COUNCIL DIRECTIVE

of 19 December 1978

on the approximation of the laws of the Member States relating to the determination of the noise emission of construction plant and equipment

(79/113/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

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

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament (1),

Having regard to the opinion of the Economic and Social Committee (2),

Whereas in the Member States the permissible noise emission of construction plant and equipment and the method of determining it is subject to mandatory provisions which differ from one Member State to another and consequently hinder trade in such construction plant and equipment; whereas it is therefore necessary to approximate these provisions;

Whereas it is necessary to approximate the requirements for the determination of the noise emission which construction plant and equipment must satisfy in order to be freely imported and marketed,

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. This Directive shall apply to the construction plant and equipment defined in paragraph 2, for which detailed requirements are laid down in separate Directives.

2. For the purposes of this Directive 'construction plant and equipment' means machinery, appliances, plant and installations or components thereof which are used, according to their type, to perform work on civil engineering and building sites but which are not primarily intended for the transport of goods or persons and in respect of which the noise emission should be determined.

3. Agricultural and forestry tractors and lifting appliances are excluded from the scope of this Directive.

Article 2

Where a separate Directive provides for the determination of the noise emission of the plant and equipment referred to in Article 1, this emission shall be determined in accordance with the requirements annexed hereto.

Article 3

Any amendments necessary to adapt the requirements annexed hereto to technical progress shall be adopted in accordance with the procedure laid down in Article 5.

Article 4

1. A Committee on the Adaptation to Technical Progress of the Directives on the Removal of Technical Barriers to Trade in Construction Plant and Equipment, hereinafter called 'the Committee', is hereby set up; it shall consist of representatives of the Member States, with a representative of the Commission as chairman.

2. The Committee shall adopt its own Rules of Procedure.

Article 5

1. Where the procedure laid down in this Article is to be followed, matters shall be referred to the Committee by the chairman, either on his own

(1) OJ No C 76, 7. 4. 1975, p. 37.
(2) OJ No C 263, 17. 11. 1975, p. 42.

initiative or at the request of the representative of a Member State.

2. The representative of the Commission shall submit to the Committee a draft of the measures to be adopted. The Committee shall deliver its opinion on the draft within a time limit set by the chairman, having regard to the urgency of the matter. Opinions shall be adopted by a majority of 41 votes, the votes of Member States being weighted as provided in Article 148 (2) of the Treaty. The chairman shall not vote.

3. (a) The Commission shall adopt the measures envisaged where they are in accordance with the opinion of the Committee.

(b) Where the measures envisaged are not in accordance with the opinion of the Committee, or if no opinion is adopted, the Commission shall without delay propose to the Council the measures to be adopted. The Council shall act by a qualified majority.

(c) If, within three months of the proposal being submitted to it, the Council has not acted, the proposed measures shall be adopted by the Commission.

Article 6

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive within 18 months of its notification and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

Article 7

This Directive is addressed to the Member States.

Done at Brussels, 19 December 1978.

For the Council

The President

G. BAUM

ANNEX

METHOD OF DETERMINING AIRBORNE NOISE EMITTED BY MACHINES USED OUTDOORS

1. OBJECT

The purpose of this method is to determine the noise emitted by all categories of machines, parts of machines or installations used outdoors. For the purposes of this method, machines, parts of machines and installations are called sound sources.

This method defines the various acoustic criteria which may be adopted to characterize a sound source, and the means of determining these criteria.

The values obtained by this method constitute the basic data for checking that the noise emission of machines complies with requirements, and for the organization of construction sites with regard to protection against noise. Unless otherwise indicated, these values are inclusive of tolerances.

This method is applicable unless separate Directives lay down different or supplementary provisions taking into account the special characteristics of certain types of machine.

2. SCOPE

2.1. Type of noise

This method is applicable to any type of noise emitted by a sound source normally used in the open air.

2.2. Size of sound source

Unless separate Directives provide otherwise, this method is applicable to sound sources of all sizes.

3. DEFINITIONS

3.1. Sound pressure level L_{pA}

The sound pressure level L_{pA} is obtained by applying the weighting A to the sound pressure level L_p.

The sound pressure level L_p, expressed in dB, of a noise is defined by:

$$L_p = 20 \log_{10} \frac{p}{p_o}$$

where:

p is the effective sound pressure value measured at a particular point, expressed in Pa;

p_o is the effective reference sound pressure, equal to 20 μPa.

The value L_{pA} of the A-weighted sound pressure level, expressed in dB, is obtained by applying the weighting A to the measuring system.

3.2. Measuring surface

The measuring surface of area S is a hypothetical surface surrounding the sound source and on which the measuring points are arranged (see 6.4).

3.3. Surface sound pressure level L_{pAm}

The surface sound pressure level L_{pAm} is the root mean square of the sound pressures recorded on the measuring surface, calculated in accordance with the method set out in 8.4.

3.4. **Sound power level L_{WA}**

The sound power level L_{WA} is obtained by applying the weighting A to the sound power level L_W.

The sound power level L_W, expressed in dB, of a sound source is defined by:

$$L_W = 10 \log_{10} \frac{W}{W_o}$$

where:

W is the total sound power generated by the sound source, expressed in watts;

W_o is the reference sound power, equal to 10^{-12} W.

The value L_{WA} of the A-weighted sound power level, expressed in dB, is obtained by applying the weighting A to the measuring system.

3.5. **Limit value of the sound power level L_{WA1}**

The limit value of the sound power level L_{WA}, expressed in A-weighted dB, is that prescribed by the separate Directives and shall be termed L_{WA1}.

3.6. **Directivity index (DI)**

The directivity index (DI), expressed in dB, to be adopted in applying this method is defined by the formula:

$$DI = L_{pAmax} - L_{pAm} + 3$$

where:

— L_{pAmax} is the highest of the sound pressure levels recorded at the measuring points (see 6.4.2), calculated in accordance with 8.1.1 and corrected in accordance with the general principles laid down in 8.6.1, 8.6.3 and 8.6.4,

—L_{pAm} is the surface sound pressure level determined in accordance with 8.4,

— 3 is a conventional additive term.

In determining the values L_{pAmax} and L_{pAm} only the measuring points prescribed need be taken into account.

3.7. **Extraneous noise**

Extraneous noise means the noise resulting from background noise and parasitic noise.

3.7.1. *Background noise*

Background noise means any noise recorded at the measuring points which is not generated by the sound source.

3.7.2. *Parasitic noise*

Parasitic noise means any noise at the measuring points which is generated by the sound source but not directly radiated by it.

4. CRITERIA TO BE USED FOR EXPRESSING RESULTS

4.1. **Acoustic criteria for the environment**

The acoustic criterion for the environment of a sound source shall be expressed:

— either by the sound power level of the sound source L_{WA},

— or by the sound power level of the sound source L_{WA} supplemented by the directivity index (DI). However, when the calculated sound power level L_{WA} is lower than the limit value of the sound power level L_{WA1} by a value specified in the separate Directive, the directivity index (DI) is given only for information.

4.2. **Acoustic criterion at the operator's position**

In principle the acoustic criterion at the operator's position shall be expressed as the sound pressure level L_{pA}.

5. MEASURING INSTRUMENTS

5.1. **General**

The instruments shall be designed to measure the A-weighted level of the root mean square of the sound pressure. The level of the root mean square value in time for a measurement point is obtained either by direct reading of the instrument, or by calculation in accordance with section 11.

5.2. **Measuring instruments**

The following instruments may be used to satisfy the preceding requirement:

(a) a sound level meter meeting the requirements of IEC publication 179, 1973, second edition. The meter shall be set at 'slow' response;

(b) an integrator effecting analog or digital integration of the squared signal over a given time interval.

Note

If, for any measurement, instruments other than a precision sound level meter or combinations of instruments, such as integrators are used, all the specifications of such instruments shall comply with the relevant requirements of IEC publication 179, 1973, second edition.

5.3. **Microphone with cable**

Use shall be made of a microphone with cable complying with IEC publication 179, 1973, second edition, and calibrated for free-field measurement.

5.4. **Weighting network**

Use shall be made of an A-weighting network meeting the requirements of IEC publication 179, 1973, second edition.

5.5. **Inspection of the measuring apparatus**

5.5.1. Before the tests, the acoustic properties of the entire apparatus (measuring instruments including microphone and cable) shall be checked by means of a calibrated sound source with an accuracy of at least 0·5 dB (e.g. a pistonphone); the apparatus shall be checked again immediately after each series of measurements.

5.5.2. These on-the-spot checks shall be supplemented by more thorough calibrations to be carried out at least once a year in a specially equipped laboratory.

6. MEASURING CONDITIONS

All details concerning the installation, operation and use of the sound sources shall be specified in the Annexes to the separate Directives.

The general requirements are given in 6.1 to 6.4.

6.1. **Purpose of the measurement**

All apparatus, such as auxiliary equipment, power generators etc., which forms an integral part of the sound source to be tested shall be accurately defined.

In the case of machines operating with interchangeable devices, such as various items of special-duty equipment, the measurements shall be made at least on the machine fitted with its main device. The results of a measurement shall be valid only for the combination tested.

If necessary, the separate Directives also specify in what way account must be taken, when measurements are being carried out, of the existence of any components which are not, strictly speaking, constituent parts of the machine (separate tools, etc.) but which are essential to its operation.