ANNEX 5 **SPECIFIC REQUIREMENTS FOR TRUCK MIXERS**	
1.0	**SCOPE**
1.1	This annexure specifies performance and functional requirements for Truck mixers used for producing concrete or mortar and for delivering concrete, mortar or the materials of the mixture to worksites necessary for roadworthiness of N2 & N3 category vehicles as defined in IS 14272 amended from time to time.
1.2	Truck mixers as defined in this standard shall necessarily meet the requirements specified in Part 1 of AIS 163 amended from time to time. Additionally, the vehicles shall meet the requirements specified in this Annexure for those special purpose duty application for which the vehicle is intended to perform.
1.3	Manufacturer may have the option to refer ISO 19711-1 and ISO 19711-2 as recommendatory guidelines for commercial specifications and constructional requirements for truck mixers
	Note: Latest version of standards (AIS, IS, ISO etc.,) referred in this Annexure shall be checked for compliance
1.4	Any alteration or modification in already type approved vehicle to build Truck mixer shall be carried out in accordance with sound engineering practices and in compliance with Central Motor Vehicles Act 1988 and Central Motor Vehicles Rule, 1989, as amended from time to time.
2.0	**REFERENCE**
2.1	ISO 19711-1:2023 Building construction machinery and equipment - Truck mixers - Part 1: Terminology and commercial specifications
2.2	ISO 19711-2:2023 Building construction machinery and equipment - Truck mixers - Part 2: Safety requirements
3.0	**DEFINITION**
3.1	In addition to the definitions available in Part 1 of this standard, following definition shall apply to Truck Mixers.
3.2	**"Approval of a Vehicle"** - The approval of Truck mixer with regard to its special function as defined in Clause Nos. 3.2 of this Annexure
3.3	**"Truck mixer"** means drum-shaped mixer device mounted on a chassis capable of producing the mixture and delivering the mixture or the materials of the mixture to worksites. The materials of the mixture that can be delivered by a truck mixer include cement, aggregate (sand, gravel, stone) and rock before processing.
4.0	**APPLICATION FOR TYPE APPROVAL** The application for type approval of a vehicle type shall be submitted by the vehicle / appliance manufacturer along with at least the details given in Appendix 1 to this annexure

5.0	**SPECIFIC REQUIREMENTS**
5.1	Truck mixers shall be Special Purpose Vehicle with following specifications:
5.1.1	Maximum rear overhang shall be 80% of wheelbase
5.1.2	Maximum speed shall be 60 kmph
5.1.3	Risk of slipping - The surface of means of access, e.g. steps, working platform, shall be slip resistant
5.1.4	Fixed guard shall be provided to protect the operator from the risk of entanglement, crushing and shearing
5.1.5	Parts or surfaces that reach temperatures >75 °C under normal operating conditions shall be designed, constructed, positioned, or provided with a thermal guard to minimize the risk of contact from the workstation
5.1.6	Truck mixers with combustion engine shall conform to the requirements of electromagnetic compatibility as specified in AIS 004 Part 3 or ISO 13766 (Part 1) amended from time to time
5.1.7	Manual control devices for emergency operation, for example, to discharge the drum, shall be protected against unintended use, for example, by a fixed guard, a distance guard or the structure of the machinery acting as a guard
5.1.8	For the illumination of the work station, at least one working light shall be provided.
5.1.9	Vehicle shall be fitted with reverse parking alert system as per the requirements defined in AIS 145 amended from time to time
5.1.10	The vehicle shall be loaded to its technically permissible maximum mass distributed between the axles as declared by the vehicle manufacturer. Where provision is made for several arrangements of the mass on the axles, the distribution of the maximum mass between the axles shall be such that the mass on each axle shall not exceed maximum permissible mass for each axle.
5.1.11	TCD / TCCD requirements shall be compliant with IS 12222: 2011 as amended from time to time
5.2	**Control-system requirements (electrical and hydraulic)**
5.2.1	**General**
5.2.1.1	**Guards/covers** - Guards intended to be opened once a day or more (e.g. hopper grill-type guards) shall be interlocked so that the dangerous movement (e.g. movement of material distribution valve in the hopper or of the agitator) automatically stops within 0.5 s after they are opened. However, if this is used less than once a day, the guard may be a fixed guard.
5.2.1.2	**Movable machine parts** - Machine parts that safeguard dangerous movements and are intended to be moved for access once a day or more shall be considered as moveable interlocking guards. The dangerous movements shall automatically stop within 0.5 s after the guards are opened.

5.3	**Stop system**		
5.3.1	**Emergency-stop device** - The machine should be equipped with an emergency-stop device. Machines shall have an emergency-stop device at each control station. Cable remote control stations are considered as being control stations on the machine.		
5.3.2	**Stop system for cable-less remote control** - The cable-less remote control shall be equipped with a stop function.		
5.4	**Provisions for consideration for CMVR requirements exemption** –		
	Testing Agency may only grant exemption(s) if the manufacturer demonstrates that the vehicle cannot meet the below requirements due to its special body construction.		
	a) External Projection as per IS 13942 provided there shall not be any projection at the rear beyond RUPD or front beyond FUPD or sides beyond SUPD / LUPD in vehicle actual running condition on road		
	b) Installation of lighting and light-signalling devices as per AIS-008 (Rev 1)		
	c) Spray Suppression System as per AIS-013 (Rev.1)		
	d) Rear Under Run Protection Device as per IS 14812		
	e) Vehicle Lateral Protection Side SUPD as per IS 14682		
	f) Approval of Retro-Reflecting Devices as per AIS-057 (Rev.1)		
	g) Constant Speed Fuel consumption test as per IS 11921 exempted		
	h) Retro-Reflective marking installation as per AIS 090.		
5.5	**Stability ratio** - It should never be more than one. The usual recommended stability ratio is 0.7 to 0.9. The stability ratio can be calculated as below:		
	Stability ratio	=	2h x Tan 23°/ b
	moment W.R.T. ground	=	2h x Tan 23°
	h	=	CG ht. Under laden condition
	b	=	Rear outer tyres center distance in m
5.5.1	Stability of fire tenders shall be validated by physical method or simulation method or by calculation as agreed by test agencies.		
6.0	**STATUTORY PLATE**		
	Each appliance shall be clearly and permanently marked with the following information:		
	Manufacturer's name, or trade-mark, if any;		
	Year of manufacture.		

APPENDIX 1 TO ANNEX 5
INFORMATION TO BE SUBMITTED AT THE TIME OF APPROVAL OF TRUCK MIXER

Sl. No.	General	Details
1.0	**Manufacturer details**	
1.1	Name and address of the manufacturer	
1.2	Name of variants, if any:	
1.3	Plant/(s) of manufacturer:	
2.0	**Description of vehicle under test**	
2.1	Vehicle category	
2.2	Vehicle type	
2.3	Vehicle manufacturer	
2.4	CMVR certificate no	
2.5	Chassis no	
2.6	Engine no	
2.7	Engine displacement	
2.8	Fuel type	
2.9	Engine Power	
2.10	Dimensions (mm)	
2.10.1	Length	
2.10.2	Width	
2.10.3	Height	
2.10.4	Ground clearance	
2.10.5	Wheelbase	
2.11	Gross vehicle weight	
3.0	**TRUCK MIXER**	
3.1	mixer type	
3.2	rated capacity of the drum	

3.3	Maximum drum speed	
3.4	Drum length	
3.5	Drum diameter	
3.6	Type of drum drive	
3.7	Water tank capacity	
3.8	Mixer device mass	