



AEROSPACE RECOMMENDED PRACTICE

ARP8830™

Issued

2023-02

Procedure for Development of a Test Method

RATIONALE

There is a need for a standardized process for adding new tests to the committee toolset, most particularly for adding new tests or properties to AS5780.

1. SCOPE

The document is a recommended guide for evaluating new or replacement test methods. It considers applicability, suitability, accessibility, and return on effort.

Particular emphasis should be placed on completing the “strategy definition” portion of this document (Stage 2), to capture all relevant process stages and complete in a recognizable order for any specific development project.

The overall process should:

1. address the rationale behind testing;
2. result in a thorough review of whether a test is fit for purpose;
3. act as a pathway for vetting if a test should be added to AS5780.

If, in any project, this process is not an exact fit, users should feel free to adjust, as necessary.

The process provides the following stages:

1.1 Stages

This test method evaluation guide includes eight stages. These stages are listed below and further detail for each stage is given in the respective section.

Stage 1: Introduction to Committee

Stage 2: Determine Need and Define Strategy

Stage 3: Determine the Test

Stage 4: Develop Test

Stage 5: Formalize Test

Stage 6: Collect Data on Test Oils

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Stage 7: Confirm Test and Reporting Requirements

Stage 8: Ballot Inclusion of a New Method/Property into AS5780

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org

AS5780 Specification for Aero and Aero-Derived Gas Turbine Engine Lubricants

SAE Standards [Document Sponsor Checklist](#), found under the E-34 Propulsion Lubricants Committee Main web page under the Resources section

SAE Standards [New Project Request Form](#), found under the E-34 Propulsion Lubricants Committee Main web page under the Resources section

SAE Standard Works [Aerospace Standard Template](#) and [Aerospace Template Instructions](#), found under the E-34 Propulsion Lubricants Committee Main web page under the Resources section, Document Development and Sponsor Guidelines.

SAE CRP - General 2017.pdf, available from SAE upon request <https://www.sae.org/standardsdev/tsb/cooperative/>

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org

ASTM E691 Standard Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method, ISO 4259, ASTM D6300, or other similar ILS (Inter-Laboratory Study)

3. NOTES

3.1 In order to comply with SAE numbering of the Aerospace Recommended Practice and to keep the simplicity of the stage numbering system, all the stages of the process are held in Appendix A.

The paragraphs in Stages 1 to 8 of the process are numbered according to the stage number (e.g., Stage 1: 1.1 to 1.4; Stage 2: 2.1 to 2.4, and so on).

3.2 Revision Indicator

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

PREPARED BY SAE E-34 PROPULSION LUBRICANTS COMMITTEE

APPENDIX A - PROCESS LAYOUT

STAGE 1: INTRODUCTION TO COMMITTEE

1.1 Prerequisites

None.

1.2 Resources

For assistance in completing this section, consider referencing Stage 2 (Determine Need and Define Strategy) of this document for additional guidance.

1.3 Process

1.3.1 Prepare a presentation reflecting:

- a. The inadequacies of a current test method.
- b. The need for a change to a current test method.

OR

- c. The need for the development of a new test method.

The motivation and rationale to pursue this project should be clearly stated in the presentation.

Optional:

Provide:

- Findings/data/methodology describing the process in question.
- Need for changes to existing methods, and/or the need for new test method development or test equipment.

Reference Stage 2 for additional guidance.

1.3.2 Contact E-34 chair for proper committee placement:

Main, Sub-committee (E-34C or E-34E), symposium presentation.

1.3.3 Request agenda space with appropriate committee chair or symposium chair.

1.3.4 Present topic at E-34 meeting.

1.3.5 Committee determines if sufficient information has been presented to proceed to Stage 2.

1.3.6 Committee assigns task team and task team lead to progress to subsequent stages.

1.4 Exit/Completion Criteria

- a. Introduction of the proposed project to the committee via a presentation.
- b. Committee agreement to pursue further via Stage 2.
- c. Project/Task Team assigned, and a Lead identified.

STAGE 2: DETERMINE NEED AND DEFINE STRATEGY

2.1 Prerequisites

Introduction to Committee: Project/Task Team has been assigned to this issue.

2.2 Resources

- a. Initial Rationale/Motivation developed in Stage 1 "Introduction to Committee".
- b. Any available data (ex: In-service information from OEM).
- c. Historical strategies for completing similar projects.
- d. Cooperative Research Program (CRP) of SAE International:
<https://www.sae.org/standardsdev/tsb/cooperative/>

2.3 Process

Develop a white paper articulating industry need (design, safety, replacement test, test consolidation, etc.) succinctly summarizing the motivation/rationale, defining the project strategy, and addressing the return on efforts (technological, safety, efficiency, etc.).

Main steps in this stage are:

Refine Motivation/Rationale and Articulate the Need (2.3.1)
Define Return on Efforts (2.3.2)
Define Project Goals (2.3.3)
Determine Funding Mechanism (2.3.4)
Develop Strategy (2.3.5)

2.3.1 Refine Motivation/Rationale and Articulate the Need

2.3.1.1 Some previously used methods include:

- a. Survey industry (during committee meetings or via surveys sent to OEMs and oil manufacturers).
- b. Identify controlling regulation/law.
- c. Identify concerns during the review of Proficiency Test Program data or another data set.

2.3.1.2 Some other questions that may support the development of a well-defined motivation/rationale statement and needs statement include:

- a. Is this an individual want or an industry need?
- b. Is there a safety issue that needs to be addressed?
- c. Are there compatibility/performance issues in service?
- d. How does this test enhance performance guidelines or new product development guidelines?
- e. Who/what benefits from this change?
- f. Is this attribute critical to the functionality of the lubricant?
- g. Does the proposed test apply to new lubricant raw materials not previously seen?

- h. How much is known about the application, proposed method, or new property? Is it new or established? Are there published papers or experiments available?
- i. What properties of the lubricant will the new test assess?
- j. Can optimal operational conditions to targets be established before method development begins? (Best practices indicate that operational conditions of interest are defined before moving forward with the development of a new method.)
- k. How will the information collected with this test method be used?
 - i. Are the controlled/tested properties helpful for the design of equipment?
 - ii. Will the information be necessary for approval to a specification?
 - iii. Will the information support product development beyond the current specification (i.e., next generation oil)?
 - iv. Will the test method be used to assess quality or solve a problem?
- l. What is considered out of scope for this particular effort?

2.3.2 Define Return on Efforts

It is important to determine how this project will be worth the efforts of the committee members. Possible returns include, but are not limited to:

- a. Improvements to technology.
- b. Improvements to safety.
- c. Improved qualification speed and/or cost.

2.3.3 Define Project Goals

Examples include:

- a. Add a new test to specification.
- b. Improve repeatability and reproducibility of test method.
- c. Improve test precision.
- d. Add a new instrument to an existing method.

2.3.4 Determine Funding Mechanism

- a. Determine if contributions of data/resources from individual companies and/or groups of companies will be sufficient. If sufficient, move on to next step (2.3.5).
- b. Determine if a CRP is appropriate:
 - i. Is this a project that would require a collaborative agreement to build the technology or collect the data?
 - ii. Will this project require someone outside of the committee to manage data or proprietary information?
 - iii. Will this project require central funding, with contributions from multiple companies/organizations?