
0	14.01.04	All	New document
1	30.01.04	All	New cover page. Reference to doc. OB_TC_R014 incorporated.

Table of contents

1 Introduction

This report describes the materials, laminates and test procedures used within the experimental work of Task Group 1 [1]. The basis for the experimental test program of Task Group 1 is the general test specification [2]. This report refers to the aforementioned specification and gives additional information and specifications, where the general specification is not applicable.

2 Materials

In Task Group 1 no further material than the OPTIMAT reference material [2] is used.

3 Laminates

In Task Group 1 no further laminates than the OPTIMAT standard laminates [2] are used.

4 Specimens

In Task Group 1 no further specimens than the OPTIMAT standard specimens [2] are used.

5 Test program

The test types used within the experimental work of Task Group 1 are given in this section. An overview of the selected types of tests is given in Table 1. In the description for each of these tests the test method, used laminate, and specific testing conditions are given.

Types of tests					
#	Test method	Laminate	Number of specimens	Geometry (OB Definition)	Notes
1	Static tensile	MD	5	R400	
2	Static tensile	UD	5	R300	
3	Static compression	MD	5	R400	
4	Static compression	UD	5	R300	
5	Fatigue, T-T (R=0.1)	MD	23	R400	
6	Fatigue, T-T (R=0.1)	UD	21	R300	
7	Fatigue, T-T (R=0.5)	MD	21	R400	If time left
8	Fatigue, T-C (R=-0.4)	MD	21	R400	If time left
9	Fatigue, T-C (R=-1.0)	MD	32	R400	
10	Fatigue, T-C (R=-1.0)	UD	46	R300	
11	Fatigue, T-C (R=-2.5)	MD	23	R400	If time left
12	Fatigue, C-C (R=2.0)	MD	21	R400	If time left
13	Fatigue, C-C (R=10.0)	MD	23	R400	
14	Fatigue, C-C (R=10.0)	UD	21	R400	
15	Fatigue, load spectra	MD	90	R400	
16	Fatigue, load spectra	UD	45	R300	
17	Fatigue, block test	MD	165	R400	

Table 1: Overview of test types

All test results will be reported in the database, OptiDat, as soon as the tests are accomplished. Test reports, including data, figures and photographs will be prepared after a complete set of tests has been finished.

5.1 Static testing

5.1.1 Tensile testing

Tensile tests are performed using only the OPTIMAT specimen according chapter 5.2 of the general specification [2].

5.1.2 Compression testing

Compression tests are performed using only the OPTIMAT specimen according chapter 5.3 of the general specification [2].

5.2 Fatigue testing

The fatigue testing program of TG1 includes constant amplitude tests (CA) as well as variable amplitude tests (VA). The VA tests are accomplished as block tests and load spectra tests. For fatigue testing only the OPTIMAT specimens (MD, UD) are used.

5.2.1 Constant amplitude tests

The CA tests are performed according chapter 6 of the general specification [2].

5.2.2 VA tests 1 (Block tests)

The specific test procedures are not yet available.

5.2.3 VA tests 2 (Load spectra tests)

The specific test procedures are not yet available.

6 References

[1] Ch.W. Kensche et al., *Detailed plan of action Task Group 1*, DLR, doc. OB_TG1_O002 rev. 4, 17.02.2003

[2] Olaf Krause and Theodore P. Philippidis, *General Test Specification*, DLR, doc. OB_TC_R014 rev. 1, 30.01.2004