# ATC
# CODE OF PRACTICE

A Code of Practice devised by the members of the European lubricant additive industry. The Code is intended to aid continuous improvement in the development of engine lubricants and the consistency and validity of performance claims made for them.

The Code specifies engine tests, procedures and record keeping.

## February 16, 2017

Supersedes all previous issues. Applicable to all new engine lubricant developments initiated after the date of this issue.

COMMENTS OR QUERIES:

In the event of comments on or queries arising from this Code of Practice and its interpretation, then the matter shall be presented by those concerned to the ATC Main Committee for adjudication.

The Chairman of ATC may be contacted at:

Avenue E van Nieuwenhuyse 4,
Box 1, B-1160 Bruxelles,
Belgium.

ISSUE, DISTRIBUTION, AND UPDATE

This Code of Practice is available only in electronic form at the ATC-ERC website, *www.atc-erc.org* and the ATC website, *www.atc-europe.org*. It may be downloaded and printed through the use of Adobe Acrobat Reader software, also available at the website.

This Code will be updated, as changes are required. All notification of changes will be via e-mail. To have your name included on the distribution list, please send your e-mail address to:

*Jeff Clark, ATC European Registration Centre*
*Email : jac@atc-erc.org*

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## Section A EXECUTIVE SUMMARY

a.1 This Code of Practice has been voluntarily devised by representatives of member companies of the Technical Committee of Petroleum Additive Manufacturers in Europe (ATC). Compliance with the Code is voluntary and is not restricted to ATC members. The Code is intended to encourage both the consistent and precise operation of engine testing and the consistent reporting of results during the performance evaluation of automotive lubricant formulations. It is also intended to generate a body of reference data and knowledge concerning the precision and consistency of operation of test methods embraced by the Code.

a.2 The Code distinguishes between:

**Test Sponsors** who commission candidate lubricant test work with Test Laboratories under the Code either for themselves or for their clients; and

**Test Laboratories** which conduct candidate tests under the Code on behalf of Test Sponsors and also conduct reference lubricant test work.

a.3 Test Sponsors and Test Laboratories are required to register with the European Registration Centre (ERC), which forms a part of the European Engine Lubricant Quality Management System (EELQMS), and those who wish to be in compliance must undertake to comply with all of the requirements of the Code by means of annual Letters of Intent. An audit process forms part of the requirements. See Section B and Section C. Test Sponsors are strongly encouraged to provide Letters of Intent.

a.4 The Code is based upon the ISO 9000 international quality system. All participating Test Laboratories shall comply, or be in the process of complying with this system. Only Test Laboratory facilities that have been accredited to the international standard ISO17025 for the relevant procedures shall be used under the Code. See Section C.

a.5 The Code specifies internationally recognised engine tests which must be operated to the prescribed procedures by participants of the Code. Participating Test Laboratories must be active members of any relevant bodies which are developing or monitoring listed engine test procedures. See Section C and Section D.

a.6 All reference tests, and candidate lubricant engine tests conducted under the Code which are intended to support candidate lubricant performance claims, must be registered with ERC before testing begins. At the completion of registered test work, the Test Validity Statement together with a summary of results must be declared both to ERC and to the Test Sponsor. A specified formulation/test coding sequence must be used to facilitate tracking of test programmes. See Section E.

a.7 The Code specifies minimum levels of information which must be disclosed by Test Laboratories to both ERC and to Test Sponsors. See Section F.

## Section A continued

a.8 The Code specifies the minimum contents of the Candidate Data Package which must be used by Test Sponsors to declare to their customers the results of testing carried out under the Code. This information will include disclosure of any formulation changes which may have been made during the development programme and which support the final candidate formulation. Permissible formulation modifications are specified in the Code. See Section G and Section H.

a.9 The Code employs precisely defined terms to aid consistent interpretation. See Section I.

## Section B TEST SPONSOR REQUIREMENTS

REGISTRATION OF TEST SPONSORS

b.1 Organisations (Test Sponsors) wishing to commission lubricant engine testing under the Code of Practice shall apply to ERC (European Registration Centre) for a Test Sponsor Identity Code (Sponsor ID).

b.2 Test Sponsors are encouraged to sign a Letter of Intent; this should be submitted to ERC.

It is implicit within the Letter of Intent that Test Sponsors authorise ERC a) to include their industry reference oil test results in the release of unattributable test data; and b) to conduct analysis of their candidate test results for inclusion in release of unattributable test data. No individual or actual candidate results will be published.

Groups that wish to obtain unattributable test data shall submit their request through their ATC representative to the ATC Performance Testing Sub-committee (PTS) for consideration. The request will only be granted when consensus is agreed to by ATC membership.

A Test Sponsor's continued use of their Sponsor ID authorises ERC to include their candidate test results and any reference test results within release of unattributable test data as specified above. (This has been implicit since April 1st 1999).

Any Test Sponsor or Test Laboratory may request an ID and password to access the ATC-ERC website in order to review unattributable reference oil data.

b.3 The Letter of Intent confirms that all candidate lubricant engine testing with any of the engine test procedures listed in this Code and commissioned anywhere in the world will be conducted under the conditions of the Code. Similarly, all reference lubricant engine testing for the prescribed methods will be conducted under the same conditions.

Organisations may elect to run lubricant engine tests for research purposes outside the remit of this Code. Such research lubricant tests, for example, need not be registered but their results cannot then be used as primary support in an ATC Data Set or Programme.

b.4 Whilst it is not obligatory for Test Sponsors to be certified as complying with the ISO 9000 system, it is recommended that such certification should be sought.

TEST SPONSOR COMPLIANCE AND AUDIT PROCESS

b.5 The Code requires that compliance or the intention to comply be notified to ATC before any claims to follow the Code are made. A standard Letter of Intent shall be delivered to ERC before April 1st of each year; each annual period shall be from 1st April to 31st March. The required format of the letter is shown in Appendix 1, Form B.1*:* "Letter of Intent".

b.6 In order to comply with this Code of Practice, Test Sponsors shall conduct an annual audit (see Page B.3) which must be based on the Self Evaluation Check List of Compliance shown in Appendix 1, Form B.2. This audit may be carried out by an internal or external auditor.

b.7 The audit period shall be from April 1st to March 31st and the audit shall be completed by June 30th, using the Self Evaluation Check List of Compliance.

b.8 The Test Sponsor must request ERC to provide, in confidence and to the auditor and Test Sponsor only, a list of all registered tests conducted by the applicant Test Sponsor during the audit period and for review during the audit process.

b.9 Compliance with the Code will be determined by the absence of any Stage I (no compliance) and any Stage II (substantial non-compliance) entries on the completed Self Evaluation Check List of Compliance (Form B.2) which forms part of the audit process.

Additionally, the ATC Quality Management Working Group (QMWG) has the authority to resolve any compliance issues that may arise. This includes but is not limited to issues relating to test registration activities. Refer to Appendix 2 for more information on the QMWG Issue Resolution process.

b.10 The completed Self Evaluation Check List of Compliance must have been delivered to ERC, by July 1st annually. Failure to provide a Self Evaluation Check List of Compliance to ERC by July 1st will be considered a Compliance Stage I category (no compliance with the Code). The compliance period begins April 1$^{st}$ of new year and terminates on March 31$^{st}$ of the following year.

b.11 A Test Sponsor which has not registered any candidate lubricant tests during the compliance period will be considered to be in compliance by having filed a Letter of Intent at ATC and ERC and by the confirmation by ERC that no such tests have been registered by that Test Sponsor in that period.

b.12 Where a Test Sponsor is found not to be in compliance, as a result of an audit, then a period of four months will be allowed for rectification. Before the end of this period the Test Sponsor shall repeat the audit and provide a new Self Evaluation Check List of Compliance to ATC. During the four-month period, the Test Sponsor shall be considered to be in compliance with respect to client programmes, subject to the outcome of the repeated audit.

Lack of compliance resulting solely from late submission of the Check List may be rectified by submission in this four-month period; a repeat of the audit is not required in this instance.

b.13 When requested by a client company, a Test Sponsor must supply evidence of compliance.
Upon request, a copy of the signed Self Evaluation Check List of Compliance must be shown to potential clients of the Test Sponsor and be available for other audit purposes.

## AUDIT GUIDE TO THE COMPLETION OF THE SELF EVALUATION CHECK LIST OF COMPLIANCE

Before beginning to check the items on the check list shown in Appendix 1, Form B.2:

- Verify the existence of the Letter of Intent;
- Confirm that up to date controlled copies of the ATC Code of Practice and ATC Bulletins are available.
- Obtain, from the Test Sponsor, a list of Candidate Data Packages issued for the audit period.
- Obtain a list of all registered tests conducted by the Test Sponsor for the audit period.

1. Test Registration.
   - 1.1 Verify all test registration documentation.
   - 1.2 Confirm that the test registration date and time preceded the start of the test.
   - 1.3 Verify the Sponsor ID.
   - 1.4 Verify the use of the Cancellation Form, if one was used.
   - 1.5 Confirm reasons for cancelled tests were given.
   - 1.6 Verify the use of Correction of Error Form, if one was used.

2. Test Validity.
   - 2.1 Confirm that the Test Validity Statement for each test report is complete.
   - 2.2 Verify the outcome of each registered test on the Test Validity Statement and/or ERC Summary as one of the following categories:

     Up to September 1997:
     - Cancelled; Discontinued/Aborted; Pending; Completed

     From September 1997:
     - Operationally valid and completed (and, from October 2000, on the ERC Summary, further shown as "in accordance" or "not in accordance").
     - Operationally valid and stopped by sponsor
     - Operationally valid and terminated
     - Operationally invalid and completed
     - Operationally invalid and aborted
     - Cancelled; Pending

   - 2.3 Confirm reasons for discontinued/aborted tests were given.

3. Use and Treatment of Data.
   3.1 Confirm agreement of engine test data reported in the ATC Candidate Data Package and the ERC Summaries.
   3.2 Confirm that all supporting tests in the Candidate Data Package fall into one of three categories, depending on completion date:

| | |
|---|---|
| Up to September 1997 | Completed |
| September 1997-December 1999 | Operationally valid and completed |
| From October 2000 | Operationally valid, completed (and in accordance) |

4. Validity or Interpretation Questions.
   4.1 Confirm the inclusion in the ATC Candidate Data Package of any opinions, if sought, regarding the validity or interpretation of particular tests or test results.

5. Formulation Modifications.
   5.1 Confirm that formulation modifications are clearly identified for data supporting the final candidate formulation.
   5.2 Confirm that appropriate data as specified in Section G are given for each modification supporting the final candidate formulation.
   5.3 Confirm that a complete description is included of the initial candidate formulation(s) and all final candidate formulation(s) in all applicable SAE viscosity grades.

6. Programme Extensions.
   6.1 Confirm that Programme Extensions and any additional SAE viscosity grades have been linked to an ATC Programme.
   6.2 Where formulation modifications have been used, verify that, where relevant, items within 1.1 to 6.1 above are correctly documented.
   6.3 Confirm that Viscosity Grade Readacross and Base Oil Interchangeability comply with the ATIEL Code of Practice.
   6.4 Confirm that any VM Interchange complies with the ATC Code of Practice (Section h.13).

## Section C TEST LABORATORY REQUIREMENTS

REGISTRATION OF TEST LABORATORIES

c.1 Test Laboratories wishing to conduct lubricant engine testing under the Code of Practice shall apply to ERC for a Test Laboratory Identity Code (Laboratory ID). ERC will only issue new Laboratory ID Codes on receipt of a valid Test Laboratory Letter of Intent and will only accept test registrations from Test Laboratories with current Letters of Intent. The required format of the letter is shown in Appendix 1, Form B.1: "Letter of Intent".

c.2 All Test Laboratories wishing to register and operate within this Code must be certified as being in compliance with the ISO 9000 system of quality practices.

c.3 In order to be eligible for registration, the Test Laboratory must be an active participant in the appropriate CEC Working Group where such a group is responsible for the development, refinement or monitoring of a CEC engine test procedure which is listed in this Code of Practice.

c.4 It is implicit within the Letter of Intent (Form B.1) that Test Laboratories authorise ERC to include their industry reference oil test results in the release of unattributable test data (these data are available on the ATC-ERC website - see Bulletin 1/99).
Any Test Sponsor or Test Laboratory may request an ID and password to access the ATC-ERC website in order to review unattributable reference oil data.

ACCREDITATION AND COMPLIANCE OF TEST LABORATORY FACILITIES

c.5 Each Test Laboratory must provide an annual Letter of Intent; the required format of the letter is shown in Appendix 1, Form B.1: " Letter of Intent". This letter must be delivered to ERC before April 1st of each year; each annual period shall be from 1st April to 31st March.

c.6 Engine test facilities to be used within this Code must be accredited to ISO 17025 for the appropriate tests. Such accreditation must have been granted by an organisation which has demonstrated that it operates in accordance with the requirements of ISO/IEC Guide 58.

An organisation that has been evaluated by EAL (European Cooperation for Accreditation of Laboratories) and is a signatory to the EAL multilateral agreement (MLA), or has a bi-lateral agreement with the signatories to the EAL MLA, meets this requirement

c.7 The Test Laboratory must be an active participant in the appropriate CEC Working Group where such a group is responsible for the development, refinement or monitoring of a CEC engine test procedure which is listed in this Code of Practice.

## Section C continued

c.8 Engine test stands employed under this Code of Practice must have a unique identity. The stand identity code shall be shown in the test registration, the data package and other documentation relating to a test/result.

c.9 Only engine test stands which have provided reference lubricant data which fall within the acceptance bands for each parameter (as developed by the CEC Working Group, when applicable) may be used for candidate lubricant testing. The Test Laboratory must be able to produce such reference data which have been generated with the same test procedure and in the same test stand. The reference data must have been derived from a relevant CEC round robin programme, and/or must have been generated within the referencing protocol stipulated by the CEC Working Group.

Additionally, the ATC Quality Management Working Group (QMWG) has the authority to resolve any reference protocol issues that may arise. Refer to Appendix 2 for more information on the QMWG Issue Resolution process.

c.10 Each Test Laboratory, in order to be in compliance with the Code, will conduct all candidate lubricant engine testing for Test Sponsors, and all reference lubricant engine testing, according to the requirements of the Code applying at the time of test registration.

c.11 All Test Laboratories, in compliance with this Code of Practice, are deemed to be equal.

### AUDIT PROCESS FOR TEST LABORATORIES

c.12 The audit process for Test Laboratories will be as defined under the applicable industry standards determined by ISO 17025.

c.13 In order to reconcile their records for audit purposes Test Laboratories shall request ERC to provide, in confidence and to the auditor and Test Laboratory only, a list of all tests registered by the Test Laboratory during the audit period.

### CLASSIFICATION OF OPERATIONALLY VALID AND COMPLETED TEST DATA

The attention of Test Laboratories is drawn to Section D, and in particular paragraph d.7 on Page D.3 of 4.

## Section D LISTED ENGINE TEST PROCEDURES

d.1 Engine tests conducted under this Code must comply completely with the latest test procedures published by the CEC Secretariat or relevant project group.

d.2 The following engine test procedures are presently or have previously been included within the Code of Practice. The ATC designation for each test shall be used in all documentation required by this Code.

| Current Test Procedures | Included In ACEA-12 | Included In ACEA-16 | Test Description | ATC Designation | Date of Inclusion |
|---|---|---|---|---|---|
| CEC L-38-94 | Yes | No | **TU3M** Valve Train Scuffing, Wear | TU3MS | 01Oct95 |
| CEC L-53-95 | Yes | No | **M111** Black Sludge | M111SL | 01Oct95 |
| CEC L-54-96 | Yes | Yes | **M111** Fuel Economy Improvement | M111FE | 01Mar98 |
| CEC L-78-99 | Yes | Yes | **VW TDI** Direct Injection Diesel Performance | VWTDI2 | 22Nov99 |
| CEC L-88-02 | Yes | No | **TU572** Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU572 | 1Nov02 |
| CEC L-93-04 | Yes | No | **DV43E** Oil Dispersion at Medium Temperature for Passenger Car D Diesel Engines | DV4E3 | 31Dec04 |
| CEC L-099-08 | Yes | Yes | **OM646LA** Passenger Car Diesel Engine Wear Test | 646LA | 01Nov07 |
| CEC L-101-09 | Yes | Yes | **OM501LA** Bore Polishing & Piston Cleanliness Test | 501LA | 16Nov07 |
| CEC L-104-16 | Yes (a) | Yes | **OM646LA Bio** Bio-Diesel Cleanliness Test | OM646BIO | 01Nov16 |
| CEC L-106-14 | Yes (b) | Yes | **DV6C** Oil Dispersion at Medium Temperature for Passenger Car DI Diesel Engines | DV6C | 10Nov14 |
| CEC L-107-XX | No | Yes | **M271 EVO** Sludge Test | M271EVO | (c) |
| CEC L-111-16 | No | Yes | **EP6CDT** Gasoline Cleanliness Test | EP6CDT | 01Nov16 |

Note
(a) ACEA-12 Sequences specify that the OM646LA Bio test limits are “Rate and Report”
(b) ACEA-12 Sequences specify that the DV6 test may be run as an alternative to the DV4 test
(c) At the time of release of this issue of the Code of Practice, the M271 EVO sludge test (CEC L-107) has not yet been fully developed. Once the CEC L-107 procedure is fully CEC approved, it will be included in the Code of Practice.

| Previous Test Procedures | Test description | ATC Designation | Date of Inclusion | Last Allowable Registration |
|---|---|---|---|---|
| CEC L-42-A-92 | **OM 364A** Bore Polishing/Piston Cleanliness | OM364A | 01Oct95 | 15Sep99 |
| CEC L-42-T-99 | **OM 364LA** Bore Polishing/Piston Cleanliness | OM364LA | 01Jul99 | 23Dec09 |
| CEC L-46-T-93 | **VWICTD** Ring Sticking and Piston Cleanliness | VWICTD | 01Oct95 | 31Oct08 |
| CEC L-51-98 | **OM 602A** Wear | OM602A | 01Oct95 | 23Dec09 |
| CEC L-52-97 | **OM441LA** Bore Polishing/Piston Cleanliness and Turbocharger Performance | 441LA | 01Mar98 | 23Dec09 |
| CEC-L-56-T-95 | **XUD 11ATE** Medium Temperature Dispersivity | XUD11 | 01Oct95 | 01Mar99 |
| CEC L-56-T-98 | **XUD11BTE** Medium Temperature Dispersivity | XUD11B | 15Feb99 | 01Jun07 |
| CEC-L-78-T-97 | **VWDI** Direct Injection Diesel Performance | VWTDI | 01Mar98 | 01Mar02 |
| CEC-L-88-X-01 | **TU5L4X** Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU5L4 | 26Mar01 | 01Mar02 |
| CEC-L-88-T-00 | **TU5JP** Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU5JP | 26Mar01 | 1Nov02 |
| CEC-L-88-X-01 | **TU572X** Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU572X | 27Nov01 | 1Nov02 |
| CEC-L-55-T-95 | **TU3M** High Temperature Deposits, Ring Sticking, Oil Thickening | TU3MH | 01Oct95 | 01Dec03 |

d.3 ATC will establish guidelines for round robin, reference, and candidate registrations and testing whenever a new test method is introduced by CEC.

d.4 ATC support and prefer CEC approved tests and parameters. However, it is recognized that under certain circumstances ACEA include non-CEC approved parameters in ACEA Sequences. The ATC Code of Practice will apply to both CEC approved and non-CEC approved parameters. Non-CEC approved parameters will be indentified in ATC Product Approval Code of Practice Summary Details (also known as ERC summaries) by the following symbol, ‡, and the note:

‡ This parameter is not approved by CEC.

d.5 ATC reserve the right not to include a new test in the Code; in the event of such a decision, ATC will advise its industry partners of the reason(s) for the exclusion.

d.6 CLASSIFICATION OF OPERATIONALLY VALID AND COMPLETED TEST DATA

Table 1 shows the criteria that the laboratories should use to determine how to complete the declarations on the Test Validity Statement. Note: ERC will reconcile information provided by the laboratory

Where a laboratory runs tests that do not fully comply with the Code due to absence of acceptable reference data (for candidate tests), the test data will be classified as not in accordance with the Code.

Acceptable reference data are always required before a subsequent test can be considered to be in accordance with the Code EXCEPT for the tests that are being run to generate these acceptable reference data. It is not necessary to answer the 'Acceptable Reference Data' question for these tests (see p.F.2, third declaration).

Acceptable reference tests must be operationally valid, run according to ATC Code of Practice, and yield results within the acceptance bands for all parameters of that test.

For 'X' status candidate tests, these data may not be used to support Candidate Data Packages until they are subsequently re-classified by ATC as eligible for inclusion in the ERC Summary.

**Table 1**

| Test Registered at ERC | Test Stand | | CEC Test Status | | | Data In Accordance with Code | Eligible for Inclusion in ERC Summary | Note |
|---|---|---|---|---|---|---|---|---|
| | Acceptable Reference Data | ISO 17025 | * Full Approval Status | 'T' or 'A' Status | 'X' Status | | | |
| **No** | Yes/No | Yes/No | **Yes / No** | Yes/No | Yes/No | **No** | **No** | 1 |
| Yes | **No** | Yes | **Yes** | Yes | No | **No** | **No** | 2 |
| Yes | **No** | No | **Yes** | Yes | No | **No** | **No** | 2 |
| Yes | **No** | Yes | **No** | No | Yes | **No** | **No** | 2 |
| Yes | **No** | No | **No** | No | Yes | **No** | **No** | 2 |
| Yes | Yes | Yes | **No** | **No** | Yes | Yes | **No** | 3 |
| Yes | Yes | No | **No** | **No** | Yes | Yes | **No** | 3, 4 |
| Yes | Yes | No | **Yes** | Yes | No | Yes | Yes | 4 |
| **Yes** | **Yes** | **No** | **Yes** | **No** | **No** | **No** | **No** | |
| Yes | Yes | Yes | **Yes** | Yes | No | Yes | Yes | |

Notes 1-4 on page D.4 * per current development methodology in d.3

Note 1: Unregistered tests cannot subsequently be considered to have been run in accordance with the Code. (A completed registration is documented by ERC sending part C of the registration form to the sponsor and laboratory).

Note 2: Acceptable reference data, run in accordance with CEC Test Method Section 11 must be obtained before subsequent candidates can be considered to have been run in accordance with the Code.

Note 3: Once 'T' Status has been granted, any tests run to equivalent 'X'-Status version(s) of the CEC Test Method can be considered as eligible for inclusion in the ERC Summary (see para d.4). Equivalence will be defined by the CEC Working Group.

Note 4: Once a laboratory achieves ISO17025 accreditation, tests with a start date up to 18 months prior to the accreditation date can be considered as eligible for inclusion in the ERC Summary, provided they were acceptable references or subsequent candidates.

Where an accreditation body has a policy of not allowing accreditation of 'X' Status tests, classification of the data as run in accordance with the Code is allowed by ATC. In the case of a test that is subsequently granted 'T' Status, this allowance will not be extended beyond 12 months after the start date of the first test at the laboratory run to the 'T' Status method.

## Section E REGISTRATION OF TESTS

e.1 Preamble

The ATC Code of Practice requires that all candidate lubricant engine tests requested by Test Sponsors, and all reference lubricant tests, shall be operated by a registered Test Laboratory and each test shall be registered with the European Registration Centre (ERC). The purpose of this registration is to provide unambiguous documentation and a simple tracking system for all registered engine tests. The system depends upon the obligatory use of a three-part Registration Form. Different forms are used for candidate and reference tests.

Lubricant engine testing carried out for research purposes need not be registered with ERC.

e.2 Documentation

Each Registration Form comprises three parts for completion by the Test Sponsor, the Test Laboratory and ERC respectively. Only the format in Appendix 1, Form E.1 and Form E.2 shall be used.

e.3 Admissible tests

Only those tests listed in Section D of this Code may be registered.

e.4 Registration Fee

A registration fee becomes chargeable upon receipt by ERC of Part A of the Registration Form.

e.5 Completion of Test Registration Forms

The forms shown in Appendix 1, Form E.1 (for candidate lubricants) and Form E.2 (for reference lubricants) require specific information to be provided by both the Test Sponsor and the Test Laboratory when registering tests. Entries shall follow various coding conventions, which are shown on pages E.4-5 for candidate tests and E.6-7 for reference tests together with explanations of the information required.

**Part A:**

To be completed by the Test Sponsor at the time of commissioning test work with a Test Laboratory. Copies shall be provided to both the ERC and to the selected Test Laboratory.

The Test Sponsor may choose any ERC registered Test Laboratory.

**Part B:**

To be completed by the Test Laboratory on the form received from the Test Sponsor with Part A already completed. Where a Test Laboratory uses more than one stand for the required test procedure, the next available vacant stand must be chosen for the planned candidate lubricant test.

Part B must show the planned date of commencement of testing.

When Parts A and B have been fully completed, copies of the Registration Form shall be provided to ERC and to the Test Sponsor by the Test Laboratory.

Test work may not commence until after the time of receipt of the form by ERC. Tests begun before this time shall not be used in support of candidate formulations.

**Part C:**

Shall be completed by ERC upon receipt of the Registration Form with Parts A and B completed. ERC shall note the time of receipt, to the nearest minute, and the applicable time zone.

Copies of the form showing completed entries in Parts A, B and C shall be returned to the Test Sponsor and to the Test Laboratory for information purposes. The copy of the completed Registration Form, which is held by ERC, shall be the official copy for the purposes of the Code of Practice, with any others serving only for information. The time of receipt shown by ERC in Part C will show the precise time of registration.

e.6 Cancellation of a test

If a test is cancelled after registration, but prior to starting the test, then a Cancellation Form shall be forwarded to ERC and to the Test Laboratory by the Test Sponsor. A copy of the Cancellation Form is shown in Appendix 1, Form E.3.

e.7 Engine Test Start

A test is deemed to have started when the engine has been charged with the test oil (candidate or reference) - the test has not been started if the engine is being 'run-in' on 'run-in' oil.

e.8 Correction of Errors

The Correction of Error Form is generally used to correct typographical errors or transposition of numbers. It must be completed by the Test Sponsor or the Test Laboratory. If the error is in Part A of the Registration Form, the Test Sponsor must complete a Correction of Error Form and submit it with a new Registration Form to ERC and to the Test Laboratory.

If the error is in Part B of the Registration Form, the Test Laboratory must submit a Correction of Error Form and a corrected Registration Form to both the Test Sponsor and ERC.

A copy of the Correction of Error Form is shown in Appendix 1, Form E.4.

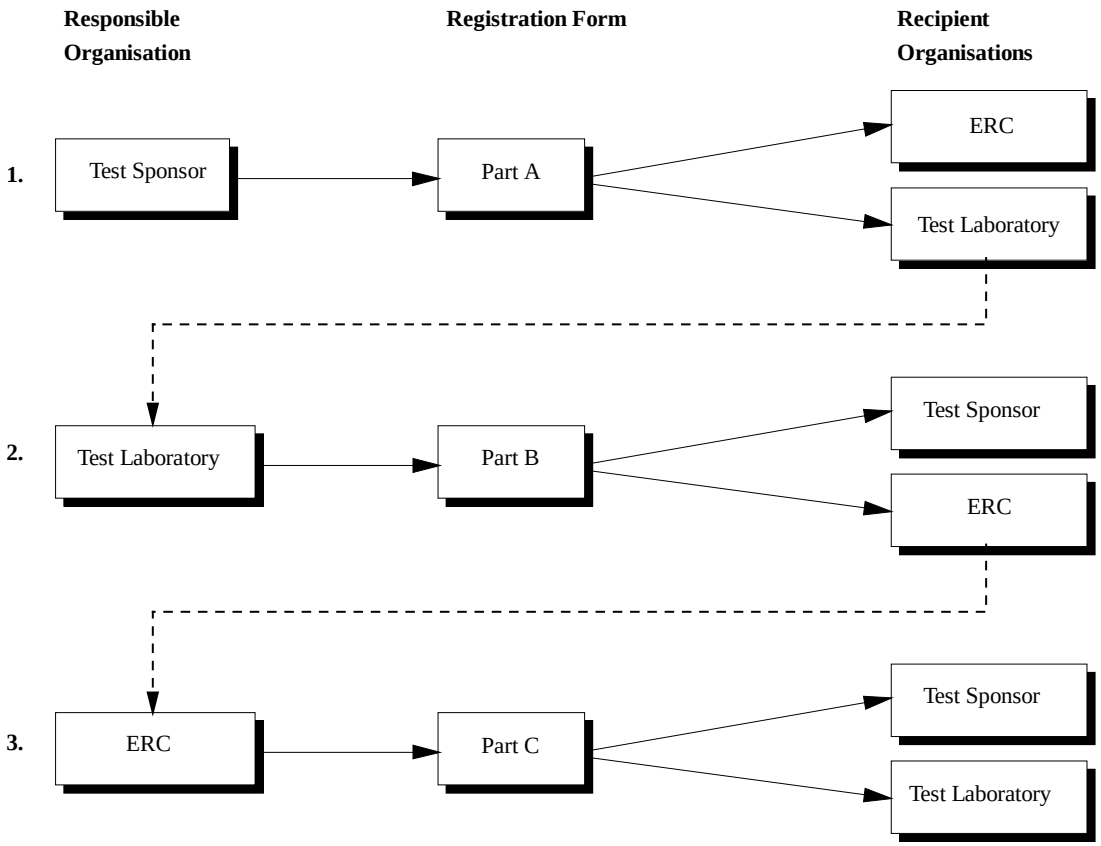
e.9 Uncontrolled Circumstances

In the case that an attempt on the part of either the sponsor or test laboratory to register a test with the ERC (via either fax or website) is unsuccessful due to uncontrolled circumstances, then the sponsor or lab may register the test by providing all relevant information (either Part A or Part B) via email to:

registration@atc-erc.org

Uncontrolled circumstances may include situations such as a power, network, or phone outages. Once the uncontrolled circumstance has been resolved, the record and email will be treated as a valid registration provided all pertinent information has been properly supplied. The ERC will then provide documentation that registration has been received and that the time and date of the email has been honored for registration purposes.

## SCHEDULE OF REGISTRATION ACTIVITIES



The following sequence of coding conventions shall be used:

| | Sponsor ID | Sponsor Code | Modification | Blend Number | Test (ATC Designation) | Count | Laboratory ID | Stand |
|---|---|---|---|---|---|---|---|---|
| Example | **AB** | **LUBE123456** | **A** | **02** | **OM364LA** | **03** | **YZ** | **STAND** |

Sponsor ID
A unique two-letter combination agreed with ERC for use in all registration applications. Where a ACC Sponsor ID already exists, then the same Sponsor ID shall be used. Where the Test Laboratory acts as the Test Sponsor, the Laboratory ID shall be used as Sponsor ID, wherever possible. The Test Sponsor inserts this Sponsor ID.

Sponsor Code
A candidate lubricant coding chosen by the Test Sponsor to a maximum length of ten characters and used to facilitate the tracking of formulations. The Test Sponsor inserts this Sponsor Code.

Modification
A single, upper case letter beginning with A for the initial candidate formulation and progressing through the alphabet as successive formulation modifications are made during the course of a development programme. See also Section H. The Test Sponsor inserts this letter.

Blend Number
A two-digit number where 01 is the first and 02 is the second candidate lubricant batch, etc. The Test Sponsor inserts this number.

Test
An ATC Designation is used to define the type of engine test run. The Test Sponsor inserts this Designation.

The ATC Designation for each registered CEC test, along with a test description, is shown in the table in Section d.2.

Count
A two-digit number code used to designate the number of times Part A of the Registration Form for the candidate, as identified by "Sponsor ID", "Sponsor Code" and "Modification", has been submitted to a Test Laboratory within a designated "Test Type". 01 = the first test submitted to any Test Laboratory for a given Sponsor ID and Sponsor Code, 02 = the second test submitted to any Test Laboratory for the same Sponsor ID and Sponsor Code, etc. The count number shall be reset with each formulation modification.

The Test Sponsor inserts this Count.

| | |
|---|---|
| Laboratory ID* | A unique two-letter combination, agreed with ERC, and used to identify the Test Laboratory at which the test is to be conducted. Where a ACC Laboratory ID already exists, then the same coding shall be used, wherever possible.<br>The Test Sponsor inserts this Laboratory ID. |
| Stand | An alpha/numeric code of no more than five characters which uniquely defines the test stand.<br>The Test Laboratory inserts this Stand code. |

* Where a Test Laboratory initiates tests, then the Laboratory ID shall be used as a Sponsor ID, where possible.

The following sequence of coding conventions shall be used

| | Sponsor ID | CEC Reference Oil Code | Batch Number | Test (ATC Designation) | Reference Run Count | Laboratory ID | Stand |
|---|---|---|---|---|---|---|---|
| **Example:** | **YZ** | **RL148** | **12** | **OM602A** | **03** | **YZ** | **Stand** |

Sponsor ID
A unique two-letter combination agreed with ERC for use in all registration applications. Where a ACC Sponsor ID already exists, then the same Sponsor ID shall be used. Where the Test Laboratory acts as the Test Sponsor, the Laboratory ID shall be used as Sponsor ID, wherever possible. The Test Sponsor inserts this Sponsor ID.

CEC Reference Oil Code
The Reference Oil Code of up to five characters assigned by CEC. The Test Sponsor inserts this code.

Batch Number
The Batch Number of the reference oil of up to two characters as assigned by CEC. The Test Sponsor inserts this number.

Test
An ATC Designation is used to define the type of engine test run. The Test Sponsor inserts this Designation.

The ATC Designation for each registered CEC test, along with a test description, is shown in the table in Section d.2.

Reference Run Count
A two-digit number indicating the number of times a given reference oil/batch has been tested in the designated test and stand, where 01 = first test and 02 = second test, etc. The Test Laboratory inserts this count.

Laboratory ID
A unique two-letter combination, agreed with ERC, and used to identify the Test Laboratory at which the test is to be conducted. Where a ACC Laboratory ID already exists then the same coding shall be used, wherever possible.
The Test Sponsor inserts this Laboratory ID.

Stand
An alpha/numeric code of no more than five characters which uniquely defines the test stand. The Test Sponsor inserts this Stand code.

**Note:** It is assumed that for reference tests the Test Laboratory will, in the majority of cases, be the Test Sponsor. Where this is not the case the Test Sponsor should liaise with the Test Laboratory for data needed to complete the formulation/stand code.

f.1 Upon completion of an engine test, the Test Laboratory shall complete the electronic data file in ATC-approved format according to the relevant data dictionary. Test Laboratories must submit the test results to ERC by Electronic Data Transfer (EDT).

f.2 Procedures for transmitting data electronically are available from the ERC.

f.3 A Test Validity Statement relating to the outcome of the test (see Fate of Tests, Glossary Section I) is required for any test that was started under the ATC Code of Practice. This statement is included in the data dictionaries. If a test was cancelled prior to start, the ERC must receive a completed Cancellation Form. No Test Validity Statements are submitted for tests that do not start.

f.4 The ERC does not need the test report from the Test Laboratory, but the Test Sponsor does. The reporting profiles in the Data Dictionaries contain all test result parameters which are to be stored in the ERC data base, selected parameters of which are to be reported in the ERC Summary for the Test Sponsor's Candidate Data Package.

f.5 Data dictionaries contain the reporting profiles for each engine test within the Code, for candidate and reference oil tests. They have been developed through industry consensus and are maintained by the European Registration Centre to facilitate electronic transfer of engine test data via the data upload website and can be found on the ATC/ERC Website at *Data dictionaries for electronic transfer of CEC test results*.

f.6 In the past, reporting of both 'A' and 'B' sets of variables was mandatory for candidate, reference, and round robin tests. These variables are now included in the data dictionary.

f.7 In the past, where performance targets were defined relative to reference oil performance, the relevant reference oil result, together with the reference formulation / stand code had to be included in the reporting profile. These results are now included in the data dictionary.

f.8 Test Laboratories may find it necessary to change reported test results, either as a result of their own internal quality checks or as a result of discrepancies found by ERC during data validation.

The reason for the changes must be indicated in the Validity Comment section of the Test Validity Statement. This refers to the root cause of the error, not to the way the error was detected.

To ensure that the changes are recorded, the Validation Date and Validation Contact of the Test Validity Statement must be updated accordingly.

f.9 End-of-test data must be sent to the ERC and to the Test Sponsor no later than 60 days after the engine test start date.

Late test reports will be handled according to ERC Posting #9. If the requisite information is not received by ERC within the timing specified, ATC will disallow any new registrations by the Test Laboratory. Results supplied to ERC later than 60 days after start may be ineligible as candidate support; for reference tests, subsequent candidate registrations may be rejected.

## Section G ATC CANDIDATE DATA PACKAGE

All Test Sponsors have the responsibility to maintain a complete record of each ATC Data Set or Programme conducted under the ATC Code of Practice. The ATC Candidate Data Package is a part of the total documentation, which includes information of critical interest to the customer. The Candidate Data Package may contain any additional information that the Test Sponsor deems appropriate.

The information given below must be included.

g.1 A summary, generated by ERC, of all engine tests which were registered as part of an ATC Data Set or ATC Programme: this shall include (a) all tests registered under each Sponsor ID / Sponsor Code combination as defined in Section E (pages E.4-E.7), (b) test results with any CEC non-approved parameters explicitly identified, (c) for each test, the entire Formulation/Stand Code as illustrated in Section E, (d) the fate of each registered test. Refer to Section I, pages I.3 and I.4, 'Fate of Tests'.

For tests completed after 1st October 2000, only tests in the category - Valid, Completed (and in accordance) - may be used to support the final candidate formulations.

g.2 Documentation defining the composition of the initial formulation (that used at the start of the ATC Data Set or Programme), and the final formulations: this shall provide the complete formulation recipe in mass percent, such that the total is 100%. Details will include: Performance Additive Package; Viscosity Modifier (VM), if any; pour point depressant, if any; and other additives in the formulation as well as all base stocks. Each additive and base stock designation may be identified by trade name, stock or code number or any other designation, which clearly identifies it to the customer. If a VM is used, an indication as to whether the product is dispersant or non-dispersant type shall be included. If a Performance Additive Package is not used, individual components must be listed.

Analysis of the specific base stock(s) used in the programme shall be provided to allow classification in accordance with the base stock categories as defined by the ATIEL Code of Practice, Appendix A.

g.3 A summary of all formulation modifications used and guidelines invoked in developing the final candidate formulation.

g.4 Physical and chemical characterisation of all candidate formulations which support a final candidate formulation, to include:

- Kinematic viscosity at 100°C
- CCS
- Finished oil metals where present
- Finished oil S, N, Si, P
- TBN
- Sulphated Ash
- Treatment levels of Performance Additive Package, base stocks, viscosity modifiers and any other constituents.
- Cl: only required on the final formulation and where an ACEA A/B or C claim is being made.

## Section G continued

Within an ATC Data Set / Programme and any Programme Extension the same test methods must be used for measurement of candidate physical and chemical properties

g.5 Documents and Reports for Oil Codes/Tests in the ATC Programme

| Test Form needed → | For Each Registered Test | | | | Full Test Report |
|---|---|---|---|---|---|
| Fate of Test ↓ | Test Registration Form | Cancellation Form | Test Validity Statement | ERC Summary | |
| Cancelled | √ | √ | N/A | √ | N/A |
| Operationally valid, completed and in accordance | √ | N/A | √ | √ (ii) | √ (iii) |
| Operationally valid, completed and not in accordance | √ | N/A | √ | √ (ii) | √ (iii) |
| Operationally valid and stopped by sponsor (i) | √ | N/A | √ | √ | N/A |
| Operationally valid and terminated (i) | √ | N/A | √ | √ | N/A |
| Operationally invalid and completed | √ | N/A | √ | √ | N/A |
| Operationally invalid and aborted (i) | √ | N/A | √ | √ | N/A |

√ = Required N/A = Not applicable

(i) Aborted = failed to complete for operational reasons and declared invalid by Test Laboratory.
Stopped = at test sponsor request.
Terminated = failed to complete for other reasons
(ii) This will include a full summary of the 'A' variable test results.
(iii) Only for engine tests supporting final candidate formulation.

Completed engine tests that do not support a final candidate formulation must be documented through inclusion of completed Test Validity Statements; it is expected that a full report will exist for all such tests that were operationally valid and completed.

In the event that a test is operationally invalid, full ratings may be an unnecessary expense. In such a case, a partial report is acceptable provided that the report contains sufficient information that a third party may clearly see the cause of the operational invalidity. The Test Validity Statement may serve as the partial report.

g.6 Data to support additional SAE viscosity grades included in the Programme as defined in the ATIEL Viscosity Grade Readacross Guidelines.* Applicable information in g.1 through g.5 above, and a statement from the Test Sponsor which relates each SAE viscosity grade within the ATC Programme, must also be provided. This also applies to Programme Extensions.

g.7 Data to support other base stocks as defined in the ATIEL Base Oil Interchange Guidelines.* Applicable information in g.1 through g.6 above, and a statement from the Test Sponsor which links the Programme Extension to the ATC Programme, must be provided.
(*) See ATIEL Code of Practice

This section deals with formulation modifications, which may be required during the generation of an ATC Data Set or Programme, and to extend the use of an ATC Programme. The intention is to allow the use of Fundamental Formulation Knowledge within the following framework.

It is the intention that the initial candidate formulation will meet all relevant ACEA engine test requirements without modification. However, formulation modifications for engine tests shall be permitted with the expectation that the modified formulation will also meet all engine test requirements. Modifications covered in guidelines h.1 to h.5, should be of sufficient magnitude that they would be expected to result in discernible improvements in performance

Formulation modifications made during the conduct of tests covered by the ACC Code of Practice (meaning ASTM tests found in the ACEA sequences) shall be governed by the ACC Code.

Formulation modifications made during the conduct of tests covered by the ATC Code (meaning CEC tests found in the ACEA sequences) are based on the following set of guidelines.

Base stock changes made during the course of an ATC Programme are governed by guideline h.7.1 for new base stock addition and by h.8.d for changes to existing base stock ratio. Additionally, a base stock matrix approach for an ATC Data Set generation is allowed by guideline h.7.2.

All formulation modifications must be declared to the customer.

## MODIFICATIONS WITHIN AN ATC DATA SET OR PROGRAMME

### PERFORMANCE ADDITIVE PACKAGE:

h.1 No decrease in treatment level of either the entire Performance Additive Package or its individual components is allowed, except within the context of permissible rebalances.

h.2 Increase in the total treatment level of the Performance Additive Package and/or its individual components is allowed.

h.3 One new component addition (separate from permissible rebalances) is allowed, subject to its final level being no more than 10% by mass of the final Performance Additive Package.

h.4 Rebalance among zinc dithiophosphates is allowed whilst maintaining constant formulation phosphorus level. This may include introduction of a new zinc dithiophosphate: only one new zinc dithiophosphate introduction is allowed.

h.5 Rebalance among metallic detergents is allowed whilst not decreasing formulation soap level. This may include introduction of a new metallic detergent; only one new metallic detergent introduction is allowed.

h.6 Any final candidate Performance Additive Package offered to the customer must incorporate all of the formulation modifications used to substantiate the performance claims.

**BASESTOCKS:**

h.7.1 **New Basestock Addition**

Substitution of a base stock by another base stock within the same base stock slate is allowed as described in the ATIEL Code of Practice Issue Number 20, 6.5.1.

Substitution of a base stock by another base stock from a differing base stock slate[5] , or by a Group V base stock, is allowed according to the following table:

| Base stock in original formulation | Interchange Base Stock [1, 4] | | | | |
|---|---|---|---|---|---|
| | Group I | Group II | Group III | Group IV | Group V |
| Group I | Note 7 | ≤10% Note 8 | ≤30% >30%[2] | ≤30 >30%[2] | ≤10[2] |
| Group II | ≤10% Note 8 | ≤10% Note 8 | ≤30% >30%[2] | ≤30 >30%[2] | ≤10[2] |
| Group III | None Note 8 | None Note 8 | ≤10% Notes 6, 8 | ≤30 | ≤10[2] |
| Group IV | None Note 8 | None Note 8 | None | Note 3 | ≤10[2] |
| Group V | None | None | None | None | None |

Notes:
1. All percentages are %m of the finished oil
2. Allowed with engine test data from the specific engine test
3. Substitution of Gp IV by another manufacturer's Gp IV is allowed as defined by the ATIEL Code of Practice Issue Number 20 (Appendix A, base Stock Interchange Guidelines)
4. Base stock groupings are as defined by the ATIEL Code of Practice Issue Number 20, Appendix A, Section A1.
5. A base stock slate is a product line of base stocks as defined in the ATIEL Code of Practice Issue Number 20, Appendix A, Section A1.
6. For the TU5JP, follow ATIEL Code of Practice Issue Number 19, Appendix B, Table B.3. For other engine tests, follow the table above
7. Follow ATIEL Code of Practice Issue Number 20, Appendix A, Table A.4.2 BOI Tables for engine tests listed there. For the TU5JP and DV43E follow ATIEL Code of Practice Issue Number 19, Appendix B
8. For the M111FE, follow the requirements of the ATIEL Code of Practice Issue Number 20, Appendix A, Table BOI.3. For other engine tests, follow the table above

Cumulative substitutions must not exceed 10%, or 30% by mass, as relevant and as defined above, from any initial/intermediate candidate for which test data are to be retained in support of the final candidate without specific engine test data. With specific engine test data, replacement of Gp I or II with Gp III or IV is unlimited.

Where changes such as above are introduced as a result of failing engine test data, and to pass an engine test, the reverse substitution may not be made subsequently, even if apparently allowed under the rules above, without the relevant engine test having been re-run and passed on a system representative of the final base stock mix to be promoted.

h.7.2 **Base Stock Matrix Approach**

As an alternative to the use of a single base stock slate for the generation of data to support an ATC Programme, a matrix approach may be used. This uses the ATIEL Code base oil interchange principles in that a test (or tests) which are not deemed sensitive to base stock changes may be run in any applicable base stock.

For example, for ACEA A5/B5-12, a matrix might comprise:

| Test Type | Group I Base Stock Slate | | |
|---|---|---|---|
| | A | B | C |
| TU572 | X | | |
| Seq VG | X | | |
| TU3M | R/A | X | |
| M111SL | X | | |
| M111FE | X | | |
| DV4E3 | R/A | | X |
| VW TDI | X | | |
| OM646LA | R/A | X | |
| OM646LA Bio | X | | |

Where X = Test Completed
R/A = Read-across Allowed

In this example, base stock A is fully qualified to A5/B5-12 using data from base stocks A, B and C. To qualify in base stocks B and C, additional testing will be required.

**OTHER CONSTITUENTS:**

h.8 In addition to those modifications to the candidate formulation as outlined above, certain other changes may be made to allow adjustment of the physical/chemical properties of the candidate without adversely affecting engine performance. Only the following changes are allowed.

a) Viscosity modifier treatment level within a given candidate SAE viscosity grade may be changed in accordance with the following principles:

Change in viscosity modifier level up to 15% relative is allowed without further support (change of viscosity modifier is not permitted within an ATC data set or programme).

Change in viscosity modifier level above 15% relative is allowed if such change is in alignment with the principles of the ATIEL Viscosity Grade Readacross Guidelines, specifically as follows:

On a test by test basis, if the required SAE viscosity grade (e.g. 5W-30) can be read across to the next higher summer grade (e.g. 5W-40) then the viscosity modifier content of the final candidate oil may be higher than that of the tested oil by >15% relative (in this example both the test oil and the final candidate oil are 5W-30 grade).

Likewise if read across is allowed to the next lower summer grade (e.g. 5W-20), then the viscosity modifier content of the final candidate oil may be lower than that of the tested oil by >15% relative.

Where the ATIEL Viscosity Grade Readacross Guidelines are used, as above, to justify changes in viscosity modifier level of >15% relative and these guidelines indicate a need for technical support data as defined in Section h.15 of the ATC Code of Practice, then such technical support must be included in the ATC candidate data package.

Where the ATIEL guidelines do not support read across to the relevant adjacent summer grade then the change in viscosity modifier content is restricted to a maximum of 15% relative.

b) Pour point depressant type and/or level.

c) Foam inhibitor type and/or level.

d) Base oil ratio of existing base oil mix within a candidate SAE viscosity grade, as follows:

For a basestock mix from a single slate, basestock ratio rebalance is unrestricted.

For a basestock mix of more than one basestock slate, any rebalance must follow the principles given in h.7 above (which also covers any new basestock addition), but with no change in Gp V level permitted.

Example 1: A basestock mix of 65 mass% A (Gp I) and 15 mass% B (Gp II) can be rebalanced by (this is a maximum example):

a) Substituting 10 mass% A (Gp I) for B (Gp II) to give:
55 mass% A (Gp I), 25 mass% B (Gp II)

b) Substituting 10 mass% B (Gp II) for a new basestock C (Gp II) to give:
65 mass% A (Gp I), 5 mass% B (Gp II), 10 mass% C (Gp II)

Example 2: A basestock mix of 75 mass% D (Gp III) and 5 mass% E (Gp IV) can be rebalanced by (this is a maximum example):

c) Substituting 30 mass% D (Gp III) for E (Gp IV) to give:
45 mass% D (Gp III) and 35 mass% E (Gp IV)

d) Substituting 10 mass% D (Gp III) for a new basestock F (Gp III) to give:
65 mass% D (Gp III), 10 mass% F (Gp III) and 5 mass% E (Gp IV)

Example 3: An engine test has been run on a base stock mix of 60 mass% D (Gp II) and 20 mass% E (Gp III). An interchange is considered based on the replacement of 20 mass% D (Gp II) and 20 mass% E (Gp III) by base stock F (Gp IV) leading to a cumulative introduction of 40 mass% base stock F (Gp IV). Is this interchange allowed without re-running the engine test?

Answer: No, engine testing is required on the interchanged base stock mix with 40 mass% F (Gp IV)

The table in h.7.1 indicates that the following two interchanges are each allowed individually: (a) Replacement of Gp II in the original formulation by 20 mass% Gp IV and (b) replacement of Gp III in the original formulation by 20 mass% Gp IV

However, together, these two interchanges would lead to the introduction of 40% Gp IV which exceeds the cumulative substitution limit of 30% mentioned in h.7.1

Where, A,B,C,D,E, F represent different base stock slates

h.9 The final candidate formulation supported in the ATC Data Set is that which incorporates all of the changes outlined in guidelines h.1-h.8 from formulation variants for which test data are retained.

**PROGRAMME EXTENSIONS:**

h.10 Programme Extension is the process by which modification is made to the final formulation of an ATC Programme to meet additional requirements.

Examples of such requirements can include, but are not restricted to:

* Base Oil Interchange (BOI)
* (Additional) SAE Viscosity Grades
* Viscosity Modifier Interchange
* Additional engine test performance
* TBN boost

h.11 Modifications outlined in guidelines h.1-h.5 and h.8 are also permitted within Programme Extensions without further support. In addition, components which were not present in the original tested formulation may be used as boosters to the system. The amount of the resultant addition is not restricted but demonstration that the performance has not been harmed must be available according to h.15.

New basestock addition according to guideline h.7 may be invoked in Programme Extension, subject to the cumulative limitations cited in h.7 which must apply across the original and extended set of supporting formulations.

h.12 SAE Viscosity Grade Read Across and Base Oil Interchange are particular examples of Programme Extension, guidelines for which are as contained in the ATIEL Code of Practice.

h.13 Viscosity Modifier Interchange (VMI)

h.13.1 General

VMI is a specific example of Programme Extension and is subject to the minimum requirements given in the following sections.

Any VMI shall be supported by data in specific engine tests and rheology tests before implementation is permissible.

An engine lubricant formulation (VM plus performance additive package plus base stock) shall be fully supported by an ATC Data Set before VMI testing can take place.

h.13.2 VMI Testing

VMI testing, where carried out, shall commence on the same performance additive package at the same concentration, and shall be carried out in the same base stocks that were used for the original programme. Minor re-balancing of the base stocks is permissible to achieve viscometric targets. Selection of viscosity grade(s) for VMI test work should be made based upon the coverage required for the interchange viscosity modifier and with regard to the relevant Viscosity Grade Read-across (VGRA) guidelines.

h.13.3 VMI Suppliers

VMI may be permissible between products from the same or from different suppliers.

For products from the same supplier, this supplier is responsible for demonstrating those products that are equivalent and interchangeable without testing, and those for which testing is required before interchange is permissible. Acceptable support demonstrating equivalence includes that given in h.15. In any case, if the VM polymer concentration increase is greater than 15 mass %, VMI testing shall be carried out.

For products from different suppliers, VMI testing is always required.

h.13.4 VMI Programme

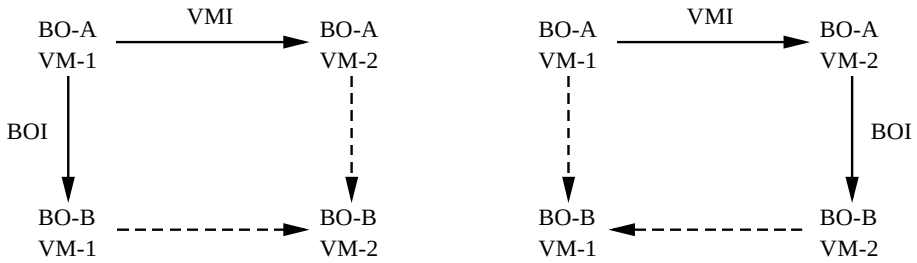
A complete VMI programme can be used to support other VMs from the same supplier, which are declared by the supplier to be equivalent and interchangeable. No additional interchange testing is required.

A VMI programme is performance additive package specific, but can extend to performance additive package systems of related technology within the formulation modification guidelines of the ATC Code of Practice.

h.13.5 BOI Test Work

BOI test work must be separate from VMI testing.

One BOI programme run on either the original VM (VM-1)/performance additive package or the interchange VM (VM-2)/performance additive package system will cover both systems (i.e. all corners of the diagrams below). e.g.




Similarly, one VMI programme, run on either the original Base Oil/Performance Additive Package or the interchange Base Oil/Performance Additive Package System, will cover both systems.

h.13.6 Engine Tests

Engine tests required by the proposed performance claim(s) shall be run for VMI. Specifically, for CEC tests governed by this Code, and ASTM tests methods, included in the ACEA Oil Sequences, the tests shown in Table H.1 shall be run before implementation of the interchange is permissible.

Different test requirements have been identified for interchanging non-dispersant viscosity modifiers (NDVM) and dispersant viscosity modifiers (DVM).

**Table H.1 Engine tests required before implementing VMI**

| Performance Category | NDVM to NDVM[1,2,3,4,5,6,7] | DVM to DVM or NDVM to DVM[1,2,3,4,5,6,7] |
|---|---|---|
| Gasoline/light-duty diesel engines | TU572, EP6CDT<br>M111SL[8], M271EVO[9]<br>VW TDI<br>M111FE<br>OM646LA Bio | TU572, EP6CDT<br>M111SL[8], M271EVO[9]<br>OM646LA<br>DV4E3[10], DV6C[10]<br>VW TDI<br>M111FE<br>OM646LA Bio |
| Gasoline/light-duty diesel engines with aftertreatment devices | TU572, EP6CDT<br>M111SL[8], M271EVO[9]<br>VW TDI<br>M111FE<br>OM646LA Bio | TU572, EP6CDT<br>M111SL[8], M271EVO[9]<br>OM646LA<br>DV4E3[10], DV6C[10]<br>VW TDI<br>M111FE<br>OM646LA Bio |
| Heavy-duty diesel engines | OM441LA, OM501LA<br>Mack T-8E or Mack T-11[11,12,13]<br>Cummins ISM[14]<br><br>OM646LA Bio | OM646LA<br>OM441LA, OM501LA<br>Cummins ISM[14]<br>Mack T-8E or Mack T-11[12,13]<br>OM646LA Bio |

(1) Refer to Section d.2 for CEC test methods to be used.

(2) Full testing is required for VMI not listed above.

(3) Physical mixes of NDVM and DVM are treated as DVM.

(4) Only the tests included in the ACEA Oil Sequence/SAE grade for which read across is required have to be run.

(5) Where alternative tests are listed, e.g., "T-8E or T-11", the alternative test cannot be run to document read-across if a failing result has already been obtained on the other test.

(6) Cummins ISM (or M11HST or M11 EGR for ACEA E7-12) not required if the new lubricant formulation has the same or a greater HTHS value compared with the original tested formulation.

(7) For Sequence VG, refer to ACC Code of Practice

(8) Or the M271 sludge test procedure as described by Daimler AG. This engine test is not documented in the ATC Code as it is not a CEC test method

(9) Until the new CEC test method L-107 is fully CEC-appoved, the M271 sludge test procedure as described by Daimler AG must be run. Once the L-107 is fully approved, the L-107 may be used

(10) Only CEC approved parameters apply.

(11) Mack T-8E requirement is waived if the replacement NDVM is within the same chemical type as the tested NDVM (chemical type means chemical family such as, but not limited to**,** styrene ester, polymethacrylate, styrene butadiene, styrene isoprene, polyisoprene, olefin copolymer and polyisobutylene).

(12) For ACEA E9-12, Mack T-11 is required instead of the Mack T-8E.

(13) Mack T-11 results obtained as part of an API CK-4, CI-4, CI-4+ or API CJ-4 or API FA-4 approval program can be used in place of Mack T-8E

(14) For ACEA E7-12, the Cummins M11HST or Cummins M11EGR test may be used in place of the Cummins ISM test.

## Section H continued

h.14 All formulation modifications used and the guidelines invoked to reach the final candidate formulation supported by the ATC Data Set must be declared to the customer in the Candidate Data Package.

h.15 A demonstration that the oil performance has not been harmed on addition of a booster must be available. Support must be detailed for each performance criteria (e.g. valve train wear, cylinder wear etc.) relevant to the category claimed.

Acceptable support includes:

CEC, OEM, or ASTM engine tests
Proprietary engine tests
Computer modelling
Bench/laboratory tests
Vehicle field tests

h.16 The following information must be presented on all formulation variants which support the final candidate lubricant formulation:

* Kinematic viscosity at 100°C
* CCS
* Finished oil metals where present
* Finished oil S, N, Si, P
* TBN
* Sulphated Ash
* Treatment levels of Performance Additive Package, base stocks, viscosity modifiers and any other constituents.

Within an ATC Data Set/Programme and any Programme Extension the same test methods must be used for measurement of candidate physical and chemical properties.

**Aborted Test -** See **Fate of Tests.**

**ATC Candidate Data Package**
The full record of an ATC Data Set or Programme, with contents as described in Section G.

A Candidate Data Package must be prepared by the Test Sponsor to support any performance claim or test requirements involving tests covered by the ATC Code, and must be made available to a customer on request.

**ATC Data Set**
A collection of test data which may be used to demonstrate engine test performance to meet customer requirements and which has been based upon testing covered by the ATC Code of Practice.

Data must include information on any formulation modifications utilised as allowed under the ATC and/or ACC Codes of Practice.

The results may derive from a single engine test, selected tests or a full set of tests using engine tests covered by the ATC Code.

**ATC Final (Candidate) Formulation**
The formulation which meets the requirements and/or performance claims in an ATC Data Set or Programme involving testing covered by the ATC Code.

**ATC Initial/Intermediate Formulation**
The formulation(s) used at the start and in course of development of an ATC Data Set or Programme involving testing covered by the ATC Code. Section H covers permissible formulation modifications.

**ATC Programme**
An ATC Data Set which fully documents the performance in engine tests covered by the ATC Code of a final formulation against one or more performance categories for engine lubricants.

Data provided must include information on any permitted SAE viscosity grade read across which has been invoked.

**Candidate Data Package -** See **ATC Candidate Data Package.**

**Candidate (Lubricant) Formulation -** See **ATC Initial/Intermediate/Final Formulation as above.**

**Customer**
An organization or individual for whom an ATC Data Set or ATC Programme is conducted.

## Section I continued

**Component**
A material which imparts a property to a candidate formulation, has a unique identifier and meets a particular manufacturer's specification. A Performance Additive Package is composed of specific components.

**Data Dictionary -** A file that contains the bookkeeping information necessary to manage data and contains the names, field types, length, and other characteristics of the fields in the database tables.

**Data Set -** See **ATC Data Set.**

**Discontinued / Aborted Test**
Any registered engine test which is started but does not complete the required test hours; reasons for the failure to finish the test are recorded in the Test Validity Statement.
For more detailed descriptions, see: Fate of Tests

**Documentation**
The following standard documents are specified for use by all participants within this Code:

| | |
|---|---|
| **Letter of Intent** | Appendix 1, Form B.1 |
| **Test Sponsor Self Evaluation Check List of Compliance** | Appendix 1, Form B.2 |
| **Engine Test Registration Form for Candidate Tests** | Appendix 1, Form E.1 |
| **Engine Test Registration Form for Reference Tests** | Appendix 1, Form E.2 |
| **Engine Test Cancellation Form** | Appendix 1, Form E.3 |
| **Correction of Error Form** | Appendix 1, Form E.4 |

**Electronic Data Transfer** – the movement of data files form one location to another using a secure socket-layer server. In this case, files are prepared by the Test Laboratory according to the data dictionary and are transmitted to ERC.

**Engine Test Stand**
The specific location within a test facility of the test equipment together with, but not necessarily limited to: a dynamometer, the test engine and all associated instrumentation and control apparatus which are appropriate to the proper conduct of the specified engine test procedure.

**Engine Test Start**
A test is deemed to have started when the engine has been charged with the test oil (which can be either a candidate or reference oil.) The test has not started if the engine is being 'run-in' on a specific 'run-in' oil.

For the M111FE, where a baseline reference oil is run prior to the candidate, the test start is considered to be when the candidate oil is charged to the engine.

**ERC Summary**
A summary, generated by ERC at the request of the Test Sponsor, of all engine tests which were registered on a Sponsor Code as part of an ATC Data Set or ATC Programme. It will include: all engine tests registered for each Sponsor Code/Modification; the entire Formulation/Stand Code (see Section E, p.E.4); the fate of each test; and, for each Operationally Valid and Completed Test, a summary of the 'A' variable test results (see Section F).

**Fate of Tests –** The outcome of a candidate or reference test.

| FATE OF TESTS | STATUS |
|---|---|
| **Operationally Valid, Completed (and in accordance)** (Previously: Operationally Valid and Completed; or Completed, Valid) | • The test ran for full duration.<br>• All required data were submitted to ERC in the proper format.<br>• The Test Laboratory concluded that the test was operationally valid.<br>• The Test Laboratory concluded that the test was run in accordance with the ATC Code.<br>• The Test Stand and the Test Method met the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1). |
| | |
| **Operationally Valid, Completed (and not in accordance)** | • The test ran for full duration.<br>• All required data were submitted to ERC in the proper format.<br>• The Test Laboratory concluded that the test was operationally valid.<br>• The Test Laboratory concluded that the test was not run in accordance with the ATC Code; or<br>• The Test Stand and the Test Method does not yet meet the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1). |
| | |
| **Operationally Valid and Stopped by Sponsor** | • The Test Sponsor requested the test be stopped early.<br>• The Test Laboratory concluded that the test had been operationally valid prior to cessation.<br>• Test Validity Statement (as a minimum) has been submitted to ERC. |
| | |
| **Operationally Valid, Terminated** | • The Test Laboratory stated that the test was terminated.<br>• The Test Laboratory concluded that the test had been operationally valid prior to cessation.<br>• The reason(s) for test cessation do(es) not fall within 'Valid and Stopped' or 'Invalid and Aborted' categories.<br>• Test Validity Statement (as a minimum) has been submitted to ERC with a comment showing reason for the test termination. |
| | |

**Fate of Test (continued)**

| | |
|---|---|
| **Operationally Invalid and Completed:** (previously: Completed, Invalid) | • The test ran for full duration.<br>• The Test Laboratory concluded that the test was operationally invalid, and the Test Validity Statement (as a minimum) has been submitted to ERC. |
| **Operationally Invalid and Aborted** | • The Test Laboratory stated that the test was discontinued or aborted.<br>• The Test Laboratory concluded that the test was operationally invalid.<br>• Test Validity Statement (as a minimum) has been submitted to ERC with a comment showing reason for the test abort. |
| **Cancelled** | • ERC have received a Test Cancellation Form from either the Test Sponsor or Test Laboratory prior to the test start. |
| **Pending** | • The Part A Registration has been submitted but the Part B Registration has not been submitted, or<br>• The test has been fully registered but the Test Validity Statement and Engine Test Results Form have not been received, or<br>• The test has been fully registered but there are format errors on the Test Validity Statement or with 'A' Variables data. |
| **Completed, Unresolved** | • Where a completed test/result does not comply with the above categories it will be assessed 'Completed, Unresolved'. |
| **REFERENCE TESTS**<br><br>**Operationally Valid, Completed (and in accordance and within acceptance bands)** | • The test ran for full duration<br>• All required data were submitted to ERC in the proper format.<br>• The Test Laboratory concluded that the test was operationally valid.<br>• The Test Laboratory concluded that the test was run in accordance with the ATC Code.<br>• The Test Stand and the Test Method met the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1).<br>• The test results were within the acceptance bands in place at the start of the test for all parameters. |
| **REFERENCE TESTS**<br><br>**Operationally Valid, Completed (and in accordance and NOT inside acceptance bands)** | • The test ran for full duration<br>• All required data were submitted to ERC in the proper format.<br>• The Test Laboratory concluded that the test was operationally valid.<br>• The Test Laboratory concluded that the test was run in accordance with the ATC Code.<br>• The Test Stand and the Test Method met the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1).<br>• One or more test results were outside the acceptance bands in place at the start of the test for all parameters. |
| **Discontinued / Aborted** (Superseded in September 1997 by Valid and Stopped; or, Invalid and Aborted; or Valid and Terminated) | • The Test Laboratory stated the test was discontinued or aborted. |

**Final (Candidate) Formulation -** See **ATC Final (Candidate) Formulation.**

**Formulation Modification(s)**
Permissible adjustment(s) to a formulation. See Section H.

**Fundamental Formulation Knowledge**
Fundamental Formulation Knowledge is founded upon an understanding of proprietary formulation technologies and the inter-relationship of basestock and additive performance in bench engine tests and in the field.

Fundamental Formulation Knowledge is built up through extensive and continuing experience in the development of automotive lubricants, and results in a comprehensive understanding of the effect of formulation modifications within specific lubricant additive technologies.

**Identity Codes -** See **Sponsor ID** and **Laboratory ID.**

**Initial/Intermediate (Candidate) Formulation -** See **ATC Initial/Intermediate (Candidate) Formulation.**

**Relative (Percentage) Change**
The fractional change made to a lubricant constituent, expressed in percentage terms.

**Soap Level**
The organic chemical part of the detergent.

**Sponsor Code**
A candidate lubricant coding chosen by the test sponsor and used to facilitate the tracking of formulations.

**Invalid/Invalidity -** See **Test Validity**

**Laboratory ID**
A unique two-letter combination, agreed with ERC, and used to identify the Test Laboratory at which the test is to be conducted. Where a ACC Laboratory ID already exists then the same coding shall be used, wherever possible.

**Letter of Intent**
A standard format letter which must be signed by a senior officer of any organisation wishing to demonstrate compliance with this Code of Practice. See Section B, Section C, and Appendix 1, Form B.1.

**Performance Additive Package**
A combination of, for example, detergents, dispersants, inhibitors and other components which when blended into base oils is intended to meet specific engine and bench test requirements.

**Programme -** See **ATC Programme.**

**Programme Extension**
Programme Extension is the process by which modification is made to the final formulation of an ATC Programme to meet any additional requirements.

Examples of such requirements can include but are not restricted to:

Base Oil Interchange
(Additional) SAE Viscosity Grades
Viscosity Modifier Interchange
Additional engine test performance.
TBN Boost

See Section H.

**Reference Lubricant**
Reference lubricants are those which should have known field performance against which the engine test can be compared to establish correlation.

**Sponsor ID**
A unique two-letter combination agreed with ERC for use in all registration applications. Where a ACC Sponsor ID already exists, then the same Sponsor ID shall be used, wherever possible.

**Stand -** See **Engine Test Stand.**

**Test Sponsor**
That individual, company, or organisation having financial and administrative responsibility for conducting a programme.

**Test Validity, or Invalidity**
The terms 'Valid/Validity' and 'Invalid/Invalidity' related to engine tests with this Code refer to a Test Laboratory's assessment of the operational status of the test, unless otherwise specified.

**Valid / Validity**
See Test Validity.

## Section J ACRONYMS

| | |
|---|---|
| ACC | American Chemistry Council |
| ACEA | Association des Constructeurs Européens d'Automobiles |
| API | American Petroleum Institute |
| ATC | Technical Committee of Petroleum Additive Manufacturers in Europe. A sector group of CEFIC |
| ATIEL | Association Technique de l'Industrie Européene des Lubrifiants |
| BOI | Base Oil Interchange |
| CEC | Coordinating European Council for the Development of Performance Tests for Transportation Fuels, Lubricants and Other Fluids |
| CEFIC | European Chemical Industry Council |
| DVM | Dispersant Viscosity Modifier |
| EAL | European Cooperation for Accreditation of Laboratories |
| EDT | Electronic Data Transfer |
| EELQMS | European Engine Lubricant Quality Management System |
| ERC | European Registration Centre |
| HTHS | High Temperature High Shear |
| ISO | International Standards Organisation |
| MLA | Multilateral Agreement |
| NDVM | Non Dispersant Viscosity Modifier |
| SAE | Society of Automobile Engineers |
| TBN | Total Base Number |
| VM | Viscosity Modifier |
| VMI | Viscosity Modifier Interchange - See Section H |

## Appendix 1: Forms

Form B.1: Letter of Intent

Form B.2: Test Sponsor Self-Evaluation Checklist of Compliance

Form E.1: Test Registration Form—Candidate Lubricants

Form E.2: Test Registration Form—Reference Lubricants

Form E.3: Cancellation Form for Candidate and Reference Tests

Form E.4: Correction of Error Form

# LETTER OF INTENT

_____
(Company Name)

is committed to the continuous improvement of engine lubricant testing and approval procedures as defined in the ATC Code of Practice.

Accordingly, with effect from _____ (Date), this company intends to conduct all relevant lubricant engine tests and programmes in accordance with the practices specified in the ATC Code of Practice.

_____
(Typed Name)

_____
(Title)

_____
(Signature)

_____
(Date)

## TEST SPONSOR SELF-EVALUATION CHECKLIST OF COMPLIANCE

This Check List should be used in conjunction with pages B.4, B.5, which provides the key to each item.

| | COMPLIANCE STAGE * | I | II | III | IV | N/A |
|---|---|---|---|---|---|---|
| 1.1 | Test Registration | | | | | |
| 1.2 | | | | | | |
| 1.3 | | | | | | |
| 1.4 | | | | | | |
| 1.5 | | | | | | |
| 1.6 | | | | | | |
| 2.1 | Test Validity | | | | | |
| 2.2 | | | | | | |
| 2.3 | | | | | | |
| 3.1 | Use and Treatment of Data<br>ERC Summary/CDP consistency | | | | | |
| 3.2 | Appropriateness of Supporting Data | | | | | |
| 4.1 | Validity or Interpretation Questions | | | | | |
| 5.1 | Formulation Modifications | | | | | |
| 5.2 | | | | | | |
| 5.3 | | | | | | |
| 6.1 | Programme Extensions | | | | | |
| 6.2 | | | | | | |
| 6.3 | | | | | | |
| 6.4 | | | | | | |

COMPLIANCE STAGES *

I No compliance with the Code.
II Item affected by issues having real importance to, or substantial consequences for, implementing the Code.
III Item affected by issues having no real importance to, or no substantial consequences for, implementing the Code.
IV Full compliance with the Code.
N/A Not applicable.

_____ _____
Auditor Executive Officer or Delegated Authority Typed Name/Title

_____
Test Sponsor Company Name

_____ _____ _____
Date Signature Date

European Registration Centre
6555 Avenue, Pittsburgh, PA 15206, USA https://atc-erc.org
Services Provided By: A Program of ASTM International

# CANDIDATE

**Engine Test Registration Form**

| **Registration Key:** |
|---|

| **Part A** – completed by Test Sponsor | | | |
|---|---|---|---|
| Test Sponsor: | Contact: | | |
| Address: | | | |
| City: | State/Province: | | |
| Country: | Postal Code: | | |
| Phone Number: | Fax Number: | | |
| Email: | Date: | **Time: | |
| Test Laboratory: | Test Type: | | |
| **Formulation Stand Code:** | | | |
| SAE Viscosity Grade: | Sponsor In-House Number: | | |

| **Part B** – completed by Test Laboratory | | | |
|---|---|---|---|
| Test Lab: | Contact: | | |
| Address: | | | |
| City: | State/Province: | | |
| Country: | Postal Code: | | |
| Phone Number: | Fax Number: | | |
| Email: | Date: | **Time: | |
| Test Number: | Stand Number: | | |
| Round Robin (Yes/No): | Estimated Start Date: | | |
| **Formulation Stand Code:** | | | |
| Prepared By: | | | |

| **Part C** – ATC European Registration Center | |
|---|---|
| Part A Date Received: | **Time Received: |
| Part B Date Received: | **Time Received: |

***Times shown are U.S. Eastern Time Zone.*

Print this page and retain for your records – If anything is in error please notify the ATC ERC immediately.
The test lab and ATC ERC will notify you via email upon successful scheduling of request.

European Registration Centre
6555 Avenue, Pittsburgh, PA 15206, USA https://atc-erc.org
Services Provided By: CMC A Program of ASTM International

# REFERENCE

**Engine Test Registration Form**

| **Registration Key:** |
|---|

| **Part A** – completed by Test Sponsor | | | |
|---|---|---|---|
| Test Sponsor: | Contact: | | |
| Address: | | | |
| City: | State/Province: | | |
| Country: | Postal Code: | | |
| Phone Number: | Fax Number: | | |
| Email: | Date: | **Time: | |
| Test Laboratory: | Test Type: | | |
| **Formulation Stand Code:** | | | |
| SAE Viscosity Grade: | Sponsor In-House Number: | | |

| **Part B** – completed by Test Laboratory | | | |
|---|---|---|---|
| Test Lab: | Contact: | | |
| Address: | | | |
| City: | State/Province: | | |
| Country: | Postal Code: | | |
| Phone Number: | Fax Number: | | |
| Email: | Date: | **Time: | |
| Test Number: | Stand Number: | | |
| Round Robin (Yes/No): | Estimated Start Date: | | |
| **Formulation Stand Code:** | | | |
| Prepared By: | | | |

| **Part C** – ATC European Registration Center | |
|---|---|
| Part A Date Received: | **Time Received: |
| Part B Date Received: | **Time Received: |

***Times shown are U.S. Eastern Time Zone.*

Print this page and retain for your records – If anything is in error please notify the ATC ERC immediately.
The test lab and ATC ERC will notify you via email upon successful scheduling of request.

European Registration Centre
6555 Avenue, Pittsburgh, PA 15206, USA https://atc-erc.org
Services Provided By: A Program of ASTM International

Sponsor Cancellation Form

| **Registration Key:** | | | |
|---|---|---|---|
| **Test Sponsor Information** | | | |
| Test Sponsor: | Contact: | | |
| Address: | | | |
| City: | State/Province: | | |
| Country: | Postal Code: | | |
| Phone Number: | Fax Number: | | |
| Email: | Part A Date: | Part A Time*: | |
| **Formulation Stand Code:** | | | |
| Reason For Cancellation: | | | |

| **Laboratory Information** | | | |
|---|---|---|---|
| Test Lab: | Contact: | | |
| Address: | | | |
| City: | State/Province: | | |
| Country: | Postal Code: | | |
| Phone Number: | Fax Number: | | |
| Email: | Part B Date: | Part B Time*: | |
| Test Number: | Stand Number: | | |
| Test Type: | Estimated Start Date: | | |
| **Formulation Stand Code:** | | | |

| **ATC European Registration Centre** | |
|---|---|
| Cancellation Date Received: | Time Received*: |

Print this page and retain for your records – If anything is in error please notify the ATC ERC immediately.
The ATC ERC will notify you via email upon receiving the request.
* All listed times are US Eastern.

European Registration Centre
6555 Avenue, Pittsburgh, PA 15206, USA https://atc-erc.org
Services Provided By:
A Program of ASTM International

## Correction History Form

| **Registration Key:** |
|---|

| **Current Schedule/Registration Information as of :** | |
|---|---|
| Sponsor: | Sponsor Contact: |
| Sponsor Phone Number: | Sponsor Email: |
| Lab: | Lab Contact: |
| Lab Phone Number: | Lab Fax Number: |
| Test Current Status: | Test Type: |
| Test Number: | Stand: |
| Estimated Start Date: | Lab Email: |
| **Formulation Stand Code:** | |

| **Correction History Information** | | | |
|---|---|---|---|
| Item | Corrected Value | Date | Time |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# Adherence to Reference Protocol And Code of Practice Issue Resolution Process

Background:

As noted in Sections B.9 and C.9, the ATC QMWG has the authority to resolve any issues that may arise for Test Sponsor code compliance and Test Lab adherence to reference protocol. These items may be discovered through various processes which can include sponsor and lab internal or external quality audits, ERC registration data verification, and ERC review of reference test data. The following outline summarizes the review process.

**Review Process:**

I. Discovery – Issues may be discovered by sponsors, labs, or the ERC. Upon discovery, the issue must be brought forth to the ERC. If the issue is discovered by the ERC, the ERC must contact the sponsor or lab.

II. Documentation – the ERC will work with the involved parties to document the full scope of the issue. This should include the total impact of the issue, the root cause, and corrective action.

III. Reporting – The ERC will report the incident to the QMWG Chair and Vice-Chair for resolution. The issue will be presented in an anonymous manner and will not reveal, in any way, the identity of the parties involved.

IV. Resolution – Upon agreement of both the Chair and Vice-Chair, the specified resolution will be enacted by the ERC. The resolution may be to accept the discrepancy, to accept the discrepancy contingent upon a specified action for the party involved, or to not accept the discrepancy as being in compliance with the code or reference protocol.

V. Follow Through – Upon resolution, the ERC will work with the party involved to close out the issue, including verification of any actions. Documentation will be presented to the party involved and the QMWG. The ERC will also maintain a comprehensive list of all issues.

Please contact the ERC if you have any questions on this process.