



dexos™

Test Registration Manual

This manual specifies the registration procedures for engine and elastomer test methods required of engine lubricants intended to meet General Motors dexos performance specifications.

This manual is available only in electronic form at the GM Test Data Center website, <https://gmtdc.org>. This manual will be updated as necessary. All notification of changes will be via e-mail. To have your name included on the distribution list, please send your request along with your e-mail address to the address shown below.

Any questions or comments can be directed to:

GM Test Data Center

Email : info@gmtdc.org

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Section I

OVERVIEW

I.a This manual details the procedures and requirements necessary to register and report tests intended for use in establishing dexos performance claims for engine lubricants.

- i. This manual covers only the test registration and test reporting processes.
- ii. GM Customer Care and Aftersales (CCA) administers the dexos licensing program. For information on how to pursue a dexos Blender or Brand license contact:

Website: <http://www.gmdexos.com/>

Email: gmdexos.inquiries@gm.com

I.b The goal and purpose of the GM Test Data Center (GMTDC) is to register GM test methods and to collect all test data, whether generated by GM or industry test methods, in support of dexos licensing requirements. The GMTDC has been modeled after the ACC and ATC registration systems in recognition of their effectiveness.

- i. dexos specifications do not require registration of engine tests through the GMTDC that are already registered with either of the two agencies mentioned in Section I.b. dexos specifications do require the reporting of all test data used to support dexos licensing. Refer to [Section II, Table II](#) for the list of engine and elastomer tests and the required registration agency to be used for each test method.
- ii. Similarly, dexos specifications do not require a different formulation coding system for engine tests than already exists through the two agencies mentioned in Section I.b. and instead have adopted the same formulation coding system used for CEC and ASTM engine tests.
- iii. Combined with information from the ACC and ATC registration systems, the GMTDC ensures that all tests used in establishing dexos performance claims for engine lubricants have been suitably registered.

- iv. Contact Information:

ACC Monitoring Agency
<https://acc-ma.org>

ATC European Registration Center
<https://atc-erc.org>

- I.c Test Sponsors and Test Laboratories are required to register with the GMTDC by means of annual Letters of Intent. Further Sponsor and Laboratory requirements are detailed in [Section III](#) and [Section IV](#).
- I.d dexos Test Registration uses the ISO 9000 international quality system. All participating Test Sponsors and Laboratories shall comply, or be in the process of complying with this system (see Sections [III](#) and [IV](#)).
- I.e dexos Test Registration specifies engine tests which must be operated to their prescribed methods. Participating Test Laboratories must be active members of any relevant bodies which are developing or monitoring listed engine test procedures. See [Section II](#).
- I.f All candidate lubricant tests which are intended to support dexos performance claims must be registered with the appropriate registration agency. With the exceptions noted in Table II, Footnote D, lubricant tests must be registered *before* testing begins. At the completion of registered test work, Test Laboratories must submit the results to the appropriate registration agency, the Test Sponsor, and the GMTDC (See [Section VI](#)). A specified formulation/test coding sequence must be used to facilitate tracking of test programs (See [Section V](#)).
- I.g dexos specifies the contents a submission package which must be used by Test Sponsors to establish dexos performance claims. This information will include test results and the disclosure of any formulation changes which may have been made during development and which support the final candidate formulation. Contact [dexosESubmission](#) for information.

Section II

REGISTERED TEST PROCEDURES

- II.a Registered tests conducted for dexos must comply completely with the latest published test procedures.

- II.b [Table II](#) lists the test procedures that are used for dexos specifications as well as the agency responsible for the registration of each test type.

Table II
dexos Registration
Test Methods and Registration Agencies

Registration Agency: GM Test Data Center (https://gmtdc.org)		
<u>Description</u>	<u>Test Method</u>	<u>Registration Designation</u>
GMOD Oxidaton / Deposits	GMW17043	GMOD
Aeration Test	GMW17295	GMAER
Stochastic Pre-Ignition Gen 3 ^A	GMW18299	GMSPI3
Turbo Coking	GMW17299	GMTC
Oil Efficiency Evaluation	GMW18359	GMOEE
M271 Sludge ^{B, D}	Daimler M271	M271SL
Opel Vehicle Fuel Economy Test ^{B, D}	Opel WLTC	OPVFE
ACEA AEM Elastomer ^{B, C, E}	CEC L-112-16	ACEAAEM
ACEA FKM Elastomer ^{B, C}	CEC L-112-16	ACEAFKM
ACEA ACM Elastomer ^{B, C}	CEC L-112-16	ACEAACM
ACEA HNBR Elastomer ^{B, C}	CEC L-112-16	ACEAHNBR
SAE J2643 ACM-1 ^{B, C}	SAE J2643	SAEACM1
SAE J2643 ACM-2 ^{B, C}	SAE J2643	SAEACM2
SAE J2643 AEM-1 ^{B, C}	SAE J2643	SAEAEM1
SAE J2643 FKM-1 ^{B, C}	SAE J2643	SAEFKM1
SAE J2643 FKM-2 ^{B, C}	SAE J2643	SAEFKM2
SAE J2643 HNBR-1 ^{B, C}	SAE J2643	SAEHNBR1
SAE J2643 VMQ-1 ^{B, C}	SAE J2643	SAEVMQ1

^A Refer to [Section V.j](#) for special instructions regarding GMSPI and GMSPI3 registrations.

^B Test registration with the GMTDC may occur after test completion.

^C Elastomer test registrations are only for final formulations.

^D M271SL and OPVFE tests are not registered with the GMTDC; only test results are uploaded.

^E ASTM D2240, ASTM D412 and ASTM D471 should be used for dexos™1 Gen3 parameters

Table II
dexos Registration
Test Methods and Registration Agencies (Continued)

Registration Agency: ACC Monitoring Agency (https://acc-ma.org)		
Description	Test Method	Registration Designation
Sequence III G/A/B	ASTM D7320	III G, III GA, III GB
Sequence IV B	ASTM D8350	IV B
Sequence V G	ASTM D6593	V G
Sequence V H	ASTM D8256	V H
Sequence V I D	ASTM D7589	V I D
Sequence V I E	ASTM D8114	V I E
Sequence V I F	ASTM D8226	V I F
Sequence V I I I	ASTM D6709	V I I I
Sequence I X	ASTM D8291	I X
Sequence X	ASTM D8279	X
Registration Agency: ATC European Registration Centre (https://atc-erc.org)		
Description	Test Method	Registration Designation
TU3M Wear Test	CEC L-38	TU3MS
TU5JP High Temp Deposits, Oil Thickening	CEC L-88	TU572
M271EVO Sludge	CEC L-107	M271EVO
EP6CDT Gasoline Cleanliness	CEC L-111	EP6CDT
OM646LA Wear, Viscosity Stability	CEC L-099	646LA
OM646LA Bio Wear, Viscosity Stability	CEC L-104	OM646BIO
DV6C (DI) Diesel Oil Dispersion Medium Temp	CEC L-106	DV6C
MB M111 Fuel Economy	CEC L-54	M111FE
VW TDI Diesel Piston Cleanliness, Ring Sticking	CEC L-078	VWTDI2
VWTDI3 Diesel Piston Cleanliness Test	CEC L-117	VWTDI3
Diesel Turbocharger Compressor Deposit Test	CEC L-114	TCCD

Section III

TEST SPONSOR REQUIREMENTS

- III.a Test Sponsors wishing to commission lubricant testing for dexos registration shall apply to the GMTDC for a Test Sponsor Identity Code (Sponsor ID).
- i. Where possible, the GMTDC will assign a Sponsor ID already in use by that sponsor for either/both the ACC-MA and/or the ATC-ERC.
- III.b Test Sponsors shall sign an annual Letter of Intent, to be submitted to the GMTDC.
- i. A standard Letter of Intent shall be delivered to GMTDC 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, Letter of Intent](#).
 - ii. Submission of Letters of Intent and use of Sponsor IDs indicates that Test Sponsors authorize the GMTDC to include their test results for use in and release of blind test data studies.
- III.c The Letter of Intent confirms that all candidate lubricant testing, intended for dexos performance claims, commissioned anywhere in the world will be conducted in compliance with dexos Test Registration and Licensing programs.
- i. Sponsors may elect to run lubricant tests for research purposes outside the scope of dexos programs. Such tests need not be registered but their results cannot then be used as support in dexos programs.
- III.d Test Sponsors shall be certified as complying with ISO 9001.
- i. When requested by General Motors, the GMTDC or a client company, a Test Sponsor shall supply evidence of compliance to the appropriate ISO accreditation(s).

Section IV

TEST LABORATORY REQUIREMENTS

- IV.a Test Laboratories wishing to conduct lubricant testing for dexos registration shall apply to the GMTDC for a Test Laboratory Identity Code (Laboratory ID).
- i. Where possible, the GMTDC will assign a Laboratory ID already in use by that lab for either/both the ACC-MA and/or the ATC-ERC
- IV.b Test Laboratories shall sign an annual Letter of Intent, to be submitted to the GMTDC.
- i. A standard Letter of Intent shall be delivered to GMTDC 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, Letter of Intent](#).
 - ii. The GMTDC will only issue new Laboratory ID Codes on receipt of a valid Letter of Intent and will only accept test registrations from Test Laboratories with current Letters of Intent.
- IV.c In order to be eligible for registration, a Test Laboratory must be an active participant in the appropriate industry group where such a group is responsible for the development, refinement or monitoring of a test procedure which is listed in this registration manual.
- IV.d Test Laboratories shall be certified as complying with a quality system.
- i. Test Laboratories shall be ISO 17025 certified for all tests. New tests will be added to the laboratory scope on the first audit following release of the standards. Such accreditation must have been granted by an organization which has demonstrated that it operates in accordance with the requirements of ISO/IEC 17011:2004.
 - ii. When requested by General Motors, the GMTDC or a client company, a Test Laboratory shall supply evidence of compliance to all appropriate ISO accreditation(s).
 - iii. The audit process for Test Laboratories will be part of their ISO 17025 certification.
 - iv. In order to reconcile their records for ACC audit purposes Test Laboratories shall request GMTDC 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.

- IV.e Each test apparatus (stand, bath, etc.) employed for registration 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 and its result.
- IV.f To be eligible to conduct registered candidate lubricant tests, a test apparatus shall have successfully qualified by running reference oil test(s) which meet the relevant acceptance criteria and have been submitted to the appropriate reference testing monitoring agency, where applicable. All candidate tests shall be conducted on currently qualified test apparatus.
 - i. The reference test requirement in Section IV.f does not apply to elastomer testing for final formulations.
- IV.g Each Test Laboratory, in order to be in compliance with dexos registration, will conduct all testing according to the requirements of both the dexos Test Registration Manual and the applicable test method in effect at the time of test registration.
- IV.h All Test Laboratories in compliance with dexos registration, are deemed to be equal.

Section V

REGISTRATION OF TESTS

- V.a dexos specifications require that all candidate lubricant tests, requested by Test Sponsors, shall be operated by a registered Test Laboratory and each test shall be registered with the appropriate registration agency (See Section II, [Table II](#)). The purpose of this registration is to provide unambiguous documentation and a simple tracking system for all registered tests. The system depends upon the obligatory use of a three-part Registration Form.
- i. Lubricant testing carried out for research purposes need not be registered.
- V.b Each Registration Form comprises three parts (Parts A, B, and C) for completion by the Test Sponsor, the Test Laboratory and the registration agency.
- i. Part A is completed by the Test Sponsor at the time of commissioning test work with a Test Laboratory.
 - ii. Part B is completed by the Test Laboratory once the estimated date of test start is known. Engine test stand selection must comply with Appendix D of the American Chemistry Council Petroleum Additives Product Approval Code of Practice. Test work may not commence until after Part B has been submitted to the GMTDC. Tests begun before this time shall not be used in support of candidate formulations.
 - iii. Part C is produced by the GMTDC upon receipt of Parts A and B, and notes the date and time of the registration. The completed registration form, held by the GMTDC, shall be the official registration for the purposes of dexos registration. Copies of the registration are provide to the Test Sponsor and Laboratory.
- V.c Only those tests listed in [Section II](#) of this manual may be registered.
- V.d Completion of Test Registration Forms
- i. For tests registered with the GMTDC, submit registrations through the GMTDC website (<https://gmtdc.org>). The registration form information and the formulation coding to be used follow the structure detailed in Appendix B of the American Chemistry Council Product Approval Code of Practice (available from www.americanchemistry.com).
 - ii. For tests registered with either the ACC Monitoring Agency or the ATC European Registration Centre, refer to each organization’s code of practice for instructions on registering tests.

- iii. Test work may not commence until after the time of receipt of the form by the registration agency (Part C completed). With the exceptions noted in Table II, Footnote D, tests begun before this time shall not be used in support of candidate formulations.
- V.e Fees
- i. Registration Fee - A registration fee becomes chargeable upon receipt by the GMTDC of Part A of the Registration Form.
 - ii. Test Review Fee - A test review fee becomes chargeable for non-GM test methods on initial upload.
 - iii. More information on fees is available from the [GMTDC website](#).

Note: Sections V.f through V.i are specific only to tests registered with the GMTDC; for tests registered with the other agencies, refer to their policies.

- V.f Test Cancellation - If a test is cancelled after registration but prior to test start, then the Test Sponsor shall submit a Cancellation Form through the GMTDC website (<https://gmtdc.org>).
- V.g Test Start - A test is deemed to have started when the test apparatus has been charged with the test oil.
- V.h Correction of Errors – submit corrections of registration errors through the GMTDC website (<https://gmtdc.org>). The Correction of Error is generally used to correct typographical errors or transposition of numbers. It is not intended for use to change which oil formulation is actually scheduled for testing or to change which laboratory is to conduct testing. Those changes require a cancellation and a new registration.
- i. If the error is in Part A of the Registration Form, the Test Sponsor must submit a Correction of Error.
 - ii. If the error is in Part B of the Registration Form, the Test Laboratory must submit a Correction of Error.
- V.i Uncontrolled Circumstances - In the case that an attempt on the part of either the Test Sponsor or Test Laboratory to register a test with the GMTDC 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@gmtdc.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 GMTDC will then provide documentation that registration has been received and that the time and date of the email has been honored for registration purposes.

- V.j Special Instructions for Registering GMSPI and GMSPI3 Tests - Test sponsors are to schedule five consecutive tests at the test laboratory. These tests should follow the format shown with the 'Count' starting at '01' and increasing to '05'.

TT-UUUUUUUUUU-V-W-GMSPI-01-XX-YY
TT-UUUUUUUUUU-V-W-GMSPI-02-XX-YY
TT-UUUUUUUUUU-V-W-GMSPI-03-XX-YY
TT-UUUUUUUUUU-V-W-GMSPI-04-XX-YY
TT-UUUUUUUUUU-V-W-GMSPI-05-XX-YY

If an operationally invalid test occurs then the lab, with permission from the sponsor, can start a 6th test without prior test scheduling by the test sponsor through the GMTDC website. This is permitted only for a 6th run. The test sponsor must schedule this 6th test ('Count' of '06') as soon as possible after being notified by the lab of the need to run a 6th test. The test sponsor must schedule and the lab must subsequently register this test before a data file upload occurs.

Section VI

ENGINE TEST REPORTS

- VI.a The Test Laboratory shall submit test data, in the GMTDC-approved format according to the relevant data dictionary, for all GMTDC registered tests and for all tests used in support of dexos licensing as described in Section I.b.
- i. Test Laboratories must submit the test results to GMTDC via fileupload on the [GMTDC website](#). Procedures for transmitting data electronically are available from the GMTDC.
 - a. The date completed must be reported for all tests.
 - ii. As part of the test data, the Test Laboratory shall make an appropriate validity declaration regarding the test result. This statement is included in the test data dictionaries.
 - iii. Test Laboratories have 30 days from test completion to submit the test data to the GMTDC. Results supplied later than 30 days after completion may be ineligible as candidate support and subsequent candidate registrations may be rejected.
- VI.b 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 GMTDC during data validation. Test data may be corrected by uploading the full test data file, with the corrected data, to the GMTDC website.

Section VII

ACKNOWLEDGEMENTS

- VII.a In recognition of the effectiveness of both the ACC and ATC registration systems, dexos test registration has been modeled after those systems. Specifically, the registration process and the formulation coding for GMTDC registered tests use the ACC/ATC processes. This provides benefit by avoiding the complexity and confusion that could arise if markedly different registration and formulation coding schemes were to be employed.

Appendix 1: Letter of Intent

LETTER OF INTENT

(Company Name)

is committed to the continuous improvement of engine lubricant testing and approval procedures as defined in the dexos® Test Registration Manual.

Accordingly, with effect from _____, this company intends to conduct all
(Date)
relevant lubricant tests and programs in accordance with the practices specified in the dexos Test Registration Manual.

(Typed Name)

(Title)

(Signature)

(Date)
