



Overview of ADR

What is the meaning of ADR?



Transport of dangerous goods needs to be regulated in order to prevent, as far as possible, accidents to persons or property and damage to the environment, the means of transport employed or to other goods.

Consequences: ADR 2009 Part 8 „ Requirements for vehicle crews, equipment, operation and documentation” and ADR 2009 Part 9 „Requirements concerning the construction and approval of vehicles”

ADR =

1. English: *European Agreement concerning the international carriage of dangerous goods by road*
2. French: *Accord européen relatif au transport international des marchandises Dangereuses par Route.*

What about the transport of dangerous goods by road?

**ATEX directive
Council directive 94/9/EEC**

Gasoline station



ATEX

Transport by ROAD



Rifinery



ATEX

The **ATEX directive** consists of two EU directives describing what equipment and work environment is allowed in an environment with an explosive atmosphere.

ATEX derives its name from the French title of the 94/9/EC directive:

*Appareils destinés à être utilisés en **AT**mosphères **EX**plosives.*



The vehicle has to fulfil the requirements of ADR and ATEX!

EC-Recording Equipment ADR

Legal regulations

94/9/EC	<p>ATEX-directive, equipment and protective systems intended for use in potentially explosive atmospheres.</p> <p>The ATEX-directive is valid since 01/01/1996.</p>
ADR	<p>European Agreement concerning the international carriage of dangerous goods by road</p> <p>Part 9 General requirements concerning the construction and approval of vehicles</p>
ECE-R 105	<p>Consistent conditions for special technical requirements for the type approval of vehicles for the transport of dangerous goods</p> <p>includes the requirements of the valid ADR (at this time ADR 2013)</p>
98/91/EC	<p>motor vehicles and their trailers intended for the transport of dangerous goods by road</p> <p>Type approval of motor vehicles</p> <p>Reference to 2008/68/EC concerning the construction</p>
2008/68/EC	<p>inland transport of dangerous goods</p> <p>transport of dangerous goods by road, by rail or by inland waterway</p> <p>Reference to the valid ADR requirements (ADR 2013) and to the construction of vehicles</p>

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Legal regulations

The ADR is the European Agreement concerning the international carriage of dangerous goods by road (UN ECE in Geneva)

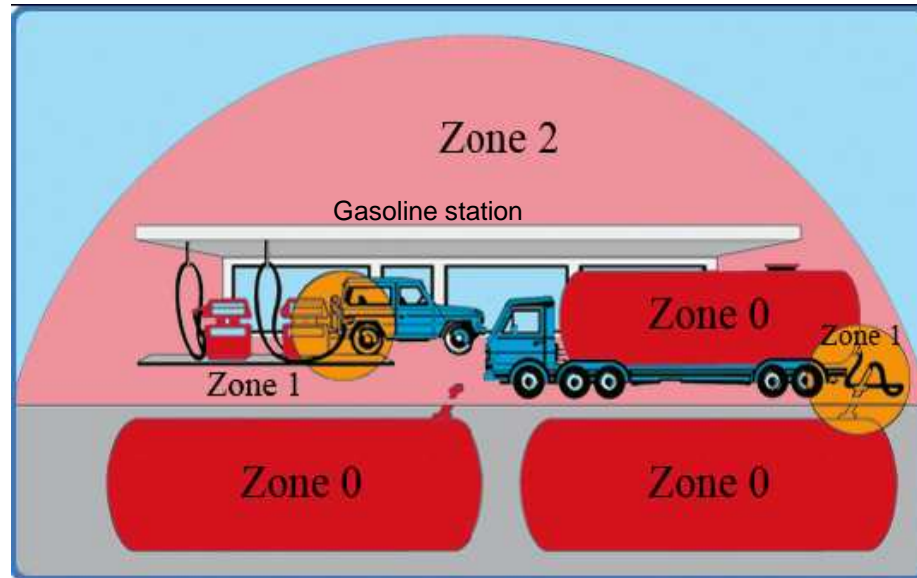
The agreement exists since 30. Sept. 1957, adaptations according to the technical progress

The agreement was signed by 48 countries:

Albania	Andorra	Austria	Azarbaijan
Belarus	Belgium	Bosnia and Herzegovina	Bulgaria
Croatia	Cyprus	Czech Republic	Denmark
Estonia	Finland	France	Germany
Greece	Hungary	Iceland	Ireland
Italy	Kazakhstan	Latvia	Liechtenstein
Lithuania	Luxembourg	Malta	Moldova
Montenegro	Morocco	Netherlands	Norway
Poland	Portugal	Romania	Russian Federation
Serbia	Slovenia	Slovakia	Spain
Sweden	Switzerland	Tajikistan	The former Yugoslav Republic of Macedonia
Tunisia	Turkey	Ukraine	United Kingdom

Definition of the zones for explosive atmosphere

EXPLOSIVE ATMOSPHERES - CLASSIFICATION OF HAZARDOUS AREAS (ZONING) AND SELECTION OF EQUIPMENT



Hazardous area zones and equipment categories

Hazardous places are classified in terms of zones on the basis of the frequency and duration of the occurrence of an explosive atmosphere.

Gases, vapours and mists

For gases, vapours and mists the zone classifications are:

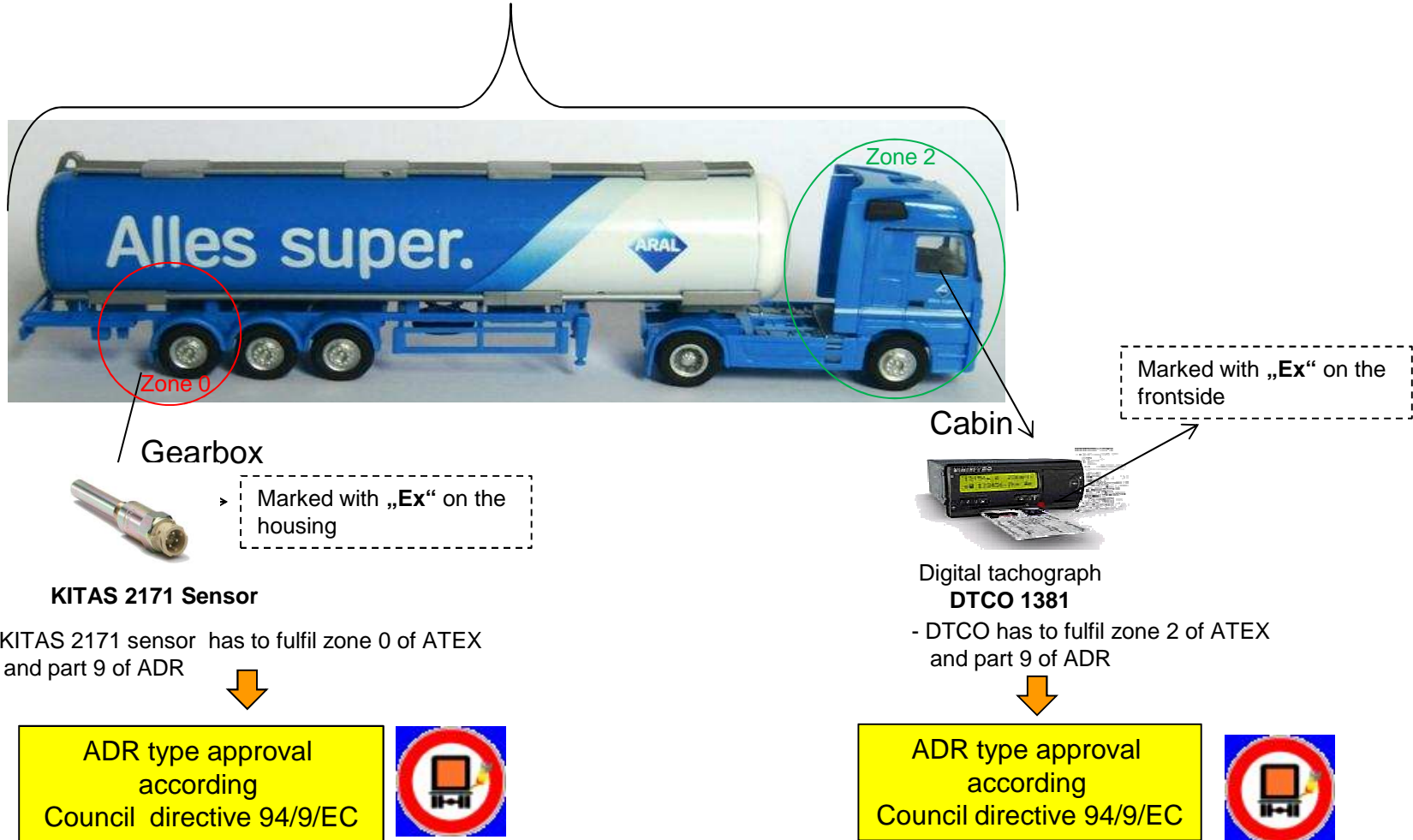
Zone 0 A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is present **continuously** or for long periods or **frequently**.

Zone 1 A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation **occasionally**.

Zone 2 A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is **not likely to occur** in normal operation but, if it does occur, will persist for a **short period** only.

DTCO 1381 and KITAS 2171 sensor are parts of the road tanker

The vehicle has to fulfil the requirements of ADR and ATEX!



EC-Recording Equipment ADR Requirements from ADR

9.2.2.5 Permanently energized circuits

9.2.2.5.1

- (a) Those parts of the **electrical installation including the leads** which *shall* remain energized when the battery master switch is open, shall be suitable for use in hazardous areas. Such equipment shall meet the general requirements of IEC 60079, parts 0 and 14¹ and the additional requirements applicable from IEC 60079, parts 1, 2, 5, 6, 7, 11, 15 or 18.²

For the application of IEC 60079 part 14¹, the following classification shall be used:

Permanently energized electrical equipment including the leads which is not subject to 9.2.2.3 and 9.2.2.4 shall meet the requirements for **Zone 1 for electrical equipment in general** or meet the requirements for **Zone 2 for electrical equipment situated in the driver's cab**. The requirements for explosion group IIC, temperature class T6 shall be met.

However, for permanently energised electrical equipment installed in an environment where the temperature caused by non-electrical equipment situated in that environment exceeds the T6 temperature limit, the temperature classification of the permanently energised electrical equipment shall be at least T4.

¹ *The requirements of IEC 60079 part 14 do not take precedence over the requirement of this Part.*

² *As an alternative, the general requirements of EN 50014 and the additional requirements of EN50015, 50016, 50017, 50018, 50019, 50020 or 50028 may be used.*

i9.2.2.5.2

Bypass connections to the battery master switch for electrical equipment which shall remain energized when the battery master switch is open shall be protected against overheating by suitable means, such as a fuse, a circuit breaker or a safety barrier (current limiter).

Note. This requirements are valid from ADR 2003 and have not changed until 2013!

EC-Recording Equipment ADR Standards for ADR

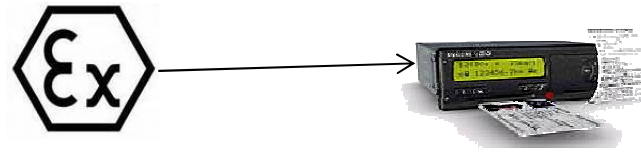
IEC-standard number	Type of protection	may be used in zone
IEC 60079-0	General requirements	
IEC 60079-6	Oil immersion „o“	1 and 2
IEC 60079-2	Pressurised apparatus „p“	1 and 2
IEC 60079-5	Powder filling „q“	1 and 2
IEC 60079-1	Flameproof enclosures „d“	1 and 2
IEC 60079-7	Increased safety „e“	1 and 2
IEC 60079-11	Intrinsic safety „ia“	0, 1 and 2
IEC 60079-11	Intrinsic safety „ib“	1 and 2
IEC 60079-15	Non-sparking, non-incendive „n“	2 only
IEC 60079-18	Encapsulation „m“	1 and 2

EC-Recording Equipment ADR

Digital tachograph

Specific design for ADR Digital tachograph:

- Vehicle Unit for Zone 2 (cabin)
identified by a logo



All “KITAS 2+” are ATEX

- Motion sensor for Zone 1 (chassis)
and identified with the ATEX logo

