

ARS 1370 - Transportation of Dangerous Goods by Road

Used vehicles and ARS 1370

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Introduction

- Recap and overview of ARS 1370
- Structure and contents of ARS 1370
- Role of the competent authority
- Construction requirements for new vehicle
- Requirements for used and existing vehicles
- Important points of note

Recap and overview of ARS 1370

- ARS 1370 covers all aspects of dangerous goods transport by road
- It serves as the regulations to the harmonized Transport of Dangerous Goods by Road Act
- It is based on the ADR requirements
- It includes numerous additional “Local” requirements (such as today’s topic) not covered in ADR

ARS 1370 - Basis

- Approach and structure based on ADR
- Contains numerous adaptations additions for “local” use
- Links to UN recommendations on the transport of dangerous goods – Model regulations (UN TDG)
- Links to UN Global Harmonised system of classification and labelling of chemicals (GHS)
- References to numerous international standards (such as EN and ISO)

Contents and structure of ARS 1370

Section	Elements included
1,2,3	Scope, application, terms and definitions
4	Administrative measures, exemptions, safety and security
5	Dangerous goods classification (linked to UN TDG model regulations – “Orange book”)
6	Table of dangerous goods and special provisions
7	Transport operations (Operational requirements, training, use of tanks, maintenance)
8	Emergency information systems (Placards, documents)
9	Packages (Linked to UN GHS – “Purple book”)
10	Construction of new vehicles and tanks
11	Annexures

The competent authority

- Defined as:
“national body or authority designated, or otherwise recognized, for the control or regulation of a particular aspect of the transport of dangerous goods “
- There can be more than one Competent Authority responsible for specific elements

The competent authority

- Functions

- Type approval of tanks
- Construction sign-off for tanks and deviations from requirements
- Countersigning the tank certificate of compliance and stamping the data plate
- Re-certification of “non-compliant” tanks
- Allocation of tank code to non-compliant tank
- Certification of major periodic and exceptional inspections
- Operational inspections
- Classification if dangerous goods (if required)
- Approval of driver training and issue of driver training certificates

Tank and vehicle use

- This is governed by section 7 of ARS 1370
- Important part of this section regarding vehicle and tanks:
 - Tank code required for transporting a substance
 - Vehicle type required for a substance
- Minimum standard for “non-complaint” vehicles and tanks
- Exceptional inspection requirement for “previously-owned” tanks and vehicles.

Tank code and vehicle type

- Every substance requires a tank complying with the stated 4-character tank code
- Tank code shown in the DG list in annexure A, column 16
- A substance also needs to use a specific vehicle type as shown in column 15 of the same table
- Special tank provisions apply as stated in column 17 of the same table. Details are found in annexure E

Tank code - Explained

Tank code – Other than for class 2 (gases)

Character	Allowable entries	What it indicates
First	L or S	Whether the substance is in liquid or solid form
2nd	G, 1,5, 2,65, 4, 10, 15 or 21	The calculation pressure used to calculate the material thickness
3rd	A, B, C, or D	The number of closures allowed and the loading/discharge method
4th	V, F, N, H	The type of pressure relief required

Tank code – For class 2 (gases)

Character	Allowable entries	What it indicates
First	C, P or R	Compressed, liquefied or refrigerated
2nd	X or 22	The calculation pressure used to calculate the material thickness. “X” is a number associated with the specific gaseous substance
3rd	B, C, or D	The number of closures allowed and the loading/discharge method
4th	N, H	The type of pressure relief required

Hierarchy of tank codes

- Tanks with “higher” tank codes can be used in place of lower codes

Substance type	Hierarchy	Allowance
Liquid	G, 1,5, 2,65, 4, 10, 15, 21	May use any of the next higher numbers
	A, B, C, D	May use any of the next following characters
	V, F, N, H	May use any of the next following characters
	Example	<p>LGBF may use L1,5BN, L1,5BH or higher pressure rating tanks with the last character of N or H</p> <p>L4BN may use L10BH and higher pressure rating tanks with last character of N or H</p>
Solid	G, 1,5, 2,65, 4, 10, 15, 21	May use any of the next higher numbers
	A, B, C, D	May use any of the next higher characters
	V, F, N, H	May use any of the next higher characters
	Example	<p>SGBF may use S1,5BN, S1,5BH or higher pressure rating tanks with the last character of N or H</p> <p>S4BN may use S10BH and higher pressure rating tanks with last character of N or H</p>

Vehicle type - *Explained*

Allowable types	What it indicates
AT	For all dangerous goods except flammable substances (Classes 2.3, 3, 4) or those with subsidiary risks of these classes
FL	For flammable substances (Classes 2.3, 3 and 4) and those with subsidiary risks of these classes
EX	Explosives (Class 1)

Elements required for various vehicle types

Example

Technical specification		Vehicle types		
Clause	Requirement	AT	FL	EX
10.2.2.1	Electrical wiring - General	X	X	X
10.2.2.2	Electrical wiring - Wiring to the rear of the cab	X	X	X
10.2.2.3	Battery master switch		X	X
10.2.2.4	Batteries	X	X	X
10.2.2.5	Permanently energised circuits		X	X
10.2.2.6	Lighting		X	X
10.2.2.7	Electrical connections for trailers	X	X	X
10.2.2.8	Location of electrical equipment		X	X
10.2.3	Exhaust system protection		X	X

Tank code and vehicle type - *Examples*

UN no	Proper Shipping Name	Class	Packing group	Labels	Vehicle type	Tank code	Tank special provision
(1)	(2)	(3)	(5)	(6)	(15)	(16)	(17)
1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II	3	FL	LGBF	TU9
1230	METHANOL	3	II	3 6.1	FL	L4BH	
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	I	3	FL	L4BN	
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S. (vapour pressure at 50°C more than 110 kPa)	3	II	3	FL	L1.5BN	
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S. (vapour pressure at 50°C not more than 110 kPa)	3	II	3	FL	LGBF	
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	III	3	FL	LGBF	
1830	SULPHURIC ACID with > 51% acid	8	II	8	AT	L4BN	TU42

TU42 - Tanks with a shell constructed of aluminium alloy, including those with a protective lining, shall only be used if the pH value of the substance is not less than 5,0 and not more than 8,0.

Allowed tank standards – Section 10.1

- Must comply with ARS1370
- Competent authority can allow tanks constructed to other standards
- Must comply with minimum requirements set out in ARS 1370
- Competent authority may allow tanks to be used complying with the following:
 - *ADR 2005 or later*
 - *US DOT 2005 or later*
- *Must provide same level of safety as ARS 1370*

Tank built without a tank code – Section 10.1

- US DOT does not include for 4-character tank codes
- Competent authority may allocate a tank code if the tank complies with the tank code requirements of ARS 1370
- Attach a plate showing the information
- Issue a certificate in accordance with ARS 1370

Tank not built to any standard – Section 10.1

- Competent authority may certify such a tank for compliance with an accepted standard
- Attaches a tank plate in compliance with the standard applied
- Issues a certificate in accordance with ARS 1370 (10.3.18)

Certification of tank not built to any standard

Involves the following under the control of the competent authority:

- ✓ Verification of the design requirements
- ✓ Verification of material used
- ✓ Verification of welded joints by suitable non-destructive tests and inspections
- ✓ Compliance of equipment fitted
- ✓ Allocation of a suitable tank code.
- ✓ Hydraulic pressure tests
- ✓ Elements covered by a major periodic inspection as included in section 7 of ARS 1370

Use of tanks – Section 7

- Existing tanks not complying with the listed standards, must be re-certified in accordance with the certification requirements of section 10
- Listed standards are:
 - ARS 1370
 - ADR 2005 or later
 - US DOT 2005 or later
 - SANS 1518:2004 or later
- Must be done withing 5 years after implementation of ARS 1370 and valid for 36-month periods/intervals
- *Next slide shows and extract from Annexure I.1 related to the tank and equipment minimum standard*
- *One after that is Annexure I.2 related to the vehicle*

Item	Requirement	References	Tank Type
Tank standard	<p>Minimum standard of compliance: ADR 2005 or later, or US DOT 2005 or later, or SABS1398:1996, or SABS1518:1996, or SANS1518:2004 or later, or TZS 1114:2009 or later, or ZS 371:2008 or later, or ZWS 995:2016 or later.</p> <p>Relevant to pressure vessels only if not compliant with the above: ASME VIII BS5500 AD Merkblatter</p>	10.4	All tanks
Tank code	4-character tank code in accordance with this standard	7.3.2 7.3.3	All tanks
Tank marking	<p>Tank to be fitted with a durable plate in accordance with the applicable tank standard indicating at least: The tank standard The tank code The name of the manufacturer The date of manufacture The test pressure The gross capacity of each compartment</p>		All tanks
Tank load plates	Compliance with the requirements of this standard.	10.3.16	All tanks
Manhole covers	<p>Manhole covers will be a minimum of 400mm in diameter to allow entry into the tank. Manhole covers will provide a liquid-tight seal when closed. Latches for openable covers will preferably be of a self-latching type</p> <p>Compliance with: EN13317 EN13314 or US DOT 178.345</p>	10.4.7.5	All tanks

Item	Requirement	References	Vehicle Type
Battery isolator switch	Compliance with the requirements of this standard	10.2.2.5	FL and EX
Electrical wiring	Compliance with the requirements of this standard	10.2.2.1 10.2.2.2	All vehicles
Location of electrical equipment	Compliance with the requirements of this standard	10.2.2.8	FL and EX
Electrical continuity	Compliance with the requirements of this standard	10.2.2.7	FL and EX

Inspection of previously-owned tanks – *Section 7*

- In terms of ARS 1370, is focused on when a local vehicle and tank is sold to another operator
- An exceptional inspection is required (Annexure B.7)
- Includes:
 - ✓ Inspection and test to ensure compliance with the original standard of construction
 - ✓ Inspection and testing of equipment such as manhole covers, valves, vents etc. to ensure compliance
 - ✓ Inspection of general construction requirements for the vehicle (Such as electrical installations, mudguards, ladders, pipes, etc.)
 - ✓ Construction documentation
 - ✓ Periodic inspection and testing documentation

How to treat a previously-owned imported tank?

- ARS 1370 does not directly address this
- It is not a problem if the tank and vehicle were constructed to the listed acceptable standards. Then one simply does an “exceptional inspection”
- If the tank and vehicle were not constructed to one of the listed acceptable standards, it is suggested to:
 - ✓ Perform the “exceptional inspection” and
 - ✓ At the same time then to perform the required re-certification

Remember..... The Competent Authority can deviate depending on operational and practical considerations