



Technical Definition

LOW CYCLE FATIGUE TEST – Inconel 718

Instructions to participant laboratories

Please read these instructions carefully **BEFORE** starting the tests.

1. Five specimen blanks ($\varnothing 22 \times 100$ mm) are supplied to each participant – 5 results must be provided.
2. The participants are free to choose the specimen geometry. The used size and shape has to be reported.
3. The tests shall be performed respecting the following conditions:
 - One operator only
 - One testing machine only
 - Tests performed in sequence
4. The tests are to be performed in accordance with the ASTM E606-12 and the below requirements and test conditions:

Test specification	ASTM E606-12
Temp. (°C)	500
Ratio	0
Strain control	
Wave form	Triangular
Strain rate	0.4% / sec
Mean strain	0.35%
Strain amplitude	0.35%
Load control	
Switch to stress control	15 000 cycles
Condition for mode switch is: plastic strain range < 0.01%	
Use the stress levels which are reached in stabilized strain controlled mode	
Wave form	Sinusoidal
Frequency	5 Hz
N stop (cycles)	Until failure



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5. Each participant is required to report the below parameters :

max imposed strain (%)
alternate imposed strain (%)
frequency (Hz) / strain rate (%/sec)
modulus before starting the test (MPa)
first cycle
modulus E2 (MPa)
modulus E1 (MPa)
max stress (MPa)
min stress (MPa)
stress range (MPa)
total strain range (%)
plastic strain range (%)
elastic strain range (%)
mid life
number of cycles
modulus E2 (MPa)
modulus E1 (MPa)
max stress (MPa)
min stress (MPa)
stress range (MPa)
total strain range (%)
plastic strain range (%)
elastic strain range (%)
Cycles to crack initiation NA (5% load drop of stabilized upper stress level)
cycles NR 75%
cycles NF
failure location

6. Testing may commence as soon as test specimens are received. All participant laboratories must supply results by 1st June 2017.

7. Instructions for submission of results are detailed on the website:

<https://ptpscheme.com>

8. To ensure the confidential treatment of your results in the final report, you will be allocated a unique identity number when you register for the program.