

Army Regulation 70-12

Research, Development, and Acquisition

**Fuels and
Lubricants
Standardization
Policy for
Equipment
Design,
Operation, and
Logistic
Support**

Headquarters
Department of the Army
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SUMMARY of CHANGE

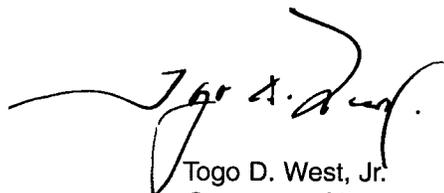
AR 70-12

Fuels and Lubricants Standardization Policy for Equipment Design, Operation, and Logistic Support

- o Consolidates the responsibilities and policies for fuels, lubricants and associated products utilization and standardization for all Army agencies (paras 1-15, 2-2, 2-3, 2-4, 4-1, 4-2, and 4-4).
- o Includes the Army fuel policy and related definitions (paras 2-2, 2-3, 2-4, tables 2-1 and 2-2).
- o Identifies the standardization policy on using lubricants, fluids, and associated products (paras 1-15, 4-1, and 4-2).
- o Identifies the policy governing use of proprietary and lubricant aftermarket additives (para 4-4).

Research, Development, and Acquisition

Fuels and Lubricants Standardization Policy for Equipment Design, Operation, and Logistic Support



Togo D. West, Jr.
Secretary of the Army

products in research, development, procurement, and operation. It also covers testing and evaluation of military and commercial equipment and materiel for use by the Army. It implements DOD 4140.25.

Applicability. This regulation applies to the Active Army, the Army National Guard, and the United States Army Reserve.

Proponent and exception authority. The proponent of this regulation is the Assistant Secretary of the Army for Research, Development, and Acquisition (ASA (RDA)). The ASA (RDA) has the authority to approve exceptions to this regulation that are consistent with the controlling law and regulation. The ASA (RDA) may delegate this authority in writing to a division chief within the proponent office in the grade of colonel or the civilian equivalent.

Army management control process. This regulation is subject to the requirements of AR 11-2. It contains internal control provisions but does not contain a checklist for conducting internal control reviews. The

checklist is being developed and will be published at a later date.

Supplementation. Supplementation of this regulation and the establishment of command and local forms are prohibited without prior approval from HQDA (SARD-ZCS), WASH DC 20310-0633.

Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to HQDA (SARD-ZCS), WASH DC 20310-0633.

Distribution. Distribution of this publication is made in accordance with initial distribution number (IDN) 095373, intended for command level A, B, and C for Active Army and D and E for Army National Guard and U.S. Army Reserve.

History. This issue publishes a revision of this publication. Because the publication has been extensively revised, the changed portions have not been highlighted.

Summary. This regulation covers the policies and responsibilities for use of liquid hydrocarbon fuels, lubricants, and associated

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*This regulation supersedes AR 70-12, 10 November 1992.

RESERVED

Chapter 1 Introduction

1-1. Purpose

This regulation prescribes standardization policy on liquid hydrocarbon fuels and lubricants. The goals are to minimize the number of petroleum fuels, lubricants, and associated products required and to enhance fuel availability near combat locations outside the continental United States (OCONUS). This regulation also prescribes policy and responsibilities for fuels, lubricants, and associated products used by the U.S. Army in the research, development, procurement, operation, modification, testing, and evaluation of military and commercial equipment and materiel.

1-2. References

Required and related publications are listed in appendix A.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are listed in the glossary.

1-4. Responsibilities

a. The Assistant Secretary of Army for Research, Development, and Acquisition (ASA/RDA) will—

(1)

(2) Assure that new materiel development embodies the single fuel on the battlefield policy prescribed by the Department of Defense (DOD) as its requirement for minimizing the number of fuels in the Army Logistics System.

b. The Deputy Chief of Staff for Logistics (DCSLOG) will—

(1) Develop policies concerning distribution, storage, use, and conservation of liquid hydrocarbon fuels, lubricants, and associated products.

(2) Approve new fuels for inclusion in the Army Logistics System.

c. The Chief of Engineers will implement the fuel usage practices cited in paragraph 2-2g pertaining to fixed facilities and installations that use liquid fuels for heating and electrical generation.

d. The Commanding General, U.S. Army Materiel Command (CG, AMC) will—

(1) Implement policies cited in paragraph 2-2 in the research, development, procurement, modification, and testing and evaluation of equipment and materiel that consumes liquid fuels and requires lubricants, fluids, and associated products intended for use by the U.S. Army.

(2) Ensure that approved items incorporate international rationalization, standardization, and interoperability (RSI) objectives as required by AR 34-1.

e. The Commander of the U.S. Army Aviation and Troop Command (ATCOM), a major subordinate command of AMC, is responsible for performing the national maintenance point functions for petroleum distribution systems and equipment for which AMC has research, development, testing, and evaluation (RDTE) responsibilities. As BRAC 95 voted to disestablish ATCOM, its responsibilities for performing this national maintenance function have been transferred to the U. S. Army Tank-Automotive and Armaments Command (TACOM).

f. The Director of the U. S. Army Tank-Automotive Research, Development and Engineering Center (TARDEC), a research center of TACOM, will execute the RDTE program for fuels and lubricants as the DOD Executive Agent for ground fuels and lubricants. TARDEC is also the single point within the Department of the Army (DA) for control of all petroleum and petroleum related specification commodities assigned to the Army and DOD and for Army representation to North Atlantic Treaty Organization (NATO) and American, British, Canadian, and Australian (ABCA) forums related to ground fuels and lubricants.

g. The Commander of the U.S. Army Petroleum Center (APC), an activity of ATCOM, is responsible for all service item control

center (SICC) functions pertaining to petroleum, solid fuels, associated products, containers, and testing. This includes supply management of fuels in support of the Army's worldwide computation of all bulk fuel mobilization requirements.

Chapter 2 Acceptable Fuels and Their Uses

2-1. Similar military and commercial fuels

a. Having similar military and commercial fuels is intended to simplify the total logistic support. Vehicle and equipment operating characteristics will permit full operation with minimum restrictions on fuel properties. This will minimize the number of fuels required in joint and combined operations and identify and maximize use of locally available fuels.

b. Vehicle and equipment fuel and lubricant characteristics will be coordinated during the design and development phases to ensure maximum flexibility. Referee fuels will be used during the research, development, testing, and evaluation of military and commercial equipment and materiel. This applies to Army activities that design, develop, operate, modify, test, or evaluate weapon systems or combat support equipment. This process includes fuel storage and distribution equipment that will be used in combat.

c. The fuels to be used in Army materiel that consume liquid hydrocarbon fuels are limited to the following:

(1) *Gasoline, aviation (ASTM D910)*. Aviation gasoline (AV-GAS) will be used as the primary fuel for all remaining reciprocating engine powered aircraft. It may also be used as an alternate fuel for other spark-ignition engines and as an emergency fuel for turbine engines.

(2) *Gasoline, automotive, unleaded or leaded (ASTM D4814)*. Automotive unleaded gasoline will be used for all mobile and stationary, spark-ignition, engine powered materiel in continental United States (CONUS). It can be used as the alternate fuel for those materiel in overseas areas if available and supportable by the logistics system.

(3) *Gasoline, automotive, combat MIL-G-3056*. MOGAS combat grade gasoline will be used for all mobile and stationary, spark-ignition, engine powered ground materiel in all OCONUS theaters of operation except in Central Europe, and for all long-term storage requirements. Within Central Europe, U.S. forces will use the new NATO automotive gasolines interchanged under NATO Code Numbers F-57 and F-67. MOGAS, F-57, and F-67 may be used as alternate fuels for gasoline consuming lanterns, heating, and cooking equipment and as an emergency fuel for all turbine engines.

(4) *Turbine fuel, aviation kerosene (MIL-T-83133, JP-8)*. Aviation kerosene turbine fuel will be the primary fuel for all Army turbine engine powered aircraft. Wide-cut aviation turbine fuel (MIL-T-5624, JP-4) and aviation turbine fuel (MIL-T-5264, JP-5) are the alternate fuels for all Army turbine engine powered aircraft. JP-8 is the alternate fuel for all compression-ignition and turbine engine powered mobile and stationary ground materiel.

(5) *Fuel oil, diesel (CID A-A-52557)*. Diesel fuel will be used as the primary fuel for all mobile and stationary compression-ignition and turbine, engine powered ground materiel in those theaters of operation that do not implement the "single fuel on the battlefield" concept.

(6) *Substitute fuels*. If fuels are available, it may be necessary to use other military or commercial fuels. These fuels will be acceptable as alternate or emergency fuels, per table 2-1. NATO fuel designations and U.S. equivalent specifications and standards are listed in table 2-2. In addition to those fuels listed in table 2-1, other alternate and emergency ground fuels available within NATO are available and are listed in the NATO Civil/Military Ground Fuels Interchangeability Catalogue AFLP-1 under Standardization Agreement (STANAG) 2945.

d. Responsible activities will, in the development of future generation engine and support systems, institutionalize use of referee fuels prescribed under MIL-F-53080 to ensure these systems are

able to use a broader range of fuels (that is, possess multifuel operability) when fielded.

2-2. Types of fuels and agreement

a. Primary fuel support for ground forces in overseas theaters will use a single kerosene-type fuel, JP-8 (MIL-T-83133). In overseas theaters, where the predominant fuel requirements support the Navy, JP-5 (MIL-T-5624) may be substituted for JP-8.

b. All new turbine powered aircraft will be designed to achieve acceptable operational performance using both JP-4 (MIL-T-5624) and kerosene-type turbine fuels, JP-8 (MIL-T-83133) and JP-5 (MIL-T-5624). Aircraft support equipment will be able to perform acceptably using the same fuels as those used by the supported systems. The exception is JP-4, which is not an acceptable fuel for compression-ignition engines.

c. To conform to the policy of a single fuel on the battlefield, all ground vehicle and equipment with compression-ignition and turbine engines will be designed to perform acceptably using kerosene-type turbine fuels such as JP-8 or JP-5, distillate-type fuels such as diesel fuel (CID A-52557), or ASTM D975 and commercial equivalents. Additionally, all future military designed combat vehicles will be capable of meeting all vehicle performance objectives using both identified kerosene and diesel fuels. However, diesel fuel (CID A-A-52557) will continue to be designated as the primary fuel for these engine systems. Referee Grade Diesel Fuel (MIL-F-46162) will be the fuel used for testing and evaluation.

d. No new equipment designed to use gasoline-type fuels will be acquired or developed, except for equipment not intended for deployment or employment OCONUS. The Army acquisition executive will determine if such acquisitions are essential. Specific petroleum logistics plans will be made to support the equipment as part of the acquisition strategy and detailed in the Integrated Logistics Support Plan and the Military Fielding Plan.

e. Vehicles and equipment currently in the field and powered by spark-ignition engines will operate on either combat grade gasoline (MIL-G-3056) or unleaded motor gasoline (ASTM D4814) having a minimum antiknock index (average of research and motor octane numbers) of 87. Additionally, within CONUS these vehicles and equipment will also be capable of operating on both oxygenated and reformulated gasolines described under ASTM D4814 including gasohol described under CID A-52530.

f. Referee grade diesel fuels Types I and II (MIL-F-46162) will be used during the materiel acquisition process to assure that vehicles and equipment operate satisfactorily when fielded. These fuels will be used in research, development, testing, and evaluation of all compression-ignition engines, ground turbine engines, other diesel fuel consuming vehicle and equipment systems, and fuel handling and distribution equipment.

g. Stationary boiler, power plants, and industrial and residential heating equipment that use liquid hydrocarbon fuels will be designed to operate on heating and burner fuels (ASTM D396).

h. All new field space heating, ration, and water heating equipment will be designed to operate on referee grade diesel fuel (MIL-F-46162).

i. Introducing new fuels that do not meet these standards must have prior approval of the Army Energy Office (DALO-TSE), with final approval authority resting with the Assistant Secretary of Defense (Logistics and Production).

j. Before publication of new or revised Lubrication Orders (LOs) or other lubrication instructions for Army materiel that specify application of lubricants, fluids, and associated products, the responsible activity or agency will furnish a draft copy of the LO or document to the Director, TACOM Mobility Technology Center - Belvoir, ATTN: AMSTA-RBF, 10115 Gridley Road, Suite 128, Fort Belvoir, VA 22060-5843, for technical approval before its publication and distribution.

k. Every effort will be made to ensure that vehicles and equipment use Army approved standard lubricants, fluids, and associated products. Decisions to develop or acquire equipment that uses non-standard lubricants, fluids, or associated products will be brought to the attention of the Army acquisition executive as follows:

(1) If no standard product is suitable for the intended application, the recommended product will be according to MIL-STD-838, MIL-HDBK-275, and MIL-HDBK-113.

(2) Using the procedures these military standards require will ensure that a nonstandard product, if needed, will be properly processed. It is then incorporated into the military supply system as a standard Army item. This should ensure adequate supply support for military equipment with the appropriate standard lubricants, fluids, and associated products.

(3) Coordination with the U.S. Army TACOM Mobility Technology Center-Belvoir is mandatory before initiating the required action.

l. Any new fuel or lubricant additives will be introduced only if there is a proven need and justification fully supported by adequate testing and evaluation. A series of standardized and industry-accepted procedures have been developed to establish these prerequisite requirements. In most instances, new additive ingredients will be incorporated into the procurement specification for the fuel or lubricant product. When this cannot be done readily, a performance specification or a purchase description will be developed to enable procurement of the additive. Proprietary aftermarket additives, primarily intended for maintenance, facility, and other personnel to use within the field environment, are not to be procured, tested, evaluated, or used by any elements of the Active Army, the Army National Guard, or the U.S. Army Reserve, unless the above required conditions have been fully met. Requests for these procedures should be forwarded to Director, Tacom Mobility Technology Center-Belvoir, ATTN: AMSTA-RBF, 10115 Gridley Road, Suite 128, Fort Belvoir, VA 22060-5843.

**Table 2-1
Fuels used in Army materiel**

Item	Primary Fuel	Alternate Fuel	Emergency Fuel
Ground gasoline-consuming materiel:		(See note 1.)	
OCONUS environments	MIL-G-3056(MOGAS)	F-57(Gasoline) F-67(Gasoline) F-18 (AVGAS)	_____
CONUS environments (See note 5.)	ASTM D4814 (S-I Fuel) (See note 2.)	CID A-A-52530 (Gasohol) ASTM D910 (AVGAS)	_____
Ground diesel fuel- consuming materiel			

**Table 2-1
Fuels used in Army materiel—Continued**

Item	Primary Fuel	Alternate Fuel	Emergency Fuel
OCONUS environments	CID A-A-52557 (Diesel) F-54 (See note 3.)	MIL-T-83133 (JP-8),F-34 MIL-T-5624 (JP-5), F-44 MIL-F-16884, F-76* F-75 (Naval Distillate)* ASTM D1655 (JET A1) (See note 4.) F-65 (Diesel Blend)	MIL-G-3056 (MOGAS) F-57 (Gasoline) F-67 (Gasoline) F-18 (AVGAS) MIL-T-5624 (JP-4), F-40
CONUS environments	CID A-A-52557 (Diesel)	ASTM D975 (Diesel) ASTM D1655 (JET A1) ASTM D396 (F01&F02)*	ASTM D4814 (S-I Fuel) ASTM D910 (AVGAS) MIL-T-5624, F-40
Aviation materiel:			
Gasoline-consuming	ASTM D910 (AVGAS), F-18	F-18 (AVGAS)	ASTM D4814 (S-I Fuel) (See note 6.)
Turbine fuel-consuming	MIL-T-83133 (JP-8), F-34	MIL-T-5624 (JP-5), F-44 MIL-T-5624 (JP-4), F-40 ASTM 1655 (JET A/A1) ASTM 1655 (JET B)	

Notes:

¹ Environmental conditions may limit use of certain alternate fuels designated with an asterisk (*).

² ASTM D4814 is a Spark-ignition Engine Fuel (S-I Fuel) that allows use of oxygenates for enhancement of antiknock quality and reduction of CO emissions.

³ Although CID A-A-52557 is shown as the primary fuel, MIL-T-83133 (JP-8) or MIL-T-5624 (JP-5) will be used as the primary fuel in theaters where the single fuel battle-field policy is being implemented in accordance with DOD Directive 4140.25 and U.S. ratification of STANAG 4362 (Fuels for Future Grade Equipment Using Compression Ignition of Turbine Engines).

⁴ JET A1/F-35 is acceptable for continuous use in cold to moderate temperature environments. For moderate to high temperature environments, JET A1/F-35 is not recommended and should be replaced by JP-8/F-34.

⁵ All diesel/distillate type fuels intended for on-highway vehicle use must not contain more than 0.05 wt% sulfur in accordance with Clean Air Act Amendment regulations.

⁶ Refer to applicable aircraft operator=s manual.

**Table 2-2
NATO fuel designation and U. S. equivalent specification and standards**

NATO code No	NATO title	Military/Federal specification	Industry equivalent standard
F-18	Gasoline, aviation, grade 100/130	ASTM D910 Aviation Gasoline	ASTM D910 Aviation Gasoline
F-46	Gasoline, auto., military (91 RON)	_____	_____
F-57	Gasoline, auto.,low lead (98 RON)	STANAG 7090	CEN EN-228
F-67	Gasoline,Auto., Unleaded (95 RON)	STANAG 7090	CEN EN-228
_____	_____	ASTM D4814 S-I Engine Fuel CID A-A-52530 (Gasohol)	ASTM D4814 S-I Engine Fuel
F-40	Turbine fuel, aviation widecut type with FSII (S-1745)	MIL-T-5624 Turbine Fuel, Aviation Grade JP-4	
F-34	Turbine fuel, aviation, kerosene with FSII (S-1745)	MIL-T-83133 Turbine Fuel, Aviation Grade, JP-8	_____
F-35	Turbine fuel, aviation, kerosene	MIL-T-83133 Turbine Fuel, Aviation Grade JP-8	ASTM D1655 Aviation Turbine Fuel, Jet A1
F-44	Turbine fuel aviation, high flash type with FSII (S-1745)	MIL-T-5624 Turbine Fuel, Aviation Grade JP-5	_____

**Table 2-2
NATO fuel designation and U. S. equivalent specification and standards—Continued**

NATO code No	NATO title	Military/Federal specification	Industry equivalent standard
F-54	Diesel Fuel, military	CID A-A-52557 Diesel Fuel, Grade DF-2	_____
F-65 _____	Low temperature diesel fuel blend _____	1:1 mix F-54 with F-34/F-35 CID A-A-52557 Diesel Fuel, Grades DL-1 & DL-2	ASTM D975 Diesel Fuel, Grades 1-D & 2-D
F-75	Fuel, naval distillate, low pour point	_____	_____
F-76	Fuel, naval distillate	MIL-F-16884 Fuel, Naval Distillate	_____
S-1745	Fuel system icing inhibitor (FSII) high flash point type	MIL-I-85470 Inhibitor, Icing, Fuel System, High Flash	_____

Appendix A References

Section I Required Publications

AR 34-1

International Military Rationalization, Standardization, and Interoperability. (Cited in para 1-4.)

MIL-STD-838

Lubrication of Military Equipment. (Cited in para 2-2k.)

Section I Required Publications

AR 11-2

Internal Management Control

MIL-HDBK-113

Guide for the Selection of Lubricants, Functional Fluids, Preservatives, and Specialty Products for Use in Ground Equipment Systems

MIL-HDBK-275

Guide for the Selection of Lubricants, Fluids, and Compounds for Use in Flight Vehicles and Components

MIL-F-46162

Fuel, Diesel, Referee Grade

MIL-F-53080

Fuel, Engine Design, Referee Grade, Types I and II

MIL-F-16884

Fuel, Naval Distillate

MIL-I-85470

Fuel System Icing Inhibitor (FSII), High Flash Point Type

MIL-T-5624

Turbine Fuel, Aviation, Grades JP-4 and JP-5

MIL-T-83133

Turbine Fuel, Aviation, Kerosene Type, Grade JP-8

CID A-A-52557

Fuel Oil, Diesel; For Posts, Camps And Stations

CID A-A-52530

Gasohol, Automotive, Unleaded

STANAG 7090 (Interservice Fuels and Lubricants)

Guide Specifications for NATO Ground Fuels: NATO Code No. F-57, Gasoline Automotive, Military/Civilian (98 RON) and NATO Code No. F-67, Gasoline Automotive, Unleaded, Civilian (95 RON)

STANAG 2945

(Interservice Fuels and Lubricants) NATO Civil/Military Ground Fuels Interchangeability Catalogue, AFLP-1

ASTM D396

Specification for Fuel Oils

ASTM D910

Specification for Aviation Gasoline

ASTM D975

Specification for Diesel Fuel Oils

ASTM D1655

Specification for Aviation Turbine Fuels

ASTM D4814

Specification for Automotive Spark-Ignition Engine Fuels

Section I Required Publications

This section contains no entries.

Section I Required Publications

This section contains no entries.

Glossary

Section I Abbreviations

ABCA

American, British, Canadian, and Australian

AFLP

Allied Fuels and Lubricants Publication

ATCOM

U.S. Army Aviation and Troop Command

AMC

U.S. Army Materiel Command

APC

U.S. Army Petroleum Center

ARNG

Army National Guard

ASA/RDA

Assistant Secretary of the Army for Research, Development, and Acquisition

ASTM

American Society for Testing and Materials

AVGAS

aviation gasoline

BRAC

Base Realignment and Closure Act

CEN

Comité Européen de Normalisation

CID

commercial item description

CONUS

continental United States

DCSLOG

Deputy Chief of Staff for Logistics

DOD

Department of Defense

DODD

Department of Defense Directive

FO

fuel oil

FSII

fuel system icing inhibitor

JP

jet petroleum

LO

lubrication order

MIL-HDBK

military handbook

MIL-STD

military standard

MOGAS

motor gasoline

NATO

North Atlantic Treaty Organization

OCONUS

outside continental United States

RDTE

research, development, test, and engineering

RON

research octane number

RSI

rationalization, standardization, and interoperability

SICC

Service Item Control Center

STANAG

Standardization Agreement

TACOM

U.S. Army Tank-Automotive and Armaments Command

TARDEC

U.S. Army Tank-Automotive Research, Development, and Engineering Center

USAR

U.S. Army Reserve

Section II Terms

Acceptable product

One that may be used in place of another for extended periods of use without technical advice.

Acceptable operational performance

The level of performance that meets the minimum requirements as defined in the vehicle or equipment specification.

Alternate fuel

A fuel that provides acceptable operational performance, but may be a restricted item of supply in tactical areas or has environmental limitations. Performance will not degrade below the vehicle or equipment minimum specification requirements. No degradation in reliability or durability will occur.

Associated product

A product of petroleum or chemical origin, used as a hydraulic fluid, corrosion preventative, coolant, or specialized product, required for the operation, maintenance, and storage of military materiel.

Emergency fuel

A fuel only used when the primary or alternate is not available. The use of an emergency fuel will not materially degrade the

design operating life of the vehicle or equipment. However, severe performance degradation is permissible when an emergency fuel is used.

Fuel system icing inhibitor

A fuel additive used to prevent ice crystals when water is present.

NATO code number

An identifying code number designation allocated to a product when it meets a specification which has been accepted under a NATO Standardization Agreement (that is, STANAG 1135).

Packaged petroleum product

A petroleum product (generally a lubricant, oil, grease, or specialty item) normally packaged by a manufacturer and procured, stored, transported, and issued in containers having a fill capacity of 55 gallons or less.

Primary fuel

A fuel that permits full design performance.

Referee fuel

A fuel that fully conforms to all requirements within its parent specification but is so designed to maximize selected chemical and physical characteristics resulting in a fuel that represents the lowest quality level procurable. Referee fuels are not intended for normal service use but are required in research, development, and materiel acquisition programs.

Research octane number

A number indicating the octane number obtained under specified operating conditions used to assess motor gasolines. The research octane numbers obtained are higher than the motor octane number.

Standardization product

A product that conforms to specifications resulting from the same or equivalent technical requirements. NATO standardized products are identified by a NATO code number.

Section III

Special Abbreviations and Terms

This section contains no entries.

Index

This index contains no entries.

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