
**Automatic vehicle and equipment
identification — Electronic registration
identification (ERI) for vehicles —**

**Part 3:
Vehicle data**

*Identification automatique des véhicules et des équipements —
Identification d'enregistrement électronique (ERI) pour les véhicules —
Partie 3: Données du véhicule*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 24534-3 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 278, *Road transport and traffic telematics*, in collaboration with Technical Committee ISO/TC 204, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 24534-3 cancels and replaces ISO/TS 24534-3:2008, which has been technically revised.

ISO 24534 consists of the following parts, under the general title *Automatic vehicle and equipment identification — Electronic registration identification (ERI) for vehicles*:

- *Part 1: Architecture*
- *Part 2: Operational requirements*
- *Part 3: Vehicle data*
- *Part 4: Secure communications using asymmetrical techniques*
- *Part 5: Secure communications using symmetrical techniques*

Introduction

A quickly emerging need has been identified with administrations to improve the unique identification of vehicles for a variety of services. Situations are already occurring where manufacturers intend to fit lifetime tags to vehicles. Various governments are considering the needs and benefits of electronic registration identification (ERI) as a legal proof of vehicle identity with potential mandatory uses. There is commercial and economic justification in respect of both tags and infrastructure that a standard enables an interoperable solution.

ERI is a means of uniquely identifying road vehicles. The application of ERI will offer significant benefits over existing techniques for vehicle identification. It will be a suitable tool for the future management and administration of traffic and transport, including applications in free-flow, multi-lane traffic conditions with the capability to support mobile transactions. ERI addresses the need of authorities and other road users for a trusted electronic identification, including roaming vehicles.

This part of ISO 24534 specifies the vehicle-related data that can be exchanged between an onboard electronic registration tag (ERT) and an ERI reader/writer inside or outside the vehicle. The vehicle-related data consists of the vehicle identifier and might also include additional vehicle data as typically included in a vehicle registration certificate.

This part of ISO 24534 does not provide any accurate definitions for additional vehicle data items; this is left to the local registration authorities and/or local legislation. This part of ISO 24534 only provides the means for an unambiguous exchange of vehicle parameters registered by local registration authorities.

This part of ISO 24534 makes use of the basic automatic vehicle identification (AVI) definitions in ISO 14816.

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Automatic vehicle and equipment identification — Electronic registration identification (ERI) for vehicles —

Part 3: Vehicle data

1 Scope

This part of ISO 24534 provides requirements for electronic registration identification (ERI) that are based on an identifier assigned to a vehicle (e.g. for recognition by national authorities) suitable to be used for:

- electronic identification of local and foreign vehicles by national authorities;
- vehicle manufacturing, in-life maintenance and end-of-life identification (vehicle life cycle management);
- adaptation of vehicle data (e.g. for international resales);
- safety-related purposes;
- crime reduction;
- commercial services.

It adheres to privacy and data protection regulations.

This part of ISO 24534 defines the vehicle identification data. This data is called the ERI data and includes

- the vehicle identifier, and
- possible additional vehicle-related information (as typically included in a vehicle registration certificate).

All additional vehicle data elements are defined as optional. It is left to local legislation and/or the discretion of a registration authority to use or not to use a particular data element. If used, the value is assumed to be the one registered by the registration authority in accordance with local legislation. This part of ISO 24534 only provides the syntax for all these data elements.

NOTE The secure application layer interfaces for the exchange of ERI data with an ERI reader or writer are specified in ISO 24534-4 and ISO 24534-5.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 612:1978, *Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions*

ISO 1176:1990, *Road vehicles — Masses — Vocabulary and codes*

ISO 3779, *Road vehicles — Vehicle identification number (VIN) — Content and structure*

ISO 3780, *Road vehicles — World manufacturer identifier (WMI) code*

ISO 3833, *Road vehicles — Types — Terms and definitions*

ISO/IEC 8824 (all parts), *Information technology — Abstract Syntax Notation One (ASN.1)*

ISO/IEC 8825-2, *Information technology — ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

additional vehicle data

ERI data in addition to the vehicle identifier

3.2

distinguishing identifier

information which unambiguously distinguishes an entity

[ISO/IEC 9798-1:1997, definition 3.3.9]

3.3

electronic registration identification

ERI

action or act of identifying a vehicle with electronic means for purposes as mentioned in the scope of this part of ISO 24534

3.4

ERI data

vehicle identifying data which can be obtained from an ERT

NOTE ERI data consists of the vehicle identifier and possible additional vehicle data.

3.5

electronic registration tag

ERT

onboard ERI device that contains the ERI data including relevant security provisions and one or more interfaces to access that data

NOTE 1 In case of high security, the ERT is a SAM (secure application module).

NOTE 2 The ERT may be a separate device or may be integrated into an onboard device that also provides other capabilities (e.g. DSRC communications).

3.6**periodic motor vehicle test**

compulsory periodic (e.g. annual) test of the roadworthiness of a motor vehicle of above a specified age, or a certificate of passing such a test

EXAMPLE The MOT test in the United Kingdom.

3.7**privacy**

right of individuals to control or influence what information related to them may be collected and stored and by whom and to whom that information may be disclosed

[ISO 7498-2:1989, definition 3.3.43]

NOTE Because this term relates to the right of individuals, it cannot be very precise and its use is best avoided except as a motivation for requiring security.

3.8**registration authority**

(for vehicles) authority responsible for the registration and maintenance of vehicle records

NOTE The authority can provide vehicle records to accredited organizations.

3.9**registration authority**

(for ERI data) organization responsible for the ERI data and security data according to local legislation

NOTE The registration authority for ERI data can be the same as the registration authority for vehicles. This International Standard, however, does not require this.

3.10**registration certificate**

vehicle registration document (paper or smart card) issued by the registration authority for vehicles in which the vehicle and its owner or lessee are registered

4 Abbreviations

AEI	automatic equipment identification
ASN.1	Abstract Syntax Notation One [as defined in ISO/IEC 8824 (all parts)]
AVI	automatic vehicle identification
EEA	European Economic Area
EN	Europäische Norm (German), English: European Standard
ENV	Europäische Norm Vorausgabe (German), English: European Pre-Standard
ERI	electronic registration identification
ERT	electronic registration tag
EU	European Union
VIN	vehicle identification number

5 Requirements**5.1 Vehicle identification data**

5.1 is informative only.

The secure onboard environment in which the vehicle identification data is stored is called the electronic registration tag (ERT).

This Clause 5 provides an abstract definition of the ERI data to be exchanged between the ERT and an ERI reader or writer. The abstract definitions are defined using Abstract Syntax Notation One (ASN.1) as defined in ISO/IEC 8824 (all parts).

The identifier used to identify a vehicle is called the vehicle identifier or vehicleId. The preferred vehicle identifier is the VIN that is assigned to the vehicle by its manufacturer in accordance with ISO 3779.

However, in order to make this part of ISO 24534 also applicable in countries where the VIN is not used, an alternative is also supported (see 5.2). The fundamental requirement is that the combination of a registration authority and a vehicle identifier should be globally distinguishing.

NOTE 1 As two vehicles built 30 years apart may have the same VIN, the VIN is not 100 % unique.

NOTE 2 Empirical data has shown that a database of a registration authority may contain duplicate VIN numbers.

NOTE 3 In this part of ISO 24534, the combination of the almost unique vehicleId and a unique ERT number may be used as the unambiguous distinguishing identifier. The ERT number is a unique read-only identifier that is written into the ERT during ERT manufacturing time. See ISO 24534-4 and ISO 24534-5 for details.

Apart from the vehicle identifier, this part of ISO 24534 also supports the use of additional vehicle data as typically included in a vehicle registration certificate. This additional vehicle data may, e.g., be used as

- additional identification information to improve the trust in a vehicle identifier, and
- certified vehicle information for other applications (e.g. for tolling to determine a tariff).

5.2 The vehicle identifier

The VehicleId type shall be used for the vehicle identifier according to local legislation and is defined as follows:

VehicleId ::= CHOICE { vin raSpecificVehicleId ... } VIN ::= CS5	VIN, RaSpecificVehicleId,	-- preferred choice
---	------------------------------	---------------------

NOTE 1 The “...” at the end of the definition designates that the type VehicleId may be extended with additional components at that location in new versions of this part of ISO 24534, e.g. to cope with a new VIN standard.

The VehicleId should be a globally distinguishing identifier.

NOTE 2 When identifying a vehicle, the ERT always delivers the vehicleId in combination with the identifier of the registration authority and the ERT number. The identifier of the registration authority may be used to obtain additional information about the vehicle. The ERT number is an extra unique identifier from another source that may be used to resolve potential disputes about the VIN of a vehicle.

NOTE 3 The choice of which alternative is used is outside the scope of this part of ISO 24534. It may e.g. depend on local legislation.

The vin alternative, if used, shall be of type VIN and is the preferred vehicle identifier. The type VIN is identical to the type CS5 as defined in ISO 14816. The value of the vin alternative shall be the value of the VIN as assigned conforming to ISO 3779 by a manufacturer or a registration authority.

The `raSpecificVehicleId` alternative, if used, shall contain a globally distinguishing identifier for the vehicle and shall be of type `RaSpecificVehicleId` as defined below:

<code>RaSpecificVehicleId ::= SEQUENCE {</code>	
<code>wmi</code>	<code>PrintableString (SIZE(3)),</code>
<code>nonIsoStandardId</code>	<code>PrintableString (SIZE (1..20))</code>
<code>}</code>	

The `wmi` component shall contain the world manufacturer identifier (WMI) code of the organization that assigned the `nonIsoStandardId` value, and the WMI code shall be assigned to this organization according to ISO 3780.

The `nonIsoStandardId` component shall be of type `PrintableString` with a maximum length of 20 characters.

NOTE 4 Any additional meaning conveyed in the value of a `nonIsoStandardId` component is outside the scope of this part of ISO 24534.

5.3 The ERI data type

The `EriData` type shall be used for the ERI data and is defined as follows:

<code>EriData ::= SEQUENCE {</code>	
<code>vehicleId</code>	<code>VehicleId,</code>
<code>additionalEriData</code>	<code>AdditionalEriData OPTIONAL</code>
<code>}</code>	

The `vehicleId` component shall contain the vehicle's identifier as defined in 5.2.

The `AdditionalEriData` component, if present, shall contain the additional ERI data.

5.4 The additional ERI data type

The type `AdditionalEriData` is used for the additional ERI data and is defined as follows:

<code>AdditionalEriData ::= CHOICE {</code>	
<code>additionalEriRegistrationData</code>	<code>AdditionalEriRegistrationData, -- preferred choice</code>
<code>...</code>	
<code>raSpecificAdditionalEriData</code>	<code>OCTET STRING (SIZE (0..1024))</code>
	<code>-- only to be used if AdditionalEriRegistrationData is not supported</code>
<code>}</code>	

The `additionalEriRegistrationData` alternative is the preferred alternative and shall be chosen whenever a value of the type `AdditionalEriRegistrationData` can be used.

The `raSpecificAdditionalEriData` alternative is of type `OCTET STRING` with a maximum length of 1 024 octets and shall only be used if a value of the type `additionalEriRegistrationData` cannot be used.

NOTE The "..." in the definition designates that the type `AdditionalEriData` can be extended with additional alternatives at that location in new versions of this part of ISO 24534, e.g. to cope with a new version of the alternative `eriRegistrationData`.

5.5 Additional ERI registration data

5.5.1 The additional ERI registration data type

5.5.1.1 The definition of the additional ERI registration data type

The AdditionalEriRegistrationData type contains the vehicle-related data typically found in a vehicle registration certificate and is defined as follows:

```

AdditionalEriRegistrationData ::= SEQUENCE {
    -- Administrative data
    registrationAuthority      RegistrationAuthority OPTIONAL,
    vehicleIdStatus            VehicleIdStatus OPTIONAL,
    dateOfFirstRegistration    DateOfFirstRegistration OPTIONAL,
    dateOfRegistration         DateOfRegistration OPTIONAL,
    validThru                  ValidThru OPTIONAL,
    chassisNumber              ChassisNumber (SIZE (1..23)) OPTIONAL,
    registrationNumber         RegistrationNumber OPTIONAL,

    -- Vehicle type
    vehicleMake                VehicleMake OPTIONAL,
    vehicleType                VehicleType OPTIONAL,
    vehicleTypeStatus          VehicleTypeStatus OPTIONAL,
    commercialDescription      CommercialDescription OPTIONAL,
    typeApprovalNumber         TypeApprovalNumber OPTIONAL,
    vehicleCategory            VehicleCategory OPTIONAL,
    vehicleTaxCategory         VehicleTaxCategory OPTIONAL,
    euVehicleCategoryCode      EuVehicleCategoryCode OPTIONAL,
    raSpecificVehicleClass1     RaSpecificVehicleClass1 OPTIONAL,
    raSpecificVehicleClass2     RaSpecificVehicleClass2 OPTIONAL,
    raSpecificVehicleClass3     RaSpecificVehicleClass3 OPTIONAL,
    vehicleUse                  VehicleUse OPTIONAL,
    privateUse                  PrivateUse OPTIONAL,
    colour                      VehicleColour OPTIONAL,

    -- Vehicle shape
    length                      VehicleLength OPTIONAL,
    width                       VehicleWidth OPTIONAL,
    height                      VehicleHeight OPTIONAL,
    wheelbase                   Wheelbase OPTIONAL,
    bodyShape                   VehicleBodyShape OPTIONAL,
    euBodyWorkType              EuBodyWorkType OPTIONAL,
    iso3833VehicleType          Iso3833VehicleType OPTIONAL,

    -- Vehicle number of passengers, axles, and mass
    numberOfSeats               NumberOfSeats OPTIONAL, -- including the driver seat
    numberOfStandingPlaces      NumberOfStandingPlaces OPTIONAL,
    maxNumberOfPassengers       MaxNumberOfPassengers OPTIONAL, -- including the
                                                                    driver
    unladenWeight               UnladenWeight OPTIONAL,
    maxDesignLadenMass          MaxDesignLadenMass OPTIONAL,
    maxAuthorizedLadenMass      MaxAuthorizedLadenMass OPTIONAL,
    maxAuthorizedTrainMass      MaxAuthorizedTrainMass OPTIONAL,
    maxAuthorizedPayload        MaxAuthorizedPayload OPTIONAL,

    numberOfAxles               NumberOfAxles OPTIONAL,
    authorizedAxleLadenMass      AuthorizedAxleLadenMass OPTIONAL, -- from front to rear axle
    axleGroupConfiguration      NumberOfAxlesForEachAxleGroup OPTIONAL, -- from front to
                                                                    rear axle group
    authorizedAxleGroupLadenMass AuthorizedAxleGroupLadenMass OPTIONAL, -- from front to
                                                                    rear axle group
    maxTowableMassBrakedTrailer MaxTowableMassBrakedTrailer OPTIONAL,

```

maxTowableMassUnbrakedTrailer	MaxTowableMassUnbrakedTrailer OPTIONAL,
<i>-- Vehicle engine and power source</i>	
engineId	EngineId (SIZE (1..60)) OPTIONAL,
primeEngineType	PrimeEngineType OPTIONAL,
enginePowerSources	EnginePowerSources OPTIONAL,
primePowerSource	PrimePowerSource OPTIONAL,
engineMaxNetPower	EngineMaxNetPower OPTIONAL,
engineDisplacement	EngineDisplacement OPTIONAL,
ratedEngineSpeed	RatedEngineSpeed OPTIONAL,
powerWeightRatio	PowerWeightRatio OPTIONAL,
maxSpeed	MaxSpeed OPTIONAL,
fuelTanksCapacity	FuelTanksCapacity OPTIONAL,
<i>-- Environmental characteristics</i>	
stationarySoundLevel	StationarySoundLevel OPTIONAL,
engineSpeed	EngineSpeed OPTIONAL,
driveBySoundLevel	DriveBySoundLevel OPTIONAL,
emissionCO	EmissionCO OPTIONAL,
emissionHC	EmissionHC OPTIONAL,
emissionNOx	EmissionNOx OPTIONAL,
emissionHCandNOx	EmissionHCandNOx OPTIONAL,
particulatesForDiesel	ParticulatesForDiesel OPTIONAL,
correctedAbsorptionCoefficient	CorrectedAbsorptionCoefficient OPTIONAL,
emissionCO2	EmissionCO2 OPTIONAL,
combinedFuelConsumption	CombinedFuelConsumption OPTIONAL,
environmentalCategory	EnvironmentalCategory OPTIONAL,
euroType	EuroType OPTIONAL,
<i>-- Others</i>	
lastOfficialTestData	OfficialVehicleTestData OPTIONAL,
...	
raSpecificData	RaSpecificData OPTIONAL
}	

The type of the components of the AdditionalEriRegistrationData type is defined in 5.5.1.2 to 5.5.1.8.

NOTE 1 The “...” at the end of the AdditionalEriRegistrationData definition designates that the AdditionalEriRegistrationData type may be still extended with additional components at that location in new versions of this part of ISO 24534.

All components are optional. Whether or not an optional component is present or absent depends on local legislation and the discretion of the vehicle's registration authority.

The precise meaning of a value of a component, if present, shall be determined by local legislation and/or the vehicle's registration authority and shall always take precedence over a definition in this International Standard.

NOTE 2 This part of ISO 24534 only facilitates the exchange of ERI registration data values for the purpose of vehicle identification. Both the precise definition of terms and the assignment of values in a particular state or country are outside the scope of this part of ISO 24534.

NOTE 3 In order to maintain consistency with the vehicle's registration certificate, the value of a component, if present and applicable, should be equal to or at least as precise as the value of the corresponding data item on the vehicle's registration certificate.

5.5.1.2 Administrative data components

The registrationAuthority component, if present, shall identify the registration authority that registered the vehicle.

The VehicleIdStatus component, if present, shall specify the status of the vehicle identifier.

The VehicleIdStatus component shall not be present for a VIN-based vehicle identifier.

The dateOfFirstRegistration component, if present, shall specify the date of the first registration of the vehicle with its current registration authority.

The dateOfRegistration component, if present, shall specify the date of the registration to which this ERI data refers.

The validThru component, if present, shall specify the last day the ERI data is valid. If not present, the validity period may be assumed to be unlimited.

The chassisNumber component, if present, shall specify the chassis number of the vehicle.

The registrationNumber component, if present, shall specify the vehicle's registration number as assigned by the registration authority.

5.5.1.3 Vehicle type components

The vehicleMake component, if present, shall specify the make of the vehicle as assigned by the vehicle manufacturer.

The vehicleType component, if present, shall specify the variant, if applicable, and/or the version, if applicable, of the vehicle as assigned by the vehicle manufacturer.

The vehicleTypeStatus component, if present, shall specify the status of the vehicle type.

The commercialDescription component, if present, shall contain the commercial description(s) of the vehicle.

The typeApprovalNumber component, if present, shall specify the type-approval number.

The vehicleCategory component, if present, shall specify the vehicle category according to local legislation.

The vehicleTaxCategory component, if present, shall specify the vehicle tax category according to local legislation.

The euVehicleCategoryCode component, if present, shall specify the vehicle category according to the EU directives EU 2001/116, EU 2002/24 and UNECE 1999.

The raSpecificVehicleClass1 component, if present, shall contain a registration authority-specific vehicle class, category or code.

The raSpecificVehicleClass2 component, if present, shall contain a registration authority-specific vehicle class, category or code.

The raSpecificVehicleClass3 component, if present, shall contain a registration authority-specific vehicle class, category or code.

The vehicleUse component, if present, shall specify the use of the vehicle.

The privateUse component, if present, shall specify whether the vehicle is for private or for commercial use.

The colour component, if present, shall specify the colour of the vehicle.

5.5.1.4 Vehicle shape components

The length component, if present, shall specify the length of the vehicle.

The width component, if present, shall specify the width of the vehicle.

The height component, if present, shall specify the height of the vehicle.

The wheelbase component, if present, shall specify the wheelbase of the vehicle.

The bodyShape component, if present, shall specify the shape of the body of the vehicle.

The euBodyWorkType component, if present, shall specify the type of body work of the vehicle according to EU 2001/116.

The iso3833VehicleType component, if present, shall specify the type of the vehicle according to ISO 3833.

5.5.1.5 Vehicle number of passengers, axles, and mass components

The numberOfSeats component, if present, shall specify the number of seats, including the driver seat.

The numberOfStandingPlaces component, if present, shall specify the number of standing places.

The maxNumberOfPassenger component, if present, shall specify the maximum permissible number of passengers (including the driver) that may use the vehicle.

The unladenWeight component, if present, shall specify the nominal unladen mass of the vehicle with bodywork.

The maxDesignLadenMass component, if present, shall specify the maximum technically permissible total mass of the vehicle including payload (but excluding the mass of trailers).

The maxAuthorizedLadenMass component, if present, shall specify the maximum permissible total mass of the vehicle including payload (but excluding the mass of trailers) when in service in the jurisdiction of the registration authority.

The maxAuthorizedTrainMass component, if present, shall specify the maximum permissible total mass in kilograms of the whole vehicle, including payload (and including trailers and the payload of trailers) when in service in the jurisdiction of the registration authority.

The maxAuthorizedPayload component, if present, shall specify the maximum permissible payload of the vehicle (but excluding the payload of trailers).

The numberOfAxles component, if present, shall specify the number of axles of the vehicle (including lifted axles).

The authorizedAxleLadenMass component, if present, shall specify the maximum laden mass on each axle in kilograms.

The axleGroupConfiguration component, if present, shall specify the number of axles of each axle group of the vehicle (including lifted axles).

The authorizedAxleGroupLadenMass component, if present, shall specify the maximum laden mass on each axle group in kilograms.

The maxTowableMassBrakedTrailer component, if present, shall specify the technically permissible maximum braked towable mass of the trailer.

The maxTowableMassUnbrakedTrailer component, if present, shall specify the technically permissible maximum unbraked towable mass of the trailer.

5.5.1.6 Vehicle engine and power source components

The engineId component, if present, shall specify the engine identification number.

The primeEngineType component, if present, shall specify the type of the prime engine of the vehicle as assigned by the manufacturer.

The enginePowerSource component, if present, shall specify the power source(s) of the vehicle.

The primePowerSource component, if present, shall specify the power source of the prime engine.

The engineMaxNetPower component, if present, shall specify the nominal (maximum net) power of the engine.

The engineDisplacement component, if present, shall specify the displacement of the engine.

The ratedEngineSpeed component, if present, shall specify the rated speed.

The powerWeightRatio component, if present, shall specify the power/weight ratio of the vehicle.

The maxSpeed component, if present, shall specify the maximum speed of the vehicle.

The fuelTankCapacity component, if present, shall specify the capacity of the fuel tank(s).

5.5.1.7 Environmental characteristic components

The stationarySoundLevel component, if present, shall specify the stationary sound level of the vehicle.

The engineSpeed component, if present, shall specify the engine speed.

The driveBySoundLevel component, if present, shall specify the drive-by sound level of the vehicle.

The emissionCO component, if present, shall specify the CO exhaust emission.

The emissionHC component, if present, shall specify the HC exhaust emission.

The emissionNOx component, if present, shall specify the NO_x exhaust emission.

The emissionHCandNOx component, if present, shall specify the HC plus NO_x exhaust emission.

The particulatesForDiesel component, if present, shall specify the exhaust emission of particulates for diesel.

The correctedAbsorptionCoefficient component, if present, shall specify the corrected absorption coefficient for diesel.

The emissionCO2 component, if present, shall specify the CO₂ exhaust emission.

The combinedFuelConsumption component, if present, shall specify the combined fuel consumption of the vehicle.

The environmentalCategory component, if present, shall be of type EnvironmentalCategory and shall specify the environmental category of the vehicle.

The euroType component, if present, shall specify the environmental category of the vehicle conforming to directive EU 1988/77 as amended by EU 2003/522.

5.5.1.8 Other components

The lastOfficialTestData component, if present, shall specify the data observed during the last official vehicle test, e.g. a periodic motor vehicle test or an intermediate motor vehicle test.

The lastOfficialTestData component shall only be present if at least one of its components is present.

NOTE The value of the EriRegistrationData has to be signed and therefore needs a canonical representation.

The raSpecificVehicleData component, if present, may contain any additional registration authority-specific data.

5.5.2 Administrative types

RegistrationAuthority	::= EntityId
VehicleIdStatus	::= Text60
DateOfFirstRegistration	::= DATE
DateOfRegistration	::= DATE
ValidThru	::= DATE
ChassisNumber	::= PrintableString (SIZE (1..23)) -- incl. 3 WMI characters
RegistrationNumber	::= CS4

Unless specified otherwise, the definition and assignment of the values for the types defined in this subclause are at the discretion of the registration authority and/or local legislation (see 5.5.1).

The RegistrationAuthority type shall be used to identify a registration authority and shall be of type EntityId.

The VehicleIdStatus type shall be used to specify the status of a vehicle identifier.

The VehicleIdStatus type shall not be used for a VIN-based vehicle identifier.

EXAMPLE Possible values are ordinary, authority assigned, the identifier of the authority that assigned the vehicleId, etc.

The DateOfFirstRegistration type shall be used to specify the date of the first registration of a vehicle with its current registration authority.

The value of a DateOfFirstRegistration component shall contain at least the year and optionally the month and/or day.

The DateOfRegistration type shall be used to specify the date of the registration to which this ERI data refers.

The ValidThru type shall be used to specify the last day the ERI data is valid. If not present, the validity period may be assumed to be unlimited.

The ChassisNumber type shall be used to specify the chassis number of a vehicle.

The RegistrationNumber type shall be used to specify the vehicle's registration number as assigned by the registration authority.

5.5.3 The EU vehicle category code type

The EuVehicleCategoryCode type is defined as follows:

```

EuVehicleCategoryCode ::= CHOICE {
    euVehicleCategoryL      EuVehicleCategoryL, -- conforms to EU 2002/24 and UNECE 1999
    euVehicleCategoryM      EuVehicleCategoryM, -- conforms to EU 2001/116 and UNECE 1999
    euVehicleCategoryN      EuVehicleCategoryN, -- conforms to EU 2001/116 and UNECE 1999
    euVehicleCategoryO      EuVehicleCategoryO, -- conforms to EU 2001/116 and UNECE 1999
    euVehicleCategoryT      NULL, -- conforms to UNECE 1999
    euVehicleCategoryG      NULL -- conforms to EU 2001/116 and UNECE 1999
}

```

EuVehicleCategoryL ::= ENUMERATED {l1, l2, l3, l4, l5, l6, l7}

EuVehicleCategoryM ::= ENUMERATED {m1, m2, m3}

EuVehicleCategoryN ::= ENUMERATED {n1, n2, n3}

EuVehicleCategoryO ::= ENUMERATED {o1, o2, o3, o4}

An EuVehicleCategoryCode value may be a vehicleCategoryL value, a vehicleCategoryM value, a vehicleCategoryN value, a vehicleCategoryO value, a vehicleCategoryT value or a vehicleCategoryG value.

The euVehicleCategoryL alternative shall be chosen for a vehicle in the L category according to directive EU 2002/24 or UNECE 1999.

The euVehicleCategoryL alternative, if chosen, shall have one of the values l1, l2, l3, l4, l5, l6, or l7 for, respectively, the vehicle categories L1, L2, L3, L4, L5, L6, or L7 defined in directive EU 2002/24 or UNECE 1999.

NOTE 1 EU vehicle category L is used for vehicles with fewer than three wheels.

The euVehicleCategoryM alternative shall be chosen for a vehicle in the M category according to directive EU 2001/116 or UNECE 1999.

The euVehicleCategoryM alternative, if chosen, shall have one of the values m1, m2, or m3 for, respectively, the vehicle categories M1, M2 or M3 defined in directive EU 2001/116 or UNECE 1999.

NOTE 2 EU vehicle category M is used for passenger vehicles with M1 for vehicles with no more than eight seats in addition to the driver seat, M2 for vehicles with more than eight seats but less than five tons and M3 for vehicles with more than eight seats and more than five tons.

NOTE 3 The category M1 special purpose vehicles from UNECE 1999 can be described as EU 2001/116 body types (see the euBodyWorkType).

The euVehicleCategoryN alternative shall be chosen for a vehicle in the N category according to directive EU 2001/116 or UNECE 1999.

The euVehicleCategoryN alternative, if chosen, shall have one of the values n1, n2, or n3 for, respectively, the vehicle categories N1, N2 or N3 defined in directive EU 2001/116 or UNECE 1999.

NOTE 4 EU vehicle category N is used for vehicles carrying goods with N1 for vehicles not exceeding 3,5 tons maximum mass; N2 for vehicles exceeding 3,5 tons maximum mass but not exceeding 12 tons; and N3 for vehicles exceeding 12 tons maximum mass.

The euVehicleCategoryO alternative shall be chosen for a vehicle in the O category according to directive EU 2001/116 or UNECE 1999.

The euVehicleCategoryO alternative, if chosen, shall have one of the values o1, o2, o3, or o4 for, respectively, the vehicle categories O1, O2, O3 or O4 defined in directive EU 2001/116 or UNECE 1999.

NOTE 5 EU vehicle category O is used for (semi-) trailers with O1 for trailers not exceeding 0,75 tons maximum mass, O2 for trailers exceeding 0,75 tons maximum mass but not exceeding 3,5 tons, O3 for trailers exceeding 3,5 tons maximum mass but not exceeding 10 tons, and O4 for trailers exceeding 10 tons maximum mass.

The euVehicleCategoryT alternative shall be chosen for a vehicle in the T category according to UNECE 1999.

NOTE 6 EU vehicle category T is used for agricultural and forestry tractors.

The euVehicleCategoryG alternative shall be chosen for a vehicle in the G category according to directive EU 2001/116 or UNECE 1999.

NOTE 7 EU vehicle category G is used for off-road vehicles.

5.5.4 Other vehicle type types

VehicleMake	::= Text60	
VehicleType	::= Text60	
VehicleTypeStatus	::= Text60	
CommercialDescription	::= Text60	
TypeApprovalNumber	::= PrintableString (SIZE (1..60))	
VehicleCategory	::= Text60	
VehicleTaxCategory	::= Text60	
RaSpecificVehicleClass1	::= Text60	
RaSpecificVehicleClass2	::= Text60	
RaSpecificVehicleClass3	::= Text60	
VehicleUse	::= Text60	
PrivateUse	::= BOOLEAN	-- False = commercial use
VehicleColour	::= Text60	

Unless specified otherwise, the definition and assignment of the values for the types defined in this subclause are at the discretion of the registration authority and/or local legislation (see 5.5.1).

The VehicleMake type shall be used to specify the make of a vehicle as assigned by the vehicle manufacturer.

The VehicleType type shall be used to specify the variant, if applicable, and/or the version, if applicable, of a vehicle as assigned by the vehicle manufacturer.

The VehicleTypeStatus type shall be used to specify the status of the vehicle type.

EXAMPLE 1 Possible values are prototype, prefabricated type, modified type, etc.

The CommercialDescription type shall be used for the commercial description(s) of a vehicle.

The TypeApprovalNumber type shall be used to specify the type-approval number, if available.

The VehicleCategory type shall be used to specify the vehicle category according to local legislation.

The VehicleTaxCategory type shall be used to specify the vehicle tax category according to local legislation.

The RaSpecificVehicleClass1 type shall be used for a registration authority-specific vehicle class, category or code.

The RaSpecificVehicleClass2 type shall be used for a registration authority-specific vehicle class, category or code.

The RaSpecificVehicleClass3 type shall be used for a registration authority-specific vehicle class, category or code.

The VehicleUse type shall be used to specify the use of a vehicle.

EXAMPLE 2 A registration authority may want to use the vehicleUse component to specify the usage of a particular category of a vehicle with values such as e.g. private or commercial, or “school bus” for a vehicle in the bus category, or “rental car” for a private car.

The PrivateUse type shall be used to specify whether a vehicle is for private or for commercial use. If for private use the value shall be TRUE, if for commercial use the value shall be FALSE.

The VehicleColour type shall be used to specify the colour of a vehicle.

5.5.5 The ISO 3833 vehicle type

The Iso3833VehicleType type is defined as follows:

```

Iso3833VehicleType ::= ENUMERATED {
    passengerCar,           -- term No 3.1.1
    saloon,                 -- term No 3.1.1.1 (sedan)
    convertibleSaloon,      -- term No 3.1.1.2
    pullmanSaloon,          -- term No 3.1.1.3
    stationWagon,           -- term No 3.1.1.4
    truckStationWagon,      -- term No 3.1.1.4.1
    coupe,                  -- term No 3.1.1.5 (coupé)
    convertible,            -- term No 3.1.1.6 (open tourer, roadster, spider)
    multipurposePassengerCar, -- term No 3.1.1.7
    forwardControlPassengerCar, -- term No 3.1.1.8
    specialPassengerCar,    -- term No 3.1.1.9
    bus,                    -- term No 3.1.2
    minibus,                -- term No 3.1.2.1
    urbanBus,               -- term No 3.1.2.2
    interurbanCoach,        -- term No 3.1.2.3
    longDistanceCoach,      -- term No 3.1.2.4
    articulatedBus,         -- term No 3.1.2.5
    trolleyBus,             -- term No 3.1.2.6
    specialBus,             -- term No 3.1.2.7
    commercialVehicle,      -- term No 3.1.3
    specialCommercialVehicle, -- term No 3.1.3.1
    specialVehicle,         -- term No 3.1.4
    trailingTowingVehicle,  -- term No 3.1.5 (draw-bar tractor)
    semiTrailerTowingVehicle, -- term No 3.1.6 (fifth wheel tractor)
    trailer,                -- term No 3.2.1
    busTrailer,             -- term No 3.2.1.1
    generalPurposeTrailer,  -- term No 3.2.1.2
    caravan,                -- term No 3.2.1.3
    specialTrailer,         -- term No 3.2.1.4
    semiTrailer,            -- term No 3.2.2
    busSemiTrailer,         -- term No 3.2.2.1
    generalPurposeSemiTrailer, -- term No 3.2.2.2
    specialSemiTrailer,     -- term No 3.2.2.3
    roadTrain,              -- term No 3.3.1
    passengerRoadTrain,     -- term No 3.3.2
    articulatedRoadTrain,   -- term No 3.3.3
    doubleRoadTrain,        -- term No 3.3.4
    compositeRoadTrain,     -- term No 3.3.5
    specialRoadTrain,       -- term No 3.3.6
    moped,                  -- term No 3.4
    motorCycle              -- term No 3.5
}

```

A “term No” in a comments part refers to the number of the corresponding term and its definition in ISO 3833.

A value of Iso3833VehicleType type shall conform to the corresponding definition in ISO 3833.

5.5.6 Other vehicle shape types

VehicleLength	::= Millimetre
VehicleWidth	::= Millimetre
VehicleHeight	::= Millimetre
Wheelbase	::= Millimetre
VehicleBodyShape	::= Text60
EuBodyWorkType	::= PrintableString (SIZE (2)) -- conforms to EU 2001/116

Unless specified otherwise, the definition and assignment of the values for the types defined in this subclause are at the discretion of the registration authority and/or local legislation (see 5.5.1).

The VehicleLength type shall be used to specify the length of a vehicle in millimetres.

Unless local legislation specifies otherwise, ISO 612 term 6.1 applies and the length includes draw gear.

The vehicleWidth type shall be used to specify the width of a vehicle in millimetres.

Unless local legislation specifies otherwise, ISO 612 term 6.2 applies.

The VehicleHeight type shall be used to specify the height of a vehicle in millimetres.

Unless local legislation specifies otherwise, ISO 612 term 6.3 applies.

The Wheelbase type shall be used to specify the wheelbase of a vehicle in millimetres.

Unless local legislation specifies otherwise, ISO 612 term 6.4 (wheel space) applies and for vehicles with three or more axles (or semi-trailers with two or more axles) the distance is taken from the foremost wheel (the fifth wheel kingpin for semi-trailers) to the rearmost wheel.

The BodyShape type shall be used to specify the shape of the body of a vehicle.

The EuBodyWorkType type shall be used to specify the type of body work of a vehicle according to EU 2001/116.

NOTE 1 The EU bodywork type (two printable characters) is a refinement of ISO 3833.

NOTE 2 The EU bodywork type is also used for the designation of the special purpose vehicles as defined in UNECE 1999 (see EU 2001/116).

5.5.7 Number of passenger, axles and mass types

NumberOfSeats	::= INTEGER	-- including the driver seat
NumberOfStandingPlaces	::= INTEGER	
MaxNumberOfPassengers	::= INTEGER	-- including the driver
UnladenWeight	::= Kilogram	
MaxDesignLadenMass	::= Kilogram	
MaxAuthorizedLadenMass	::= Kilogram	
MaxAuthorizedTrainMass	::= Kilogram	
MaxAuthorizedPayload	::= Kilogram	
NumberOfAxles	::= INTEGER	
AuthorizedAxleLadenMass	::= SEQUENCE OF Kilogram	-- from front to rear axle
AxleGroupConfiguration	::= SEQUENCE OF INTEGER	-- from front to rear axle group
AuthorizedAxleGroupLadenMass	::= SEQUENCE OF Kilogram	-- from front to rear axle group
MaxTowableMassBrakedTrailer	::= Kilogram	
MaxTowableMassUnbrakedTrailer	::= Kilogram	

Unless specified otherwise, the definition and assignment of the values for the types defined in this subclause are at the discretion of the registration authority and/or local legislation (see 5.5.1).

The NumberOfSeats type shall be used to specify the number of seats, including the driver seat.

The NumberOfStandingPlaces type shall be used to specify the number of standing places.

The MaxNumberOfPassenger type shall be used to specify the maximum permissible number of passengers (including the driver) that may use a vehicle.

The UnladenWeight type shall be used to specify the nominal unladen mass of a vehicle with bodywork in kilograms.

Unless local legislation specifies otherwise, ISO 1176 term 4.6 (complete vehicle kerb mass) applies.

The MaxDesignLadenMass type shall be used to specify the maximum technically permissible total mass of a vehicle including payload (but excluding the weight of trailers) in kilograms.

Unless local legislation specifies otherwise, ISO 1176 term 4.7 (maximum design total mass) applies.

The MaxAuthorizedLadenMass type shall be used to specify the maximum permissible total mass of a vehicle including payload (but excluding the mass of trailers) in kilograms when in service in the jurisdiction of the registration authority.

Unless local legislation specifies otherwise, ISO 1176 term 4.8 (maximum authorized total mass) applies.

The MaxAuthorizedTrainMass type shall be used to specify the maximum permissible total mass in kilograms of a whole vehicle, including payload (and including trailers and the payload of trailers) when in service in the jurisdiction of the registration authority.

Unless local legislation specifies otherwise, ISO 1176 term 4.19 (maximum authorized mass of vehicle combination) applies.

The MaxAuthorizedPayload type shall be used to specify the maximum permissible payload of a vehicle (but excluding the payload of trailers) in kilograms.

Unless local legislation specifies otherwise, ISO 1176 term 4.10 (maximum authorized pay mass) applies.

The NumberOfAxles type shall be used to specify the number of axles of a vehicle (including lifted axles).

The AuthorizedAxleLadenMass type shall be used to specify the maximum laden mass on each axle in kilograms.

The AxleGroupConfiguration type shall be used to specify the number of axles of each axle group of a vehicle (including lifted axles).

The AuthorizedAxleGroupLadenMass type shall be used to specify the maximum laden mass on each axle group in kilograms.

The first value in the list shall specify the maximum laden mass on the front axle, the second on the axle next to the front axle (including lifted axles) and so on.

Unless local legislation specifies otherwise, ISO 1176 term 4.11 (maximum design axle load) applies.

The MaxTowableMassBrakedTrailer type shall be used to specify the technically permissible maximum braked towable mass of a trailer in kilograms.

Unless local legislation specifies otherwise, ISO 1176 term 4.18 (maximum design towed mass) applies.

The MaxTowableMassUnbrakedTrailer type shall be used to specify the technically permissible maximum unbraked towable mass of a trailer in kilograms.

Unless local legislation specifies otherwise, ISO 1176 term 4.18 (maximum design towed mass) applies.

5.5.8 Engine and power source types

EngineId	::= PrintableString (SIZE (1..60))	
PrimeEngineType	::= Text60	
EnginePowerSources	::= SEQUENCE OF PowerSource	-- primary source first
PrimePowerSource	::= PowerSource	
EngineMaxNetPower	::= Kilowatt	
EngineDisplacement	::= Millilitre	
RatedEngineSpeed	::= PerMinute	
PowerWeightRatio	::= KilowattPerKilogram	
MaxSpeed	::= KilometrePerHour	
FuelTanksCapacity	::= Litre	


```

PowerSource ::= ENUMERATED {
    notPowered,
    animalPowered,
    leadedPatrol,
    bioDiesel,
    otherFuel,
    hydrogen,
    battery,
    ...,
}
humanPowered,
unleadedPetrol,
diesel,
alcohol,
lpg,
externalElectricPower,
sun,
other
  
```

Unless specified otherwise, the definition and assignment of the values for the types defined in this subclause are at the discretion of the registration authority and/or local legislation (see 5.5.1).

The EngineId type shall be used to specify the engine identification number.

The PrimeEngineType type shall be used to specify the type of the prime engine of a vehicle as assigned by the manufacturer.

The EnginePowerSources type shall be used to specify the power source(s) of a vehicle (see below). In case of a hybrid vehicle, the primary power source is mentioned first.

The PrimePowerSource type shall be used to specify the power source of the prime engine.

The EngineMaxNetPower type shall be used to specify the nominal (maximum net) power of the engine in kW.

The EngineDisplacement type shall be used to specify the displacement of the engine in cubic centimetres (cm³).

The RatedEngineSpeed type shall be used to specify the rated speed (number of revolutions of crankshaft) in min⁻¹.

The PowerWeightRatio type shall be used to specify the power/weight ratio of a vehicle in kW/kg.

The MaxSpeed type shall be used to specify the maximum speed of a vehicle in km/h.

The FuelTankCapacity type shall be used to specify the capacity of the fuel tank(s) in litres.

The PowerSource type shall be used to specify a power source and shall have one of the values: notPowered, humanPowered, animalPowered, unleadedPetrol, leadedPatrol, diesel, bioDiesel, alcohol, otherFuel, lpg, hydrogen, externalElectricPower, battery, sun, or other.

NOTE The “...” designates that the type may still be extended with other power sources at that location in new versions of this part of ISO 24534.

5.5.9 Environmental components

StationarySoundLevel	::= DB
EngineSpeed	::= PerMinute
DriveBySoundLevel	::= DB
EmissionCO	::= GpkmOrGpkw
EmissionHC	::= GpkmOrGpkw
EmissionNOx	::= GpkmOrGpkw
EmissionHCandNOx	::= GramPerKilometre
ParticulatesForDiesel	::= GpkmOrGpkw
CorrectedAbsorptionCoefficient	::= PerMinute
EmissionCO2	::= GramPerKilometre
CombinedFuelConsumption	::= LitrePer100Kilometre
EnvironmentalCategory	::= Text60

EuroType ::= ENUMERATED {non-euro, euro-1, euro-2, euro-3, euro-4, euro-5, euro-6, ... }

Unless specified otherwise, the definition and assignment of the values for the types defined in this subclause are at the discretion of the registration authority and/or local legislation (see 5.5.1).

The StationarySoundLevel type shall be used to specify the stationary sound level of the vehicle in dB(A).

The EngineSpeed type shall be used to specify the engine speed in min^{-1} .

The DriveBySoundLevel type shall be used to specify the drive-by sound level of the vehicle in dB(A).

The EmissionCO type shall be used to specify the CO exhaust emission in g/km or g/kWh.

The EmissionHC type shall be used to specify the HC exhaust emission in g/km or g/kWh.

The EmissionNOx type shall be used to specify the NO_x exhaust emission in g/km or g/kWh.

The EmissionHCandNOx type shall be used to specify the HC plus NO_x exhaust emission in g/km.

The ParticulatesForDiesel type shall be used to specify the exhaust emission of particulates for diesel in g/km or g/kWh.

The CorrectedAbsorptionCoefficient type shall be used to specify the corrected absorption coefficient for diesel in min^{-1} .

The EmissionCO2 type shall be used to specify the CO_2 exhaust emission in g/km.

The CombinedFuelConsumption type shall be used to specify the combined fuel consumption of a vehicle in litre/100km.

The EnvironmentalCategory type shall be used to be of type EnvironmentalCategory and shall specify the environmental category of a vehicle.

The EuroType type shall be used to specify the environmental category of a vehicle conforming to directive EU 1988/77 as amended by EU 2003/522.

5.5.10 The official test data type

The type `OfficialVehicleTestData` shall be used for the results of an official roadworthiness test of the vehicle, e.g. a periodic motor vehicle test or an intermediate test, and is defined as follows:

```
OfficialVehicleTestData ::= SEQUENCE {
    date                DATE OPTIONAL,
    location             NameAndAddress OPTIONAL,
    odometerValue       Kilometre OPTIONAL,
    emissionCO           GpkmOrGpkw OPTIONAL,
    emissionHC           GpkmOrGpkw OPTIONAL,
    remarks              Text60 OPTIONAL,
    ...
}
```

The date component, if present, shall specify the date of a vehicle test.

The location component, if present, shall be of type `NameAndAddress` and shall specify the name and address of the vehicle test facility.

The odometerValue component, if present, shall specify the reading of the odometer in kilometres.

The emissionCO_x component, if present, shall specify the CO_x exhaust emission in g/km or g/kWh.

The emissionHC component, if present, shall specify the HC exhaust emission in g/km or g/kWh.

The remarks component, if present, shall specify any additional remarks.

5.5.11 Other types

5.5.11.1 Registration authority-specific data

```
RaSpecificData ::= Text60
```

The `raSpecificVehicleData` component, if present, may contain any additional registration authority-specific data.

5.5.11.2 Measurement units

Measurement unit types to describe a vehicle are defined as follows:

```
GpkmOrGpkw ::= CHOICE {
    gramPerKilometre   GramPerKilometre,
    gramPerKilowatt     GramPerKilowatt
}

Kilometre ::= INTEGER (0..MAX)
DB ::= INTEGER (0..MAX)
GramPerKilometre ::= INTEGER (0..MAX)
GramPerKilowatt ::= INTEGER (0..MAX)
Kilogram ::= INTEGER (0..MAX)
KilometrePerHour ::= INTEGER (0..MAX)
Kilowatt ::= INTEGER (0..MAX)
KilowattPerKilogram ::= INTEGER (0..MAX)
Litre ::= INTEGER (0..MAX)
LitrePer100Kilometre ::= INTEGER (0..MAX)
Millilitre ::= INTEGER (0..MAX)
Millimetre ::= INTEGER (0..MAX)
PerMinute ::= INTEGER (0..MAX)
```

The `GpkmOrGpkw` type shall be used to specify a value in grams per kilometre or in grams per kilowatt. The type shall only be used when a user may choose between either of these values.

5.5.11.3 Entity identifier

The type EntityId is used for a global identification of entities and is defined as follows:

EntityId ::= OBJECT IDENTIFIER

5.5.11.4 Name and address

The NameAndAddress type shall be used to specify a name and address and is defined as follows:

NameAndAddress ::= SEQUENCE {	
name	Text60,
otherNamesOrInitials	Text60 OPTIONAL,
address	Text60
}	

The name component shall specify the surname or business name of a natural or artificial person.

The otherNamesOrInitials component, if present, shall specify other name(s) or initial(s). The otherNamesOrInitials component shall be present where appropriate and absent if not.

The address component shall specify the address of the natural or artificial person.

NOTE The NameAndAddress type is compliant with EU 2003/127, which also specifies a maximum length of 60 characters.

5.5.11.5 Text

The Text60 type is used for textual ERI data and is defined as follows:

Text60 ::= UTF8String (SIZE (1..60))

The value is a UTF8 string according to ISO/IEC 8824 not exceeding 60 characters.

5.6 Encoding

When exchanged between an ERT and an ERI reader or writer, ERI data shall be encoded according to the canonical packed encoding rules (CANONICAL-PER) ALIGNED variant as defined in ISO/IEC 8825-2.

Annex A (normative)

ASN.1 module

NOTE This annex can as a whole be converted to simple text and then be compiled. It therefore contains no additional clause headers and titles.

-- VEHICLE DATA MODULE --

ElectronicRegistrationIdentificationVehicleDataModule
{iso(1) standard(0) iso24534 (24534) vehicleData (1) version (0)}
DEFINITIONS AUTOMATIC TAGS ::= BEGIN

-- Electronic Registration Identification (ERI)- Vehicle Data

-- EXPORTS everything;

IMPORTS

CS4, CS5

FROM AVIAEINumberingAndDataStructures;

-- Vehicle Identifier

VehicleId ::= CHOICE {
 vin
 raSpecificVehicleId
 ...
}

VIN, -- preferred choice
RaSpecificVehicleId,

VIN ::= CS5

RaSpecificVehicleId ::= SEQUENCE {
 wmi
 nonIsoStandardId
}

PrintableString (SIZE(3)),
PrintableString (SIZE (1..20))

-- ERI data

EriData ::= SEQUENCE {
 vehicleId
 additionalEriData
}

VehicleId,
AdditionalEriData OPTIONAL

AdditionalEriData ::= CHOICE {
 additionalEriRegistrationData
 ...,
 raSpecificAdditionalEriData
}

AdditionalEriRegistrationData, -- preferred choice
OCTET STRING (SIZE (0..1024))
-- only to be used if AdditionalEriRegistrationData is not supported

-- Additional ERI registration data

AdditionalEriRegistrationData ::= SEQUENCE {
 -- Administrative data
 registrationAuthority
 vehicleIdStatus
}

RegistrationAuthority OPTIONAL,
VehicleIdStatus OPTIONAL,

dateOfFirstRegistration	DateOfFirstRegistration OPTIONAL,	
dateOfRegistration	DateOfRegistration OPTIONAL,	
validThru	ValidThru OPTIONAL,	
chassisNumber	ChassisNumber (SIZE (1..23)) OPTIONAL,	
registrationNumber	RegistrationNumber OPTIONAL,	
<i>-- Vehicle type</i>		
vehicleMake	VehicleMake OPTIONAL,	
vehicleType	VehicleType OPTIONAL,	
vehicleTypeStatus	VehicleTypeStatus OPTIONAL,	
commercialDescription	CommercialDescription OPTIONAL,	
typeApprovalNumber	TypeApprovalNumber OPTIONAL,	
vehicleCategory	VehicleCategory OPTIONAL,	
vehicleTaxCategory	VehicleTaxCategory OPTIONAL,	
euVehicleCategoryCode	EuVehicleCategoryCode OPTIONAL,	
raSpecificVehicleClass1	RaSpecificVehicleClass1 OPTIONAL,	
raSpecificVehicleClass2	RaSpecificVehicleClass2 OPTIONAL,	
raSpecificVehicleClass3	RaSpecificVehicleClass3 OPTIONAL,	
vehicleUse	VehicleUse OPTIONAL,	
privateUse	PrivateUse OPTIONAL,	
colour	VehicleColour OPTIONAL,	
<i>-- Vehicle shape</i>		
length	VehicleLength OPTIONAL,	
width	VehicleWidth OPTIONAL,	
height	VehicleHeight OPTIONAL,	
wheelbase	Wheelbase OPTIONAL,	
bodyShape	VehicleBodyShape OPTIONAL,	
euBodyWorkType	EuBodyWorkType OPTIONAL,	
iso3833VehicleType	Iso3833VehicleType OPTIONAL,	
<i>-- Vehicle number of passengers, axles, and mass</i>		
numberOfSeats	NumberOfSeats OPTIONAL,	-- including the driver seat
numberOfStandingPlaces	NumberOfStandingPlaces OPTIONAL,	
maxNumberOfPassengers	MaxNumberOfPassengers OPTIONAL,	-- including the driver
unladenWeight	UnladenWeight OPTIONAL,	
maxDesignLadenMass	MaxDesignLadenMass OPTIONAL,	
maxAuthorizedLadenMass	MaxAuthorizedLadenMass OPTIONAL,	
maxAuthorizedTrainMass	MaxAuthorizedTrainMass OPTIONAL,	
maxAuthorizedPayload	MaxAuthorizedPayload OPTIONAL,	
numberOfAxles	NumberOfAxles OPTIONAL,	
authorizedAxleLadenMass	AuthorizedAxleLadenMass OPTIONAL,	-- from front to rear axle
axleGroupConfiguration	NumberOfAxlesForEachAxleGroup OPTIONAL,	-- from front to rear axle group
authorizedAxleGroupLadenMass	AuthorizedAxleGroupLadenMass OPTIONAL,	-- from front to rear axle group
maxTowableMassBrakedTrailer	MaxTowableMassBrakedTrailer OPTIONAL,	
maxTowableMassUnbrakedTrailer	MaxTowableMassUnbrakedTrailer OPTIONAL,	
<i>-- Vehicle engine and power source</i>		
engineId	EngineId (SIZE (1..60)) OPTIONAL,	
primeEngineType	PrimeEngineType OPTIONAL,	
enginePowerSources	EnginePowerSources OPTIONAL,	
primePowerSource	PrimePowerSource OPTIONAL,	
engineMaxNetPower	EngineMaxNetPower OPTIONAL,	
engineDisplacement	EngineDisplacement OPTIONAL,	
ratedEngineSpeed	RatedEngineSpeed OPTIONAL,	
powerWeightRatio	PowerWeightRatio OPTIONAL,	
maxSpeed	MaxSpeed OPTIONAL,	
fuelTanksCapacity	FuelTanksCapacity OPTIONAL,	
<i>-- Environmental characteristics</i>		

stationarySoundLevel	StationarySoundLevel OPTIONAL,
engineSpeed	EngineSpeed OPTIONAL,
driveBySoundLevel	DriveBySoundLevel OPTIONAL,
emissionCO	EmissionCO OPTIONAL,
emissionHC	EmissionHC OPTIONAL,
emissionNOx	EmissionNOx OPTIONAL,
emissionHCandNOx	EmissionHCandNOx OPTIONAL,
particulatesForDiesel	ParticulatesForDiesel OPTIONAL,
correctedAbsorptionCoefficient	CorrectedAbsorptionCoefficient OPTIONAL,
emissionCO2	EmissionCO2 OPTIONAL,
combinedFuelConsumption	CombinedFuelConsumption OPTIONAL,
environmentalCategory	EnvironmentalCategory OPTIONAL,
euroType	EuroType OPTIONAL,

-- Others

lastOfficialTestData

OfficialVehicleTestData OPTIONAL,

...

raSpecificData

RaSpecificData OPTIONAL

}

-- Administrative data

RegistrationAuthority

::= EntityId

VehicleIdStatus

::= Text60

DateOfFirstRegistration

::= DATE

DateOfRegistration

::= DATE

ValidThru

::= DATE

ChassisNumber

::= PrintableString (SIZE (1..23)) -- incl. 3 WMI characters

RegistrationNumber

::= CS4

-- Vehicle type

VehicleMake

::= Text60

VehicleType

::= Text60

VehicleTypeStatus

::= Text60

CommercialDescription

::= Text60

TypeApprovalNumber

::= PrintableString (SIZE (1..60))

VehicleCategory

::= Text60

VehicleTaxCategory

::= Text60

RaSpecificVehicleClass1

::= Text60

RaSpecificVehicleClass2

::= Text60

RaSpecificVehicleClass3

::= Text60

VehicleUse

::= Text60

PrivateUse

::= BOOLEAN

-- False = commercial use

VehicleColour

::= Text60

EuVehicleCategoryCode ::= CHOICE {

euVehicleCategoryL

EuVehicleCategoryL, -- conforms to EU 2002/24 and UNECE 1999

euVehicleCategoryM

EuVehicleCategoryM, -- conforms to EU 2001/116 and UNECE 1999

euVehicleCategoryN

EuVehicleCategoryN, -- conforms to EU 2001/116 and UNECE 1999

euVehicleCategoryO

EuVehicleCategoryO, -- conforms to EU 2001/116 and UNECE 1999

euVehicleCategoryT

NULL, -- conforms to UNECE 1999

euVehicleCategoryG

NULL -- conforms to EU 2001/116 and UNECE 1999

}

EuVehicleCategoryL ::= ENUMERATED {l1, l2, l3, l4, l5, l6, l7}

EuVehicleCategoryM ::= ENUMERATED {m1, m2, m3}

EuVehicleCategoryN ::= ENUMERATED {n1, n2, n3}

EuVehicleCategoryO ::= ENUMERATED {o1, o2, o3, o4}

-- Vehicle shape

VehicleLength	::= Millimetre	
VehicleWidth	::= Millimetre	
VehicleHeight	::= Millimetre	
Wheelbase	::= Millimetre	
VehicleBodyShape	::= Text60	
EuBodyWorkType	::= PrintableString (SIZE (2))	-- conforms to EU 2001/116

```

Iso3833VehicleType ::= ENUMERATED {
    passengerCar,           -- term No 3.1.1
    saloon,                 -- term No 3.1.1.1 (sedan)
    convertibleSaloon,      -- term No 3.1.1.2
    pullmanSaloon,          -- term No 3.1.1.3
    stationWagon,           -- term No 3.1.1.4
    truckStationWagon,      -- term No 3.1.1.4.1
    coupe,                  -- term No 3.1.1.5 (coupé)
    convertible,             -- term No 3.1.1.6 (open tourer, roadstar, spider)
    multipurposePassengerCar, -- term No 3.1.1.7
    forwardControlPassengerCar, -- term No 3.1.1.8
    specialPassengerCar,    -- term No 3.1.1.9
    bus,                    -- term No 3.1.2
    minibus,                -- term No 3.1.2.1
    urbanBus,               -- term No 3.1.2.2
    interurbanCoach,        -- term No 3.1.2.3
    longDistanceCoach,      -- term No 3.1.2.4
    articulatedBus,         -- term No 3.1.2.5
    trolleyBus,             -- term No 3.1.2.6
    specialBus,             -- term No 3.1.2.7
    commercialVehicle,      -- term No 3.1.3
    specialCommercialVehicle, -- term No 3.1.3.1
    specialVehicle,         -- term No 3.1.4
    trailingTowingVehicle,  -- term No 3.1.5 (draw-bar tractor)
    semiTrailerTowingVehicle, -- term No 3.1.6 (fifth wheel tractor)
    trailer,                -- term No 3.2.1
    busTrailer,             -- term No 3.2.1.1
    generalPurposeTrailer,  -- term No 3.2.1.2
    caravan,                -- term No 3.2.1.3
    specialTrailer,         -- term No 3.2.1.4
    semiTrailer,            -- term No 3.2.2
    busSemiTrailer,         -- term No 3.2.2.1
    generalPurposeSemiTrailer, -- term No 3.2.2.2
    specialSemiTrailer,     -- term No 3.2.2.3
    roadTrain,              -- term No 3.3.1
    passengerRoadTrain,     -- term No 3.3.2
    articulatedRoadTrain,   -- term No 3.3.3
    doubleRoadTrain,        -- term No 3.3.4
    compositeRoadTrain,     -- term No 3.3.5
    specialRoadTrain,       -- term No 3.3.6
    moped,                  -- term No 3.4
    motorCycle               -- term No 3.5
}

```

-- *Vehicle number of passengers, axles, and mass*

NumberOfSeats	::= INTEGER	-- including the driver seat
NumberOfStandingPlaces	::= INTEGER	
MaxNumberOfPassengers	::= INTEGER	-- including the driver
UnladenWeight	::= Kilogram	
MaxDesignLadenMass	::= Kilogram	
MaxAuthorizedLadenMass	::= Kilogram	
MaxAuthorizedTrainMass	::= Kilogram	
MaxAuthorizedPayload	::= Kilogram	
NumberOfAxles	::= INTEGER	
AuthorizedAxleLadenMass	::= SEQUENCE OF Kilogram	-- from front to rear axle

AxleGroupConfiguration	::= SEQUENCE OF INTEGER -- from front to rear axle group
AuthorizedAxleGroupLadenMass	::= SEQUENCE OF Kilogram -- from front to rear axle group
MaxTowableMassBrakedTrailer	::= Kilogram
MaxTowableMassUnbrakedTrailer	::= Kilogram

-- *Vehicle engine and power source*

EngineId	::= PrintableString (SIZE (1..60))	
PrimeEngineType	::= Text60	
EnginePowerSources	::= SEQUENCE OF PowerSource	-- primary source first
PrimePowerSource	::= PowerSource	
EngineMaxNetPower	::= Kilowatt	
EngineDisplacement	::= Millilitre	
RatedEngineSpeed	::= PerMinute	
PowerWeightRatio	::= KilowattPerKilogram	
MaxSpeed	::= KilometrePerHour	
FuelTanksCapacity	::= Litre	

PowerSource ::= ENUMERATED {

notPowered,	humanPowered,
animalPowered,	unleadedPetrol,
leadedPetrol,	diesel,
bioDiesel,	alcohol,
otherFuel,	lpg,
hydrogen,	externalElectricPower,
battery,	sun,
...	other
}	

-- *Environmental characteristics*

StationarySoundLevel	::= DB
EngineSpeed	::= PerMinute
DriveBySoundLevel	::= DB
EmissionCO	::= GpkmOrGpkw
EmissionHC	::= GpkmOrGpkw
EmissionNOx	::= GpkmOrGpkw
EmissionHCandNOx	::= GramPerKilometre
ParticulatesForDiesel	::= GpkmOrGpkw
CorrectedAbsorptionCoefficient	::= PerMinute
EmissionCO2	::= GramPerKilometre
CombinedFuelConsumption	::= LitrePer100Kilometre
EnvironmentalCategory	::= Text60

EuroType ::= ENUMERATED {non-euro, euro-1, euro-2, euro-3, euro-4, euro-5, euro-6, ... }

-- *Others*

OfficialVehicleTestData ::= SEQUENCE {

date	DATE OPTIONAL,
location	NameAndAddress OPTIONAL,
odometerValue	Kilometre OPTIONAL,
emissionCO	GpkmOrGpkw OPTIONAL,
emissionHC	GpkmOrGpkw OPTIONAL,
remarks	Text60 OPTIONAL,
...	
}	

RaSpecificData ::= Text60

-- *Measurement units*

GpkmOrGpkw ::= CHOICE {

gramPerKilometre	GramPerKilometre,
gramPerKilowatt	GramPerKilowatt
}	

Kilogram ::=	INTEGER (0..MAX)
Kilometre ::=	INTEGER (0..MAX)
Millimetre ::=	INTEGER (0..MAX)
Litre ::=	INTEGER (0..MAX)
Millilitre ::=	INTEGER (0..MAX)
Kilowatt ::=	INTEGER (0..MAX)
KilometrePerHour ::=	INTEGER (0..MAX)
PerMinute ::=	INTEGER (0..MAX)
DB ::=	INTEGER (0..MAX)
GramPerKilometre ::=	INTEGER (0..MAX)
GramPerKilowatt ::=	INTEGER (0..MAX)
KilowattPerKilogram ::=	INTEGER (0..MAX)
LitrePer100Kilometre ::=	INTEGER (0..MAX)

-- *EntityId, names and addresses*

EntityId ::= OBJECT IDENTIFIER

NameAndAddress ::= SEQUENCE {	
name	Text60,
otherNamesOrInitials	Text60 OPTIONAL,
address	Text60
}	

-- *Text*

Text60 ::= UTF8String (SIZE (1..60))

END