No. 8940. EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR). DONE AT GENEVA ON 30 SEPTEMBER 1957[1]

ENTRY INTO FORCE of amendments to annexes A and B, as amended, of the above-mentioned Agreement

The amendments were proposed by the Government of Switzerland and circulated by the Secretary-General on 1 July 1981. They came into force on 1 January 1982, in accordance with article 14 (3) of the agreement.

AMENDMENTS TO ANNEX A

Delete existing text of marginal 2001 and replace by the following new text:

"(1) The following units of measurement * are applicable in this Annex and in Annex B.

2001

"Measurement of	SI Unit**	Acceptable alternative unit	Relationship between units
Length	m (metre)	—	—
Area	m² (square metre)	—	—
Volume	m³ (cubic metre)	l*** (litre)	$1 \, l = 10^{-3} m^3$
Time	s (second)	min (minute)	$1 \, min = 60 \, s$
		h (hour)	$1 \, h = 3\,600 \, s$
		d (day)	$1 \, d = 86\,400 \, s$
Mass	kg (kilogramme)	g (gramme)	$1 \, g = 10^{-3} kg$
		t (tonne)	$1 \, t = 10^3 kg$
Mass density	kg/m³	kg/l	$1 \, kg/l = 10^{-3} kg/m^3$
Temperature	K (kelvin)	° C (degree Celsius)	$0° \, C = 273.15 K$
Difference of temperature	K (kelvin)	° C (degree Celsius)	$1° \, C = 1 \, K$
Force	N (newton)	—	$1 \, N = 1 \, kg.m/s^2$
Pressure	Pa (pascal)	bar (bar)	$1 \, bar = 10^5 \, Pa$
			$1 \, Pa = 1 \, N/m^2$
Stress	N/m²	N/mm²	$1 \, N/mm^2 = 1 \, MPa$
Work	⎫		$1 \, J = 1 \, N.m = 1 \, W.s$
Energy	⎪	kWh (kilowatt hour)	$1 \, kWh = 3.6 \, MJ$
	⎬ J (joule)		
Quantity of heat	⎪	eV (electron-volt)	$1 \, ev = 0.1602.10^{-18} \, J$
	⎭		
Power	W (watt)	—	$1 \, W = 1 \, J/s = 1 \, N.m/s$
Kinematic viscosity	m²/s	mm²/s	$1 \, mm^2/s = 10^{-6} \, m^2/s$
Dynamic viscosity	Pa.s	mPa.s	$1 \, mPa.s = 10^{-3} \, Pa.s$

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[1] United Nations, *Treaty Series*, vol. 619, p. 77; for subsequent actions, see references in Cumulative Indexes Nos. 9 to 14, as well as annex A in volumes 905, 907, 920, 921, 922, 926, 940, 943, 951, 966, 973, 982, 987, 995, 1003, 1023, 1035, 1074, 1107, 1129, 1141, 1161, 1162 and 1237.

"The decimal multiples and sub-multiples of a unit may be formed by prefixes, having the following meanings, placed before the name of the unit.

"Factor				UN	Prefix	Symbol
1 000 000 000 000 000 000	=	10^{18}	trillion	quintillion	exa	E
1 000 000 000 000 000	=	10^{15}	thousand billion	quadrillion	peta	P
1 000 000 000 000	=	10^{12}	billion	trillion	tera	T
1 000 000 000	=	10^9	thousand million	billion	giga	G
1 000 000	=	10^6	million	million	mega	M
1 000	=	10^3	thousand	thousand	kilo	k
100	=	10^2	hundred	hundred	hecto	h
10	=	10^1	ten	ten	deca	da
0.1	=	10^{-1}	tenth	tenth	deci	d
0.01	=	10^{-2}	hundredth	hundredth	centi	c
0.001	=	10^{-3}	thousandth	thousandth	milli	m
0.000 001	=	10^{-6}	millionth	millionth	micro	μ
0.000 000 001	=	10^{-9}	thousand millionth	billionth	nano	n
0.000 000 000 001	=	10^{-12}	billionth	trillionth	pico	p
0.000 000 000 000 001	=	10^{-15}	thousand billionth	quadrillionth	femto	f
0.000 000 000 000 000 001	=	10^{-18}	trillionth	quintillionth	atto	a

"NOTE. 10^9 = 1 billion is United Nations usage. By analogy, so is 10^{-9} = 1 billionth.

"(2) Whenever the word 'weight' is used in this annex and in annex B, it means 'mass'.

"*The following round figures are applicable for the conversion of the units hitherto used into SI Units.

Force
1 kg	=	9.807 N
1 N	=	0.102 kg

Stress
1 kg/mm²	=	9.807 N/mm²
1 N/mm²	=	0.102 kg/mm²

Pressure
1 Pa	=	1 N/m²	=	10^{-5} bar	=	1.02 . 10^{-5} kg/cm²	=	0.75 . 10^{-2} torr
1 bar	=	10^5 Pa			=	1.02 kg/cm²	=	750 torr
1 kg/cm²	=	9.807 . 10^4 Pa			=	0.9807 bar	=	736 torr
1 Torr	=	1.33 . 10^2 Pa			=	1.33 . 10^{-3} bar	=	1.36 . 10^{-3} kg/cm²

Energy, work, quantity of heat
1 J	=	1 Nm	=	0.278 . 10^{-6} kWh	=	0.102 kgm	=	0.239 . 10^{-3} kcal
1 kWh	=	3.6 . 10^6 J			=	367 . 10^3 kgm	=	860 kcal
1 kgm	=	9.807 J	=	2.72 . 10^{-6} kWh			=	2.34 . 10^{-3} kcal
1 kcal	=	4.19 . 10^3 J	=	1.16 . 10^{-3} kWh	=	427 kgm		

Power
1W	=	0.102 kgm/s	=	0.86 kcal/h
1 kgm/s	=	9.807W	=	8.43 kcal/h
1kcal/h	=	1.16 W	=	0.119 kgm/s

Kinematic viscosity
1m²/s	=	10^4 St (Stokes)
1 St	=	10^{-4} m²/s

Dynamic viscosity
1 Pa . s	=	1 Ns/m²	=	10 P (poise)	=	0.102 kgs/m²
1 P	=	0.1 Pa.s	=	0.1 Ns/m²	=	1.02 . 10^{-2} kgs/m¹
1kgs/m²	=	9.807 Pa.s	=	9.807 Ns/m²	=	98.07 P

"** The International System of Units (SI) is the result of decisions taken at the General Conference on Weights and Measures (Address: Pavillon de Breteuil, Parc de St-Cloud, F-92310 Sèvres).

"*** The abbreviation L for litre is also authorized, in place of abbreviation 1 when a typewriter is used."

"(3)   Whenever the weight of a package is mentioned in this annex and in annex B, the gross mass is meant unless otherwise stated. The mass of containers or tanks used for the carriage of goods is not included in the gross mass.

"(4)   Unless expressly stated otherwise, the sign '%' in this annex and in annex B represents:

"(a)   In the case of mixtures of solids or of liquids, and also in the case of solutions and of solids wetted by a liquid: a percentage mass based on the total mass of the mixture, the solution or the wetted solid;

"(b)   In the case of gaseous mixtures: a percentage by volume based on the total volume of the gaseous mixture.

"(5)   Pressures of all kinds relating to receptacles (such as test pressure, internal pressure, safety-valve opening pressure) are always indicated in gauge pressure (pressure in excess of atmospheric pressure); however, the vapour pressure of substances is always expressed in absolute pressure.

"(6)   Where this annex or annex B specifies a degree of filling for receptacles or tanks, that degree of filling is always referred to a temperature of the substances of 15°C unless some other temperature is indicated.

"(7)   Fragile receptacles secured, either singly or in groups, by cushioning materials in a strong receptacle are not regarded as fragile receptacles if the strong receptacle is leakproof and so designed that in the event of breakage or leakage of the fragile receptacles their contents cannot escape from the strong receptacle and the mechanical strength of the latter is not impaired by corrosion during carriage.

"(8)   The following approximate conversion formula is authorized until SI units have been incorporated throughout the texts of this annex and annex B.

"1 kg/mm² = 10. N/mm²
1 kg/cm² = 1 bar

CONSEQUENTIAL MODIFICATION TO ANNEX B

Marginal 10 102 is modified as follows:

(1)   Second stroke:

. . . "(see also annex A, marginal 2001 (7));".

"(4)   Unless expressly stated otherwise, the sign "%" in this annex represents:

"(a)   In the case of mixtures of solids or of liquids, and also in the case of solutions and of solids wetted by a liquid: a percentage mass based on the total mass of mixture, the solution or the wetted solid;

"(b)   In the case of gaseous mixtures: a percentage by volume based on the total volume of the gaseous mixture.

"(5)   Whenever the weight of a package is mentioned in this annex, the gross mass is meant unless otherwise stated. The mass of containers or tanks used for the carriage of goods is not included in the gross mass.

"(6)   Pressures of all kinds relating to receptacles (such as test pressure, internal pressure, safety-valve opening pressure) are always indicated in gauge pressure (pressure in excess of atmospheric pressure); however, the vapour pressure of substances is always expressed in absolute pressure."

AMENDMENTS TO ANNEX B

Training of drivers

Add a new marginal 10 170 to chapter I, section 1:

10 170 *"Special requirements for tank vehicle drivers*

"(1) (*a*) As from 1 January 1983, drivers of tank vehicles or transport units carrying tanks or tank containers shall be equipped with a certificate issued by the competent authority or by an organization recognized by that authority that they have successfully participated in a training course on the particular requirements that have to be met during the carriage of dangerous goods.

"(*b*) By means of appropriate endorsements on his certificate made every five years by the competent authority or by any organization recognized by that authority, a vehicle driver must be able to show that he has successfully participated in refresher training courses. However, the competent authority or any organization recognized by that authority to which an application has been made for an extension of the period of validity of the certificate may exempt the applicant from undertaking a refresher course provided that he has continued in his occupation without a break since his certificate was issued or last revalidated.

"(2) The training will take place at courses approved by the competent authority. Its main objectives are to make drivers aware of hazards arising in the carriage of dangerous goods and to give them basic information indispensable for minimizing the likelihood of an incident taking place but if it does, to enable them to take measures which may prove necessary for their own safety and that of the environment and for limiting the effects of the incident. This training which should include individual practical exercises, where appropriate, should cover:

"(*a*) The general requirements governing the transport of dangerous goods;

"(*b*) The main types of hazard;

"(*c*) Preventative and safety measures appropriate to the different types of hazard;

"(*d*) What to do after an incident (first aid, road safety, basic knowledge about the use of protective equipment, etc.);

"(*e*) Labelling and marking of tankers;

"(*f*) What a vehicle driver should and should not do during the carriage of dangerous goods;

"(*g*) The purpose and the method of operation of technical equipment on vehicles;

"(*h*) The behaviour of tank vehicles on the road, including the movement of the load.

"(3) Any training certificate conforming with paragraphs (1) and (2) of this marginal issued by the competent authorities of a Contracting Party or by any organization recognized by those authorities is accepted during its period of validity by the competent authorities of other Contracting Parties."

Marginal 10 181 is modified as follows:

New paragraph (1), subparagraph (*b*):

"(*b*) The driver's certificate of competence as prescribed under marginal 10 170(1);"

The existing subparagraph (*b*) should be renumbered "(*c*)".

DIVERSE AMENDMENTS OF THE ANNEXES A AND B

Marginal 2431

Amend 15° to read:

"Empty receptacles, uncleaned, and empty tank containers, uncleaned, which have . . .".

Marginal 211 161

After the first paragraph of this marginal, add:

"These particulars shall not be required in the case of a vehicle carrying demountable tanks."

Marginal 211 262 (a) should read:

(a) Either 'lowest permissible filling temperature — 20°C' or 'lowest permissible filling temperature . . .';".

Marginal 211 263

The new text of this marginal reads as follows:

"These particulars shall not be required in the case of a vehicle carrying demountable tanks."

Marginal 211 474

Add the following new paragraph to this marginal:

"Tanks which have contained phosphorus of marginal 2431, 1°, must be considered, as far as the application of the provisions of marginal 42 500(1) is concerned, as being 'empty tanks, uncleaned'."

Marginal 211 535

The new text reads as follows:

"Shells intended for the carriage of liquid organic peroxides of marginal 2551, 1°, 10°, 14°, 15° and 18°, shall be equipped with a sun shield complying with the requirements of marginal 211 234 (1). The sun shield and any uncovered part of the shell shall be painted white and the paint shall be cleaned before each transport journey and renewed in case of yellowing or deterioration. The sun shield shall be free from combustible matter."

Marginal 212 180

Delete this marginal.

Marginal 212 474

Add the following new paragraph to this marginal:

"Tank containers which have contained phosphorous of marginal 2431, 1°, must be considered, as far as the application of the provisions of marginal 42 500 (1) is concerned, as being 'empty tank containers, uncleaned'."

Authentic texts of the amendments: English and French.

Registered ex officio *on 1 January 1982.*