

## Technical Definition

### High Cycle Fatigue Test – TA6V

You shall respect the HSE policy of your laboratory for each performed test.

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

1. Six blanks ( $\emptyset$  25 x 110 mm) are supplied to each participant – 6 results must be provided. If one result is missing, your test will be considered as an outlier. A RCA shall be completed.
2. The specimens shall be machined according to figure 1 and table 1.

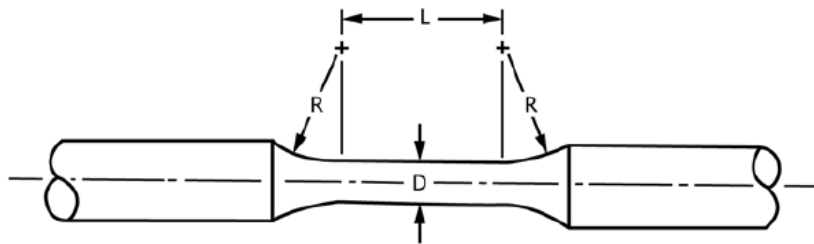


Figure 1

R	D	L
12.70 mm $\pm$ 0.25	5.080 mm $\pm$ 0.025	19.05 mm $\pm$ 0.25
0.50 in $\pm$ 0.01	0.200 in $\pm$ 0.001	0.75 in $\pm$ 0.01

Table 2

Machining parameters: **grinding + polishing**

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 E466-15** or **EN 6072-2012** and the below requirements and test conditions:

Temperature ( $^{\circ}$ C)	Room Temperature
Ratio	0.1
Wave form	Sinus
Imposed max stress (MPa)	<b>875 MPa for 3 samples</b> <b>775 MPa for 3 samples</b>
N stop (cycles)	10 000 000

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5. Each participant is required to determine and report the below information :

Characteristic	Unit	Significant digits	Mandatory / Not mandatory	Evaluated Yes/no
Diameter of the specimen	mm	X,XX	Mandatory	No
Machining ( turning, grinding, polishing )	N/A	N/A	Mandatory	No
Type of machine ( hydraulic or resonance-pulsator )	N/A	N/A	Mandatory	No
Temperature	°C	XX,X	Mandatory	No
Frequency	Hz	XX	Mandatory	No
Number of cycles to reach the level of stress	cycles	XXXXXX	Mandatory	No
Life duration (Number of cycle) - To the nearest cycle	cycles	XXXXXX	Mandatory	<b>Yes</b>

All evaluated characteristics will be analysed according to the algorithm A (ISO 13528 – 2015) and evaluated using z-score. The algorithm will be applied to the logarithm of the number of cycles.

6. Testing shall start **as soon as test specimens are received**. Please contact the following e-mail address for any technical or administrative query.

<b>Submission date :</b>	<b>July 1<sup>st</sup>, 2020</b>
<b>Technical and administrative support :</b>	<a href="mailto:info@ptpscheme.com">info@ptpscheme.com</a>

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.
9. Collusion and falsification of your PTP results are totally forbidden. In case of identification or suspicion of collusion or falsification, the laboratory will be excluded from the program and the sponsors will be immediately informed. The sponsors could ask you proofs of your records and analyses, so be sure to conserve data, curves and specimens.
10. The tested specimens do not need to be sent back to the PTP office.

APPENDIX: Instructions for IRR participation

The Internal Round Robin participation (IRR) is **optional** and **independent** from your PTP participation.

**Confidentiality:** The IRR results and reports are confidential and only accessible by your laboratory. They are not shared with the scheme sponsors or any other accreditation or certification bodies.

The extra samples shall be tested according to the following table:

	<b>Operator 1</b>	<b>Operator 2</b>	<b>Operator 3</b>	<b>Operator 4</b>	<b>Operator X</b>
<b>Test machine 1</b>	PTP kit (3 + 3 samples)	1 + 1 samples	1 + 1 samples	1 + 1 samples	1 + 1 samples
<b>Test machine 2</b>	1 + 1 samples				
<b>Test machine 3</b>	1 + 1 samples				
<b>Test machine Y</b>	1 + 1 samples				

**Operator 1 (OP1)** is to be the most experienced operator currently conducting tests on a regular basis and shall perform tests on all machines (TM1, TM2, TM3...)

**Test Machine 1 (TM 1)** is to be the most utilised machine for this test in your laboratory and shall be tested by all operators (OP1, OP2, OP3...)

**Example:** A laboratory has 2 operators and 3 test machines. They receive a PTP kit and 3 + 3 extra specimens.

Operator 1 shall test the PTP kit on TM1, 1 + 1 specimens on TM2 and 1 + 1 specimens on TM3.

Operator 2 shall test 1 + 1 specimens on TM1.

The IRR results have to be submitted on a separate results form available on the PTP website.

The identification of operators and test machines you provide will appear on the IRR final report. These identifications will not be seen by other laboratories.

The IRR results will be classified against the acceptance classes of the kit 9-3-2020.

**Reminder:** Laboratories are not permitted to switch specimens between the PTP kit and IRR samples. The traceability of the samples will be checked during the evaluation. Laboratories found to have switched samples will invalidate their PTP participation.

REVISION HISTORY

Issue Date	Issue N°	Changes
15/01/2020	1	Document creation
12/05/2020	2	Added Imposed max stress and updated deadline date