

**DIRECTIVE 94/12/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL**  
**of 23 March 1994**

**relating to measures to be taken against air pollution by emissions from motor vehicles and amending Directive 70/220/EEC**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 100a thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(2)</sup>,

Acting in accordance with the procedure laid down in Article 189b of the Treaty,

Whereas measures should be adopted within the framework of the internal market; whereas the internal market comprises an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured;

Whereas the first programme of action of the European Community on protection of the environment <sup>(3)</sup>, approved by the Council on 22 November 1973, called for account to be taken of the latest scientific advances in combating atmospheric pollution caused by gases emitted from motor vehicles and for Directives adopted previously to be amended accordingly; whereas the fifth programme of action, which in its general approach was approved by the Council in its resolution of 1 February 1993 <sup>(4)</sup>, provides for additional efforts to be made for a considerable reduction in the present level of emissions of pollutants from motor vehicles;

Whereas the objective of reducing the level of pollutant emissions from motor vehicles and the establishment and operation of the internal market for vehicles cannot be sufficiently achieved by individual Member States and can therefore be better achieved by the approximation of the laws of the Member States relating to measures to be taken against air pollution by motor vehicles;

Whereas it is recognized that the development of transport in the Community has entailed significant constraints for the environment; whereas a certain number of official estimates of the increase in traffic density have proved to be lower than the official figures; whereas for that reason stringent emission standards should be laid down for all motor vehicles;

Whereas the Commission has adopted a European programme on emissions, fuels and engine technologies (EPEFE); whereas that programme was established to ensure that proposals for future Directives on pollutant emissions seek the best solutions both for the consumer and for the economy; whereas that programme forms part of the contributions which can be made both by vehicles and the fuels which propel them;

Whereas Council Directive 70/220/EEC <sup>(5)</sup> which deals with the measures to be taken against air pollution by emissions from motor vehicles, is one of the separate Directives under the type-approval procedure laid down by Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers <sup>(6)</sup>;

Whereas Directive 70/220/EEC lays down the limit values for carbon monoxide and unburnt hydrocarbon emissions from the engines of such vehicles; whereas these limit values were first reduced by Directive 74/290/EEC <sup>(7)</sup> and supplemented, in accordance with Commission Directive 77/102/EEC <sup>(8)</sup>, by limit values for permissible emissions of nitrogen oxides; whereas the limit values for these three types of pollution were successively reduced by Commission Directives 78/665/EEC <sup>(9)</sup>, 83/351/EEC <sup>(10)</sup> and 88/76/EEC <sup>(11)</sup>; whereas limit values for particulate pollutant emissions from diesel engines were introduced by Directive 88/436/EEC <sup>(12)</sup>; whereas more stringent European standards for the emissions of gaseous pollutants of motor vehicles below 1 400 cm<sup>3</sup> were introduced by Directive 89/458/EEC <sup>(13)</sup>; whereas these standards have been extended to all passenger cars independently of their engine capacity on the basis of an improved European test procedure comprising an extra-urban driving cycle and, whereas requirements relating to the evaporative emissions and to the durability of emission-related vehicle components as well as more stringent particulate pollutant standards for motor vehicles equipped with

<sup>(1)</sup> OJ No C 56, 26. 2. 1993, p. 34.

<sup>(2)</sup> OJ No C 201, 26. 7. 1993, p. 9.

<sup>(3)</sup> OJ No C 112, 20. 12. 1973, p. 1.

<sup>(4)</sup> OJ No C 138, 17. 5. 1993, p. 1.

<sup>(5)</sup> OJ No L 76, 6. 4. 1970, p. 1. Directive as last amended by Directive 93/59/EEC (OJ No L 186, 28. 7. 1993, p. 21).

<sup>(6)</sup> OJ No L 42, 23. 2. 1970, p. 1. Directive as last amended by Commission Directive 93/81/EEC (OJ 264, 23. 10. 1993, p. 49).

<sup>(7)</sup> OJ No L 159, 15. 6. 1974, p. 61.

<sup>(8)</sup> OJ No L 32, 3. 2. 1977, p. 32.

<sup>(9)</sup> OJ No L 223, 14. 8. 1978, p. 48.

<sup>(10)</sup> OJ No L 197, 20. 7. 1983, p. 1.

<sup>(11)</sup> OJ No L 36, 9. 2. 1988, p. 1.

<sup>(12)</sup> OJ No L 214, 6. 8. 1988, p. 1.

<sup>(13)</sup> OJ No L 226, 3. 8. 1989, p. 1.

diesel engines were introduced by Directive 91/441/EEC<sup>(1)</sup>; whereas passenger cars designed to carry more than six passengers or having a maximum mass of more than 2 500 kg, light commercial vehicles, and off-road vehicles, covered by the scope of Directive 70/220/EEC, which hitherto have been subject to less stringent standards, are now, under Directive 93/59/EEC, subject to standards as stringent as those for passenger cars, taking into account the specific conditions of such vehicles;

Whereas the work undertaken by the Commission in this field has shown that the best technology currently available to the Community industry can be further improved in order to allow passenger cars to comply with considerably reduced emission limits; whereas the proposed standards will apply both to the approval of new vehicle types and to checks on conformity of production, since the amended method of sampling and statistical evaluation removes the tolerances allowed for the limit values set under previous stages of Directive 70/220/EEC;

Whereas, in the light of the worrying level of pollution caused by vehicle emissions and their role in the formation of the gases responsible for the greenhouse effect, it is necessary to reduce emissions, in particular CO<sub>2</sub> emissions, in accordance with the commitment entered into under the Framework Convention on Climate Change signed in Rio in June 1992; whereas CO<sub>2</sub> results directly from the combustion of carbon-based fuels; whereas CO<sub>2</sub> emissions can principally be reduced by lower fuel consumption; whereas this requires progress in the design of engines and vehicles and in fuel quality; whereas all these elements will be taken into account in a subsequent proposal from the Commission;

Whereas Member States should be allowed to encourage, by means of tax incentives, the introduction of vehicles which satisfy the requirements adopted at Community level; whereas such tax incentives must comply with the provisions of the Treaty and satisfy certain conditions intended to avoid distortions of the internal market; whereas the provisions of this Directive do not affect the Member States' right to include emissions of pollutants and other substances in the basis on which road traffic taxes on motor vehicles are calculated;

Whereas the prior notification requirement of this Directive is without prejudice to notification requirements under other provisions of Community law, notably Article 93 (3) of the Treaty;

Whereas the Council should, by 30 June 1996, adopt the requirements for the stage from the year 2000 on the basis of a proposal to be submitted by the Commission by 31 December 1994 and whereas that proposal is to be aimed at substantially reducing motor vehicle emissions;

Whereas the Commission has held widespread consultations with interested parties, culminating with the Symposium 'Auto Emissions 2000' on 21 and 22 September 1992, which showed that the present approach, focused on exhaust emissions, must be one element in the stage beyond the implementation of the requirements of this Directive, as part of a 'multifaceted' approach comprising all the measures for reducing air pollution due to road traffic; whereas all the parameters which have been identified as having a significant impact on such pollution can at present only be presented in the form of a list; whereas the Commission will undertake the necessary analysis of environmental, technological and cost effectiveness aspects in order to provide before end of December 1994 quantified objectives for Community measures for the year 2000;

Whereas the objective of reducing the level of pollutant emissions from motor vehicles presupposes that, when the Commission makes its proposals for measures to apply after the year 2000 and in the light, *inter alia*, of the preparation of complementary technical measures as provided for in Article 4, it will if necessary put forward target values involving a further substantial reduction in emissions,

HAVE ADOPTED THIS DIRECTIVE:

#### Article 1

Annex I to Directive 70/220/EEC is hereby amended in accordance with the Annex to this Directive.

#### Article 2

1. With effect from 1 July 1994 or, should this Directive fail to be published in the *Official Journal of the European Communities* by 31 December 1993 at the latest, six months after it is published, Member States shall accept compliance with the requirements of Directive 70/220/EEC, as amended by this Directive, for the purposes of Articles 4 (1) and 7 (1) of Directive 70/156/EEC.

2. With effect from 1 January 1996, Member States may no longer grant:

— EC type-approval pursuant to Article 4 (1) of Directive 70/156/EEC, or

— national type-approval, unless the provisions of Article 8 (2) of Directive 70/156/EEC are invoked,

for a type of vehicle on grounds relating to air pollution by emissions if it fails to comply with the provisions of Directive 70/220/EEC, as amended by this Directive.

(<sup>1</sup>) OJ No L 242, 30. 8. 1991, p. 1.

3. With effect from 1 January 1997, Member States shall:

- consider certificates of conformity which accompany new vehicles pursuant to Directive 70/156/EEC as no longer valid for the purposes of Article 7 (1) of that Directive, and
- refuse the registration, sale and entry into service of new vehicles which are not accompanied by a certificate of conformity in accordance with Directive 70/156/EEC, unless the provisions of Article 8 (2) of Directive 70/156/EEC are invoked,

on grounds relating to air pollution by emissions, if the vehicles fail to comply with the provisions of Directive 70/220/EEC, as amended by this Directive.

#### Article 3

Member States may make provision for tax incentives only in respect of motor vehicles which comply with Directive 70/220/EEC, as amended by this Directive. Such incentives shall comply with the provisions of the Treaty and satisfy the following conditions:

- they shall apply to all new vehicles offered for sale on the market of a Member State which comply in advance with the requirements of Directive 70/220/EEC, as amended by this Directive,
- they shall be terminated with effect from the mandatory application of the emission values laid down in Article 2 (3) for new motor vehicles,
- for each type of motor vehicle, they shall be for an amount lower than the additional cost of the technical solutions introduced to ensure compliance with the values set and of their installation on the vehicle.

The Commission shall be informed in sufficient time of plans to institute or change the tax incentives referred to in the first paragraph, so that it can submit its observations.

#### Article 4

The Council, acting under the conditions laid down in the Treaty, shall decide before 30 June 1996 on proposals for a further stage of the Community's measures against air pollution caused by emissions from motor vehicles, which the Commission will submit by 31 December 1994. The measures shall apply from the year 2000 onwards.

In these proposals the Commission shall take the following approach:

- the measures shall be designed to produce effects to meet the requirements of the Community's air quality criteria and related objectives,
- an assessment of the cost effectiveness of taking each measure shall be undertaken; in this global assessment full account shall be taken, *inter alia*, of the contributions that:
  - traffic management, for example by spreading the environmental costs appropriately,
  - enhanced urban public transport,
  - new propulsion technologies (e.g. electric transmission),
  - the use of alternative fuels (e.g. biofuels),
 could make to improving air quality,
- the measures shall be proportional and reasonable in the light of the intended objectives.

The proposals, taking account of the methodology outlined above and aimed at a substantial reduction of pollutant emissions as regards the vehicles covered by this Directive, shall comprise in particular the following elements:

#### 1. Further improvements in the requirements of this Directive:

based on the assessment of

- the potential of the traditional engine and post-combustion technology,
- possible improvements in the test procedure, e.g. cold-start, starting in low or wintry temperatures, durability (e.g. in the conformity tests), evaporative emissions,
- measures at the level of type-approval supporting strengthened inspection and maintenance requirements, including, for example, on-board diagnostic systems,
- the possibility of checking the conformity of vehicles in circulation,
- the proportional need for:
  - (i) specific limits for HC and NO<sub>x</sub> in addition to a cumulative limit value, and
  - (ii) measures to cover pollutants not yet regulated.

#### 2. Complementary technical measures in the framework of specific Directives, including:

- improvements in fuel quality as far as vehicle emissions of dangerous substances (in particular benzene) are concerned,

— strengthening of the requirements of the inspection and maintenance programme.

The reduced limit values which will be the subject of the new Directive shall not apply before 1 January 2000 for new type-approvals. The Council shall decide on the conditions for granting tax incentives on the basis of these limit values.

*Article 5*

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 1 July 1994 or, should the Directive fail to be published in the *Official Journal of the European Communities* by 31 December 1993, six months after it is published. They shall forthwith inform the Commission thereof.

When Member States adopt these provisions, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.

*Article 6*

This Directive is addressed to the Member States.

Done at Brussels, 23 March 1994.

*For the  
European Parliament  
The President  
E. KLEPSCH*

*For the Council  
The President  
TH. PANGALOS*

## ANNEX

AMENDMENTS TO THE ANNEXES TO DIRECTIVE 70/220/EEC  
AS AMENDED BY DIRECTIVE 93/59/EEC

## ANNEX I

## 1. Section 3.1 reads as follows:

- '3.1. The application for type-approval pursuant to Article 3 of Directive 70/156/EEC of a vehicle type with regard to its tailpipe emissions, evaporative emissions and durability of antipollution devices is submitted by the vehicle manufacturer.'

## 2. Section 4 reads as follows:

## '4. GRANTING OF EC-TYPE-APPROVAL

- 4.1. If the relevant requirements are satisfied, EEC type-approval shall be granted pursuant to Article 4 (3) of Directive 70/156/EEC.
- 4.2. A model for the EC-type-approval certificate is given in Annex IX.'

## 3. Section 5.3.1.4

The column titles and the first line of the table relating to vehicles of category M are replaced by the following:

'Category of vehicle	Reference mass  RM (kg)	Limit values				
		Mass of carbon monoxide  L <sub>1</sub> (g/km)		Combined mass of hydrocarbons and oxides of nitrogen  L <sub>2</sub> (g/km)		Mass of particulates  L <sub>3</sub> (g/km)
		Petrol	Diesel	Petrol	Diesel	Diesel
M <sup>(2)</sup>	all	2,2	1,0	0,5	0,7 <sup>(1)</sup>	0,08 <sup>(1)</sup>

<sup>(1)</sup> For vehicles fitted with diesel engines of the direct-injection type the value L<sub>2</sub> is 0,9 g/km and the value L<sub>3</sub> is 0,10 g/km until 30 September 1999.

<sup>(2)</sup> Except: — vehicles designed to carry more than six occupants including the driver,  
— vehicles whose maximum mass exceeds 2 500 kilograms.'

## 4. Section 7 reads as follows:

## '7. CONFORMITY OF PRODUCTION

- 7.1. Measures to ensure the conformity of production must be taken in accordance with the provisions of Article 10 of Directive 70/156/EEC.

Conformity of production is checked on the basis of the description in the type-approval certificate set out in Annex IX to this Directive.

If the authority is not satisfied with the auditing procedure of the manufacturer, then Sections 2.4.2 and 2.4.3 of Annex X to Directive 70/156/EEC are applicable.

- 7.1.1. If a type I test is to be carried out and a vehicle type-approval has one or several extensions, the tests will be carried out on the vehicle(s) described in the original technical file.

## 7.1.1.1. Checking the conformity of the vehicle for a type I test.

After selection by the authority, the manufacturer must not undertake any adjustment to the vehicles selected.

- 7.1.1.1.1. Three vehicles are selected at random in the series and are tested as described in Section 5.3.1 of this Annex. The deterioration factors are used in the same way. The limit values are given in Section 5.3.1.4 of this Annex.

- 7.1.1.1.2. If the authority is satisfied with the production standard deviation given by the manufacturer in accordance with Annex X to Directive 70/156/EEC, the tests are carried out according to Appendix 1 of this Annex.

If the authority is not satisfied with the production standard deviation given by the manufacturer in accordance with Annex X to Directive 70/156/EEC, the tests are carried out according to Appendix 2 of this Annex.

- 7.1.1.1.3. The production of a series is deemed to conform or not to conform on the basis of a sampling test of the vehicles once a pass decision is reached for all the pollutants or a fail decision is reached for one pollutant, according to the test criteria applied in the appropriate appendix.

When a pass decision has been reached for one pollutant, that decision will not be changed by any additional tests carried out to reach a decision for the other pollutants.

If no pass decision is reached for all the pollutants and no fail decision is reached for one pollutant, a test is carried out on another vehicle (see Figure I/7).

- 7.1.1.2. Notwithstanding the requirements of Section 3.1.1 of Annex III, the tests will be carried out on vehicles coming straight off the production line.

- 7.1.1.2.1. However, at the request of the manufacturer, the tests may be carried out on vehicles which have completed:

- a maximum of 3 000 km for vehicles equipped with a positive ignition engine,
- a maximum of 15 000 km for vehicles equipped with a compression ignition engine,

In both these cases, the running-in procedure will be conducted by the manufacturer, who must undertake not to make any adjustments to these vehicles.

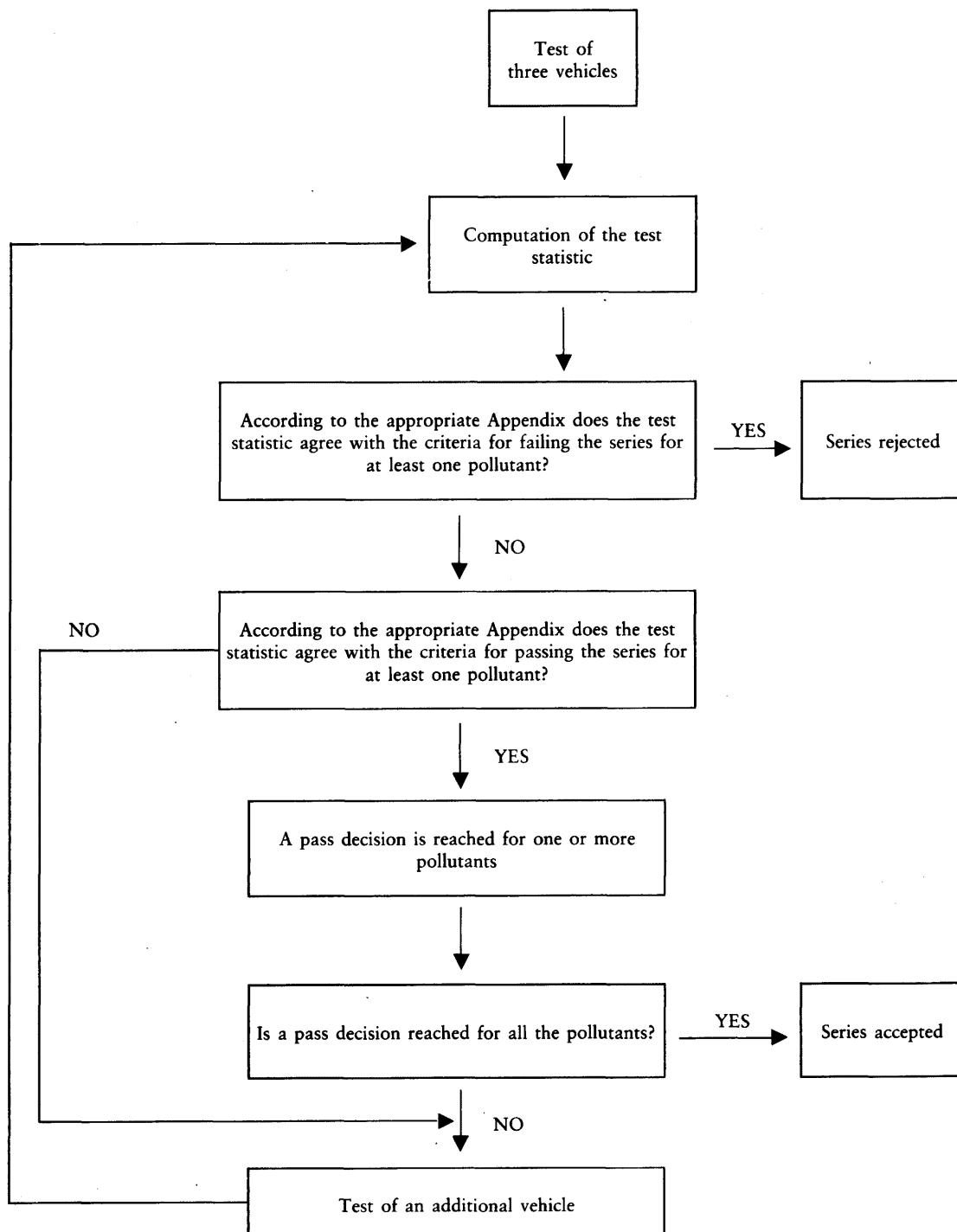


Figure 1.7

7.1.1.2.2. If the manufacturer wishes to run in the vehicles, ("x" km, where  $x \leq 3\,000$  km for vehicles equipped with a positive ignition engine and  $x \leq 15\,000$  km for vehicles equipped with a compression ignition engine), the procedure will be as follows:

- the pollutant emissions (type I) will be measured at zero and at "x" km on the first tested vehicle,
- the evolution coefficient of the emissions between zero and "x" km will be calculated for each of the pollutants:

$$\frac{\text{Emissions "x" km}}{\text{Emissions zero km}}$$

This may be less than 1,

- the other vehicles will not be run in, but their zero km emissions will be multiplied by the evolution coefficient.

In this case, the values to be taken will be:

- the values at 'x' km for the first vehicle,
- the values at zero km multiplied by the evolution coefficient for the other vehicles.

7.1.1.2.3. All these tests may be conducted with commercial fuel. However, at the manufacturer's request, the reference fuels described in Annex VIII may be used.

7.1.2. If a type III test is to be carried out, it must be conducted on all vehicles selected for the type I COP test (7.1.1.1.1). The conditions laid down in 5.3.3.2 must be complied with.

7.1.3. If a type IV test is to be carried out, it must be conducted in accordance with Section 7 of Annex VI.'

#### Appendix 1

1. This Appendix describes the procedure to be used to verify the production conformity for the type I test when the manufacturer's production standard deviation is satisfactory.
2. With a minimum sample size of 3, the sampling procedure is set so that the probability of a lot passing a test with 40% of the production defective is 0,95 (producer's risk = 5%) while the probability of a lot being accepted with 65% of the production defective is 0,1 (consumer's risk = 10%).
3. For each of the pollutants given in Section 5.3.1.4 of Annex I, the following procedure is used (see Figure I.7).

Taking:

L = the natural logarithm of the limit value for the pollutant,

$x_i$  = the natural logarithm of the measurement for the i-th vehicle of the sample,

s = an estimate of the production standard deviation (after taking the natural logarithm of the measurements),

n = the current sample number.

4. Compute for the sample the test statistic quantifying the sum of the standard deviations from the limit and defined as:

$$\frac{1}{s} \sum_{i=1}^n (L - x_i)$$

5. Then:

- if the test statistic is greater than the pass decision number for the sample size given in Table (I.1.5), the pollutant is passed,
- if the test statistic is less than the fail decision number for the sample size given in Table (I.1.5), the pollutant is failed; otherwise, an additional vehicle is tested according to Section 7.1.1.1 of Annex I and the calculation reapplied to the sample with a sample size one unit greater.



TABLE I.1.5

Cumulative number of tested vehicles (current sample size)	Pass decision threshold	Fail decision threshold
3	3,327	-4,724
4	3,261	-4,790
5	3,195	-4,856
6	3,129	-4,922
7	3,063	-4,988
8	2,997	-5,054
9	2,931	-5,120
10	2,865	-5,185
11	2,799	-5,251
12	2,733	-5,317
13	2,667	-5,383
14	2,601	-5,449
15	2,535	-5,515
16	2,469	-5,581
17	2,403	-5,647
18	2,337	-5,713
19	2,271	-5,779
20	2,205	-5,845
21	2,139	-5,911
22	2,073	-5,977
23	2,007	-6,043
24	1,941	-6,109
25	1,875	-6,175
26	1,809	-6,241
27	1,743	-6,307
28	1,677	-6,373
29	1,611	-6,439
30	1,545	-6,505
31	1,479	-6,571
32	-2,112	-2,112

## Appendix 2

1. This Appendix describes the procedure to be used to verify the production conformity requirements for the type I test when the manufacturer's evidence of production standard deviation is either unsatisfactory or unavailable.
2. With a minimum sample size of 3, the sampling procedure is set so that the probability of a lot passing a test with 40% of the production defective is 0,95 (producer's risk = 5%) while the probability of a lot being accepted with 65% of the production defective is 0,1 (consumer's risk = 10%).
3. The measurements of the pollutants given in Section 5.3.1.4 of Annex I are considered to be log normally distributed and must first be transformed by taking their natural logarithms. Let  $m_0$  and  $m$  denote the minimum and maximum sample sizes respectively ( $m_0 = 3$  and  $m = 32$ ) and let  $n$  denote the current sample number.

4. If the natural logarithms of the measurements in the series are  $x_1, x_2, \dots, x_j$  and  $L$  is the natural logarithm of the limit value for the pollutant, then define:

$$d_j = x_j - L$$

$$\bar{d}_n = \frac{1}{n} \sum_{j=1}^n d_j$$

$$v_n^2 = \frac{1}{n} \sum_{j=1}^n (d_j - \bar{d}_n)^2$$

5. Table I.2.5 shows values of the pass ( $A_n$ ) and fail ( $B_n$ ) decision numbers against current sample number. The test statistic is the ratio  $\bar{d}_n/v_n$  and must be used to determine whether the series has passed or failed as follows:

For  $m_0 \leq n \leq m$ :

— pass the series if  $\bar{d}_n/v_n \leq A_n$ ,

— fail the series if  $\bar{d}_n/v_n \geq B_n$ ,

— take another measurement if  $A_n < \bar{d}_n/v_n < B_n$ .

#### 6. Remarks

The following recursive formulae are useful for computing successive values of the test statistic:

$$\bar{d}_n = \left(1 - \frac{1}{n}\right) \bar{d}_{n-1} + \frac{1}{n} d_n$$

$$v_n^2 = \left(1 - \frac{1}{n}\right) v_{n-1}^2 + \frac{(\bar{d}_n - d_n)^2}{n-1}$$

$$(n = 2, 3, \dots; \bar{d}_1 = d_1; v_1 = 0)$$

TABLE I.2.5

Minimum sample size = 3

Sample size n	Pass decision threshold $A_n$	Fail decision threshold $B_n$
3	-0,80381	16,64743
4	-0,76339	7,68627
5	-0,72982	4,67136
6	-0,69962	3,25573
7	-0,67129	2,45431
8	-0,64406	1,94369
9	-0,61750	1,59105
10	-0,59135	1,33295
11	-0,56542	1,13566
12	-0,53960	0,97970
13	-0,51379	0,85307
14	-0,48791	0,74801
15	-0,46191	0,65928
16	-0,43573	0,58321
17	-0,40933	0,51718
18	-0,38266	0,45922
19	-0,35570	0,40788
20	-0,32840	0,36203
21	-0,30072	0,32078
22	-0,27263	0,28343
23	-0,24410	0,24943
24	-0,21509	0,21831
25	-0,18557	0,18970
26	-0,15550	0,16328
27	-0,12483	0,13880
28	-0,09354	0,11603
29	-0,06159	0,09480
30	-0,02892	0,07493
31	0,00449	0,05629
32	0,03876	0,03876