

Transmitted by the experts from France,
Germany, Norway and Sweden

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(97th GRSG, 20-23 Oct. 2009
agenda item 5)

Proposal for draft amendments to Regulation No. 118 (Burning behaviour of Materials)

A. PROPOSAL

The title of the Regulation, amend to read:

"UNIFORM TECHNICAL PRESCRIPTIONS CONCERNING THE BURNING
BEHAVIOUR **AND/OR THE CAPABILITY TO REPEL FUEL OR LUBRICANT** OF
MATERIALS USED IN THE ~~INTERIOR~~ CONSTRUCTION OF CERTAIN CATEGORIES
OF MOTOR VEHICLES"

The list of contents, amend to read:

"Regulation No. 118

UNIFORM TECHNICAL PRESCRIPTIONS CONCERNING THE BURNING BEHAVIOUR
AND/OR THE CAPABILITY TO REPEL FUEL OR LUBRICANT OF MATERIALS
USED IN THE ~~INTERIOR~~ CONSTRUCTION OF CERTAIN CATEGORIES OF MOTOR
VEHICLES

.....

12. Transitional Provisions

.....

Annex 9- Test to determine the capability of materials to repel fuel or lubricant"

The text of the Regulation,

Paragraphs 1. to 1.3., amend to read:

"1. SCOPE

1.1. This Regulation applies to the burning behaviour (ignitibility, burning rate and melting behaviour) **and to the capability to repel fuel or lubricants** of ~~interior~~ materials used in vehicles of categories M₃, Classes II and III ~~1/, carrying more than 22 passengers, not being designed for standing passengers and urban use (city buses).~~

Type approvals are granted according to:

1/ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3), Annex 7 (document TRANS/WP.29/78/Rev.1/Amend.2).

- 1.2. Part I - Approval of a vehicle type with regard to the burning behaviour **and/or the capability to repel fuel or lubricant** of the ~~interior~~ components used in the **interior passenger compartment, the engine compartment and any separate heating compartment.**
- 1.3. Part II - Approval of a component with regard to its burning behaviour **and/or its capability to repel fuel or lubricant installed in the passenger compartment, the engine compartment or any separate heating compartment."**

Insert new paragraphs 2.3. and 2.4., to read:

- "2.3. **"Engine compartment" means the compartment in which the engine is installed and in which a combustion heater may be installed.**
- 2.4. **"Separate heating compartment" means a compartment for a combustion heater located outside the interior compartment and the engine compartment."**

Paragraphs 2.3 (former) to 2.6., renumber as paragraphs 2.5. to 2.8.

Paragraphs 3.3.2. to 3.3.3.1., amend to read:

- "3.3.2. In the case of ~~interior~~ components already type approved: a list of the type approval numbers and maker's type designations of the parts concerned, shall be enclosed in the application for the vehicle type approval;
- 3.3.3. In the case of ~~interior~~ components without ECE type approval:
- 3.3.3.1. Samples, the number of which is specified in Annexes 6 to **9 8**, of the components used in the vehicles, which are representative of the type to be approved;"

Paragraph 4.2., amend to read:

- "4.2. An approval number... (at present **01 corresponding to the 01 series of amendments**) shall indicate..."

Paragraph 4.4.1., amend footnote 2/ to read:

- "2/ 1 for Germany, ... 50 for Malta, ~~and~~ 51 for the Republic of Korea, **52 for Malaysia, 53 for Thailand, 54 and 55 (vacant), 56 for Montenegro, 57 (vacant) and 58 for Tunisia.** Subsequent numbers shall ... the Agreement."

Paragraph 5., amend to read:

- "5. PART I: APPROVAL OF A VEHICLE TYPE WITH REGARD TO THE BURNING BEHAVIOUR OF THE ~~INTERIOR~~ COMPONENTS USED IN THE ~~INTERIOR PASSENGER~~ COMPARTMENT, THE ENGINE COMPARTMENT AND ANY SEPARATE HEATING COMPARTMENT AND/OR THE CAPABILITY TO REPEL FUEL OR LUBRICANT OF INSULATION MATERIALS USED IN THE ENGINE COMPARTMENT AND ANY SEPARATE HEATING COMPARTMENT"

Paragraphs 5.2.1. to 5.2.3., amend to read:

- "5.2.1. The ~~interior~~ materials of the passenger compartment, **the engine compartment and any separate heating compartment** used in the vehicle to be type approved shall meet the requirements of Part II of this Regulation.
- 5.2.2. The materials and/or equipment used in the passenger compartment, **the engine compartment and any separate heating compartment** and/or in devices approved as components shall be so installed as to minimize the risk of flame development and flame propagation.
- 5.2.3. Such ~~interior~~ materials and/or equipment shall only be installed in accordance with their intended purposes and the test(s) which they have undergone (see paragraphs 6.2.1., 6.2.2., ~~and~~ 6.2.3., **6.2.4., 6.2.5. and 6.2.6**), especially in relation to their burning and melting behaviour (horizontal/vertical direction) **and/or their capability to repel fuel or lubricant.**
- 5.2.4. Any adhesive agent used to affix the interior material to its supporting structure shall not, as far as possible, exacerbate the burning behaviour of the material."

Paragraph 6., amend to read:

- "6. PART II: APPROVAL OF A COMPONENT WITH REGARD TO ITS BURNING BEHAVIOUR AND/OR ITS CAPABILITY TO REPEL FUEL OR LUBRICANT"

Paragraph 6.1.1.2., amend to read:

- "6.1.1.2. the intended use (seat upholstery, roof lining, **insulation**, etc.),"

Paragraph 6.1.4., amend to read:

- "6.1.4. "Exposed face" means the side of a material which is facing towards the passenger compartment, **the engine compartment and any separate heating compartment** when the material is mounted in the vehicle."

Insert new paragraphs 6.1.7. and 6.1.8., to read:

- "6.1.7. "Insulation material(s)" means material(s) ~~or composite material(s)~~ used to reduce heat transfer by conduction, radiation or convection and for sound-proofing in the engine compartment and any separate heating compartment.

6.1.8. "**Capability to repel fuel or lubricant**" means the capability of materials ~~or composite materials~~ to repel fuel or lubricant when measured according to Annex 9 to this Regulation."

~~Paragraphs 6.2.1. to 6.2.3., amend to read:~~

~~6.2.1. The following materials shall undergo the test described in Annex 6 to this Regulation:~~

- ~~(a) material(s) used for the upholstery of any seat and its accessories (including the driver's seat),~~
- ~~(b) material(s) used for the interior lining of the roof,~~
- ~~(c) material(s) used for the interior lining of the side and rear walls, including separation walls,~~
- ~~(d) material(s) with thermal and/or acoustic function,~~
- ~~(e) material(s) used for the interior lining of the floor,~~
- ~~(f) material(s) used for the interior lining of luggage racks, heating and ventilation pipes,~~
- ~~(g) material(s) used for the light fittings~~
- ~~(h) **insulation material(s) installed in a horizontal position in the engine compartment and any separate heating compartment.**~~

~~The result of the test shall be considered satisfactory if, taking the worst test results into account, the horizontal burning rate is not more than 100 mm/minute or if the flame extinguishes before reaching the last measuring point.~~

~~6.2.2. The following materials shall undergo the test described in Annex 7 to this Regulation:~~

- ~~(a) material(s) used for the interior lining of the roof,~~
- ~~(b) material(s) used for the interior lining of the luggage racks, heating and ventilation pipes situated in the roof,~~
- ~~(c) material(s) used for the lights situated in the luggage racks and/or roof.~~
- ~~(d) **insulation material(s) installed in the engine compartment and any separate heating compartment.**~~

~~————— The result of the test shall be considered satisfactory if, taking the worst test results into account, no drop is formed which ignites the cotton wool.~~

~~6.2.3. The **following** materials used for the curtains and blinds (and/or other hanging materials) shall undergo the test described in Annex 8 to this Regulation:~~

~~————— (a) **curtains and blinds (and/or other hanging materials),**~~

~~————— (b) **insulation material(s) installed in the engine compartment and any separate heating compartment.**~~

~~————— The result of the test shall be considered satisfactory if, taking the worst test results into account, the vertical burning rate is not more than 100 mm/minute.~~

Insert new paragraphs 6.2.4 and 6.2.5:

6.2.4. All insulation material(s) and composite material(s) installed in the engine compartment and any separate heating compartment shall undergo the test described in Annex 9 to this Regulation.

The result of the test shall be considered satisfactory if, taking the worst test results into account, the increase of the weight of the test sample does not exceed 1 g. ~~amount of absorbed test liquid is equal or less than [10] g/m².~~

Recesses necessary for technical reasons, e.g. tubes or structural members that need to pass through the material shall be allowed as long as the protection is maintained (e.g. sealant, tape ...).

6.2.5. Electric cables shall undergo the resistance to flame propagation test described in ISO standard 6722:2006, paragraph 12.

The result of the test shall be considered satisfactory if, taking into account the worst test result, any combustion flame of insulating material shall extinguish within 70 seconds and a minimum of 50 mm insulation at the top of the test sample shall remain unburned."

Paragraphs 6.2.4. to 6.2.4.3.1. (former), renumber as paragraphs 6.2.6. to 6.2.6.3.1.

Paragraph 6.2.4.3.2., renumber as paragraph 6.2.6.3.2.

Paragraph 6.2.4.4., should be deleted.

Paragraph 6.2.4.5., renumber as paragraph 6.2.6.4.

Insert new paragraphs 12. to 12.3., to read:

"12. TRANSITIONAL PROVISIONS

- 12.1. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant ECE approval under this Regulation as amended by the 01 series of amendment.**
- 12.2. As from [24] months after the official date of entry into force of the 01 series of amendments, Contracting Party applying this Regulation shall grant ECE approvals only if the vehicle type or component type to be approved meet the requirements of this Regulation as amended by the 01 series of amendments.**
- 12.3. Starting from [60] months after the official date of entry into force of the 01 series of amendments, Contracting Party applying this Regulation may [shall] refuse first national registration (first entry into service) of a vehicle or a component which does not meet the requirements of this Regulation as amended by the 01 series of amendments."**

Annex 1,

The title, amend to read:

"INFORMATION DOCUMENT

(in accordance with paragraph 3.2. of this Regulation relating to the ECE Type Approval of a vehicle with regard to the burning behaviour of the ~~interior~~ components used in the passenger compartment, **the engine compartment and any separate heating compartment and/or the capability to repel fuel or lubricant of insulation materials used in the engine compartment and any separate heating compartment)**"

Paragraph 3., amend to read:

- "3. BODYWORK
Interior fittings **and/or insulation materials**"**

Insert new paragraphs 3.3., 3.3.1., 3.3.1.1., 3.4. and 3.4.1., to read:

- "3.3. Capability of materials to repel fuel or lubricant used in the vehicle**
- 3.3.1. Material(s) used for insulation purposes**
- 3.3.1.1. Component type-approval number(s):**
- 3.4. Electric cables**
- 3.4.1. Component type-approval number(s):"**

Annex 2

The title, amend to read:

"INFORMATION DOCUMENT

(in accordance with paragraph 3.2. of the Regulation relating to the ECE Type Approval of a component **used in the passenger compartment, the engine compartment and any separate heating compartment** with regard to its burning behaviour **and/or the capability to repel fuel or lubricant of insulation materials used in the engine compartment and any separate heating compartment)**"

Insert new paragraphs 3. to 3.6. and paragraphs 4. to 4.6., to read:

"3. **INSULATION MATERIALS**

- 3.1. **Material(s) used for:**
- 3.2. **Base material(s)/designation: . . . / . . .**
- 3.3. **Composite/single (1/) material, number of layers 1/:**
- 3.4. **Type of coating (1/):**
- 3.5. **Maximum/minimum thickness**mm
- 3.6. **Type-approval number, if available:**

4. **ELECTRIC CABLES**

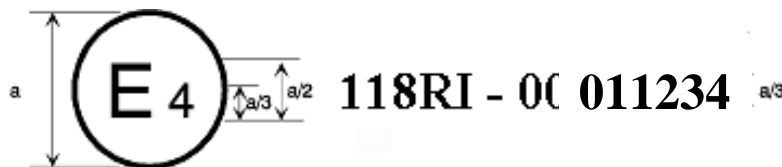
- 4.1. **Material(s) used for:**
- 4.2. **Base material(s)/designation: . . . / . . .**
- 4.3. **Composite/single (1/) material, number of layers 1/:**
- 4.4. **Type of coating (1/):**
- 4.5. **Maximum/minimum thickness**mm
- 4.6. **Type-approval number, if available:**

Annex 5, amend to read:

"Annex 5
ARRANGEMENTS OF APPROVAL MARKS

Example 1

(see Part I of this Regulation)

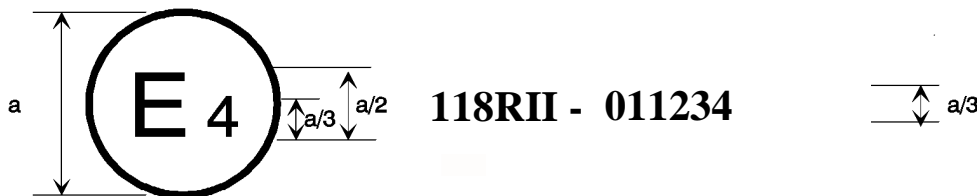


a = 8 mm min

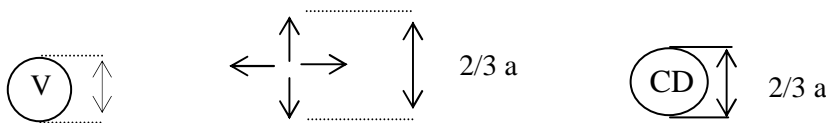
The above approval mark affixed to a vehicle shows that the type concerned was approved in the Netherlands (E4) pursuant to Part I of Regulation No. 118 under approval No. **011234**. The first two digits (**01**) of the approval number indicate that the approval was granted in accordance with the requirements of the **01 series of amendments to Regulation No. 118**.

Example 2

(see part II of this Regulation)



a = 8 mm min



The above approval mark affixed to a component shows that the type concerned was approved in the Netherlands (E4) pursuant to Part II of Regulation No. 118 under approval number **011234**. The first two digits (**01**) of the approval number indicate that the approval was granted in accordance with the requirements of the **01 series of amendments to Regulation No. 118**.

The additional symbol..."

Annex 6, amend to read:

Insert new paragraphs 1.2., to read:

~~“1.2. The samples shall be taken from the material under test. In materials having different burning rates in different material directions, each direction has to be tested. The samples are to be taken and placed in the test apparatus so that the highest burning rate will be measured. When the material is supplied in widths, a length of at least 500 mm shall be cut covering the entire width. From this the samples shall be taken so as to be at least 100 mm from the material edge and equidistant from each other. Samples shall be taken in the same way from finished products, when the shape of the product permits. When the thickness of the product is more than 13 mm, it shall be reduced to 13 mm by a mechanical process applied to the side which does not face the occupant **respective compartment (passenger, engine or separate heating compartment)**. If it is impossible, the test shall be carried out, in accordance with the Technical Service, on the initial thickness of the material, which shall be mentioned in the test report.~~

~~Composite materials (see paragraph 6.1.3.) shall be tested as if they were of uniform construction. In the case of materials made of superimposed layers of different composition which are not composite materials, all the layers of material included within a depth of 13 mm from the surface facing towards the passenger **respective compartment** shall be tested individually.”~~

Annex 7, amend to read:

Insert new paragraphs 3., to read:

~~“3. Samples~~

~~The test samples shall measure: 70 mm x 70 mm. Samples shall be taken in the same way from finished products, when the shape of the product permits. When the thickness of the product is more than 13 mm, it shall be reduced to 13 mm by a mechanical process applied to the side which does not face the occupant **respective compartment (passenger, engine or separate heating compartment)**. If it is impossible, the test shall be carried out, in accordance with the Technical Service, on the initial width of the material which shall be mentioned in the test report.~~

~~Composite materials (see paragraph 6.1.3. of the Regulation) shall be tested as if they were of uniform construction.~~

~~In the case of materials made of superimposed layers of different composition which are not composite materials, all the layers of material included within a depth of 13 mm from the surface facing towards the passenger **respective compartment (passenger, engine or separate heating compartment)** shall be tested individually.~~

~~The total mass of the sample to be tested shall be at least 2 g. If the mass of one sample is less, a sufficient number of samples shall be added.~~

~~If the two faces of the material differ, both faces must be tested, which means that eight samples are to be tested. The samples and the cotton wool shall be conditioned for at least 24 hours at a temperature $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and a relative humidity of 50 ± 5 per cent and shall be maintained under these conditions until immediately prior to testing."~~

Annex 8, amend to read:

~~TEST TO DETERMINE THE VERTICAL BURNING RATE OF MATERIALS~~

~~1. Sampling and principle~~

~~1.1. Three samples shall undergo the test in the case of an isotropic material, or six samples in the case of a non-isotropic material.~~

~~1.2. This test consists of exposing samples, held in a vertical position, to a flame and determining the speed of propagation of the flame over the material to be tested.~~

~~2. Apparatus~~

~~The apparatus shall consist of:~~

- ~~(a) a specimen holder;~~
- ~~(b) a burner;~~
- ~~(c) a ventilation system to extract gas and combustion products;~~
- ~~(d) a template;~~
- ~~(e) marker threads of white mercerized cotton threads having a maximum linear density of 50 tex.~~

~~2.1. The specimen holder shall consist of a rectangular frame of 560 mm high and shall have two rigidly connected parallel rods spaced 150 mm apart on which pins shall be fitted for mounting the test specimen which is located in a plane at least 20 mm from the frame. The mounting pins shall be not greater than 2 mm in diameter and at least 27 mm long. The pins shall be located on the parallel rods at locations shown in figure 1. The frame shall be fitted onto a suitable support to maintain the rods in a vertical orientation during testing (for the purpose of locating the specimen on the pins in a plane away from the frame, spacer stubs 2 mm in diameter may be provided adjacent to the pins).~~

~~2.2. The burner is described in figure 3.~~

~~The gas supplied to the burner can be either commercial propane gas or commercial butane gas.~~

- ~~————— The burner shall be positioned in front of, but below, the specimen such that it lies in a plane passing through the vertical centerline of the specimen and perpendicular to its face (see figure 2), such that the longitudinal axis is inclined upwards at 30° to the vertical towards the lower edge of the specimen. The distance between the tip of the burner and the lower edge of the specimen shall be 20 mm.~~
- 2.3. ~~————— The test apparatus may be placed in a fume cupboard assembly provided that the internal volume is at least 20 times, but not more than 110 times, greater than the volume of the test apparatus and provided that: no single height, width, or length dimension of the fume cupboard is greater than 2.5 times either of the other two dimensions. Before the test, the vertical velocity of the air through the fume cupboard shall be measured 100 mm in front of and behind the final position where the test apparatus will be located. It shall be between 0.10 and 0.30 m/s in order to avoid possible discomfort, by combustion products, to the operator. It is possible to use a fume cupboard with a natural ventilation and an appropriate air velocity.~~
- 2.4. ~~————— A flat rigid template made of suitable material and of a size corresponding to the size of the specimen shall be used. Holes approximately 2 mm in diameter shall be drilled in the template and positioned so that the distances between the centres of the holes correspond to the distances between the pins on the frames (see figure 1). The holes shall be located equidistant about the vertical centrelines of the template.~~

3. ~~—————~~ Samples

Paragraph 3.1., amend to read:

- "3.1. ~~—————~~ The samples dimensions are: 560 x 170 mm. **If it is impossible, the test shall be carried out, in accordance with the Technical Service, on the fitted size of the material which shall be mentioned in the test report.**"
- 3.2. ~~—————~~ The samples shall be conditioned for at least 24 hours at a temperature of 23°C ± 2°C and a relative humidity of 50 ± 5 per cent and shall be maintained under these conditions until immediately prior to testing.

~~3.3. When the thickness of the sample is more than 13 mm, it shall be reduced to 13 mm by a mechanical process applied to the side which does not face the respective compartment (passenger, engine or separate heating compartment). If it is impossible, the test shall be carried out, in accordance with the Technical Service, on the initial thickness of the material, which shall be mentioned in the test report. Composite materials (see paragraph 6.1.3.) shall be tested as if they were of uniform construction. In the case of materials made of superimposed layers of different composition which are not composite materials, all the layers of material included within a depth of 13 mm from the surface facing towards the respective compartment shall be tested individually.~~

~~add new para. 4.8:~~

~~4.8. If the sample does not ignite or does not continue burning after the burner has been extinguished or if the flame extinguishes before the destruction of one of the first marker threads occurred, so that no burning time is measured, the burning rate is considered to be 0 mm/min.~~

Insert a new Annex 9, to read:

"Annex 9

TEST TO DETERMINE THE CAPABILITY OF MATERIALS TO REPEL FUEL OR LUBRICANT

1. Scope

This annex lists prescriptions to test the capability of insulation materials used in engine compartments and separate heating compartments.

2. Sampling and principle

2.1. The test samples shall measure: 140 mm x 140 mm.

2.2. The thickness of the samples shall be 5mm. If the thickness of the test sample is more than 5 mm, it shall be reduced to 5 mm by a mechanical process applied to the side which does not face the engine compartment or separate heating compartment.

2.3. The test liquid shall be diesel fuel according to standard EN 590:1999 (Market fuels). or alternatively diesel fuel according to ECE Regulation No. 83 (Annex 10: Specification of reference fuels.

2.2.4. Four samples shall undergo the test.

3. Apparatus (see figures 4a and 4b)

The apparatus shall consist of:

EA a seal base plate, with a hardness of at least 70 Shore D.

AB ~~a base plate with an~~ absorbant surface on the baseplate (e.g. paper);

BC a metal cylinder (inner diameter of 120 mm, outer diameter of 130 mm, height of 50 mm), filled with the test liquid;

~~C-C~~ **D-D'** two screws with wing nuts;

~~DE~~ the test sample;

F top plate

4. Procedure

- 4.1. The test sample and the apparatus shall be conditioned for at least 24 hours at a temperature of [23]18°C \pm 2°C and a relative humidity of 50 \pm 5 per cent and shall be maintained under these conditions until immediately prior to testing.
- 4.2. The test sample shall be weighed.
- 4.3. The test sample, with its exposed face uppermost, shall be placed on the base of the apparatus by fixing the metal cylinder in a centred position with sufficient pressure on the screws. No test liquid shall leak.
- 4.4. Fill the metal cylinder with test liquid (~~fuel and/or lubricant~~) to a height of 20 mm and let the system rest for 24 hours.
- 4.5. Remove the test liquid **and the test sample from the apparatus.** ~~Wipe the surface of the test specimen shall be cleaned from adhesive components of the test liquid~~ **If residue of the test liquid is found on the test sample it shall be removed without compressing the test sample.**
- 4.6. The test sample shall be weighed.

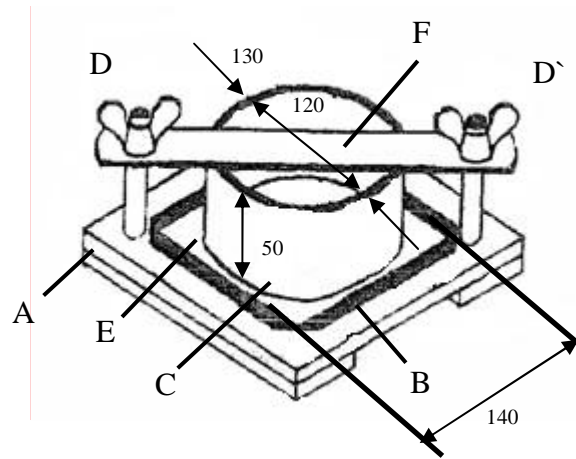


Figure 4a
Apparatus for testing the capability to repel fuel or lubricant
(Dimensions in millimeters)"

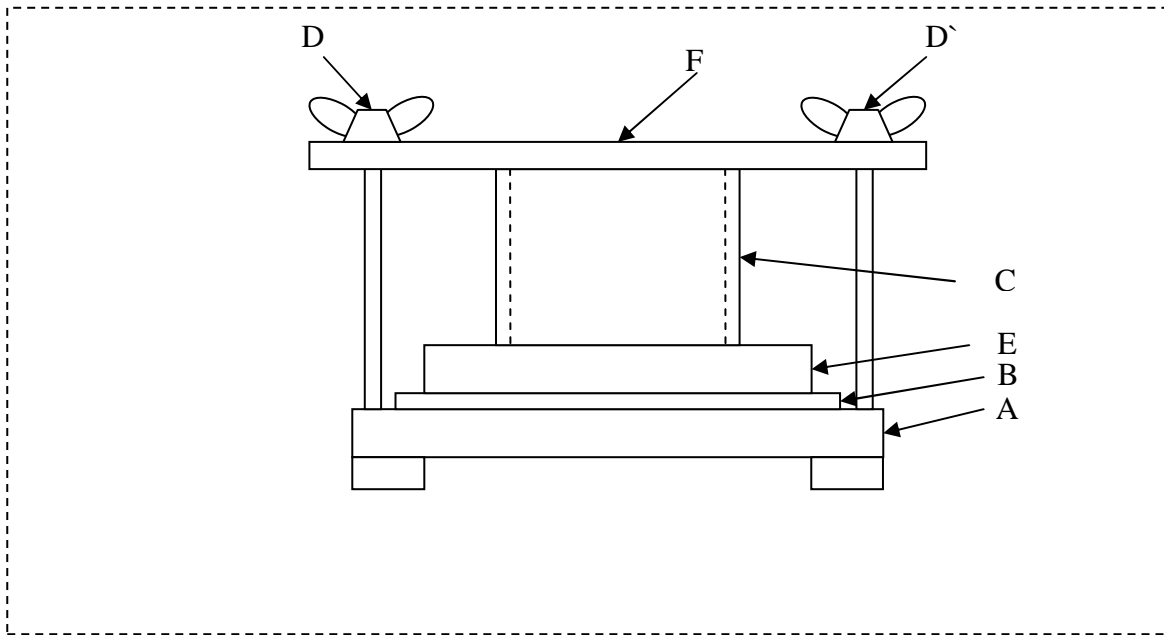


Figure 4b
Apparatus for testing the capability to repel fuel or lubricant
(Side View)