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Indian Standard

GLOSSARY OF TERMS RELATING TO
CONCRETE MIXERS

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

GLOSSARY OF TERMS RELATING TO CONCRETE MIXERS

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(Continued on page 2)

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IS : 11386 - 1985

(Continued from page 1)

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(Continued on page 7)

*Shri M. Narainaswamy acted as the Chairman at the meeting in which this standard was finalized.

Indian Standard

GLOSSARY OF TERMS RELATING TO CONCRETE MIXERS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 August 1985, after the draft finalized by the Construction Plant and Machinery Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Proper and efficient mixing of concrete is an important factor affecting the quality of concrete and the progress of concrete operations. Thorough mixing of concrete ingredients would depend to a large extent on the efficiency of mixer. A number of standards have, therefore, been brought out on the different types of concrete mixers (and a few more are under preparation) with a view to guiding the manufacturers and purchasers in obtaining concrete mixers with guaranteed minimum performance. There are number of technical terms connected with concrete mixers and quite often requires clarifications to clearly define different types of mixers and to give precise meaning to the stipulation in the standards and other technical documents relating to concrete mixers. This standard has been prepared with the object of unifying various technical terms and expressions in connection with the manufacture, use and classification of concrete mixers.

1. SCOPE

1.1 This standard contains definitions of terms relating to concrete mixers.

2. DEFINITIONS

2.1 Batch Mixer — A mixer with cyclic operations charged with materials in batches. Each batch is charged only after the previous batch is discharged out.

2.2 Continuous Mixer — A mixer in which charging of the materials is continuous with a continuous discharge of finished concrete as well.

2.3 Datum Ground Level — The level on which the road wheels stand, or if rail wheels are fitted, the level of the top of rail.

2.4 Discharge Point

2.4.1 In a tilting mixer, the lowest point of drum opening when the drum is tilted to the highest position at which it will effectively discharge its batch.

2.4.2 In a non-tilting mixer, the lowest point of the standard movable discharge chute when in its discharge position, or the lowest point of a standard fixed chute extension, if fitted.

2.4.3 In the reversing drum type, the lowest point of discharge opening, or the lowest point of the standard fixed chute extension, if fitted.

2.5 Drum Speed — The number of revolutions per minute of the drum beyond which segregation of the ingredients takes place.

2.6 Duration of Mixing — The time in seconds from the moment the charging with all ingredients is terminated to the start of the discharge of the concrete.

2.7 Forced Action Mixer

- a) *Batch Type* — A forced action mixer of a batch type has pan (or trough) and set of blades (or paddles) moving relatively one to the other. The mixing action is accomplished by the relative movements between the mix, the pan and the blades (or paddles).
- b) *Continuous Type* — In a continuous type, the mixer consists of a drum in which there are two horizontal parallel shafts with blades. Mixing action takes place by the simultaneous contrary revolutions of the parallel shafts.

2.8 Free-Fall Mixer (Drum Type) — A free-fall mixer has a drum with series of blades fitted internally, which rotates about a horizontal or inclined axis. The mixing action is achieved by causing each part of the mix to be lifted in turn as the drum rotates and at a certain point in each revolution allowing it to be dropped or directed towards the bottom of the drum where it combines with other parts of the mix in continuously changing sequence to form a homogeneous mix.

2.9 Free-Fall Continuous Mixer — A mixer with a cylindrical drum of the non-tilting type rotating about a horizontal axis. The ingredients fed at one end by a funnel or hopper are moved by blades fixed to the drum to the opposite discharging end, the charging, mixing and discharging takes place continuously.

2.10 Gyramixer — A portable pan mixer in which the ingredients are mixed by gyratory action of blades in a horizontal stationary mixing pan.

2.11 Loading Point — The loading point is used to establish the loading height above the datum ground level and is that point to which material should be raised in order to commence charging the loading skip or mixer itself as applicable.

2.12 Mixing Cycle — This is the time taken to mix one batch satisfactorily from the moment the materials are discharged into the mixer until the mixed concrete is completely discharged. The mixing cycle shall comprise the following:

- a) *Charging Time* — It is the time required for charging all the unmixed materials including water into the mixer.
- b) *Mixing Time* — It is the time taken to mix to the required consistency, batch of unmixed materials after the charging is complete.
- c) *Discharge Time* — It is the time taken from opening the discharged gate and closing after complete discharge of the mixed material.

2.13 Nominal Capacity

2.13.1 In a batch type of mixer, the nominal capacity is the volume in litres of mixed concrete which may be held and mixed satisfactorily in one batch.

2.13.2 In a continuous type of mixer, the nominal capacity is the output of mixed concrete given in m³/h.

2.14 Non-tilting Mixer (Batch Type) — The free-fall mixer in which the drum rotates in one direction on a horizontal axis and comprises a single compartment drum having two openings.

2.15 Pan Type Concrete Mixer — The pan mixer is an annular mixer of particular low lime and compact design. The mixing arm consisting of steel bar and fitted with mixing paddles, rotate in the annular mixing chamber. The material to be mixed is moved quickly from internal and external zones to the central zone and turned round in an extensive manner in continuously changing direction, including pan bottom to upwards. The mix is thus in continuous motion which results in faster homogenization at short mixing time. The annular pan rotates about a vertical axis in which steel bars and mixing paddles which are concentrically placed, rotate in the mixing chamber.

2.16 Reversing Drum Type — The free-fall mixer in which the drum rotates on a horizontal axis, the direction being reversed to discharge.

2.17 Stationary Mixer — A mixer not provided with wheels and usually built into a mixing plant.

2.17.1 Portable Mixer — A mixer fitted with a simple form of wheels.

2.17.2 Trailer Mixer — A mixer fitted with road wheels so that it may travel or be towed efficiently and safely at maximum statutory speed.

2.18 Tilting Mixer (Batch Type) — The free-fall mixer in which the drum has an inclinable axis and is a single compartment.

2.19 Transit Agitator — A mobile equipment mounted on a truck or other suitable haulage unit, in which freshly mixed concrete may be agitated by rotating the drum continuously or intermittently during transit.

2.20 Transit Mixer — A mixer generally mounted on truck or similar mobile haulage unit capable of mixing ingredients of a partly mixed concrete and agitating the mixture during transit from a concrete batching plant to the point of placement of concrete.

2.21 Two Cone Drum Mixer (Batch Type) — A free-fall mixer with an inclined drum in the shape of two truncated cones, charged and discharged from either side of the mixing drum. Blades spiralling the opposite directions in the two drums move the concrete ingredients towards each other.

2.22 Vibro Mixer — A mixer in which vibration of the concrete is done in addition to mixing by the rotation of a special unbalanced shaft within the main hollow shaft. Vibro mixer produces concrete of higher strength form stiff mixes than that of concrete mixed in the ordinary way.

2.23 Water Measurement

2.23.1 Automatic Water Tank — A tank which, on manipulation of a valve is filled by and discharges a predetermined quantity of water, according to a predetermined setting, without reference to a gauge indicating the water level.

2.23.2 Water Meter — A meter which measures the amount of water entering a mixer where it is controlled by a valve operated either manually or automatically.

(Continued from page 2)

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²