



EIE INSTRUMENTS PVT. LTD.
(An ISO 9001:2015 Certified Company)

TUMBLER DRUM TEST APPARATUS - WITH PRESETTABLE DIGITAL COUNTER



Confirming to IS 6495: 1984 : *(Method of Tumbler Test for Iron Oxides: Lump Ores, Sinter and Pellets)* / **ISO 3271:2007** – *Iron ores — Determination of tumbler strength*

1. Tumbler Drum Assembly

Drum Construction

- The apparatus **shall consist of a cylindrical rotating drum** having:
 - **Internal diameter: 1000 mm**
 - **Internal length: 500 mm**
- The drum **shall be fabricated from steel plate of minimum 5 mm thickness.**
- The drum **shall be replaced** when the wall thickness at any point is reduced to **3 mm due to wear.**

Lifters

- The drum **shall be fitted with two longitudinal lifters**, positioned **180° apart.**
- Each lifter **shall be an angle section of 50 mm × 50 mm × 5 mm**, securely welded over the full internal length.
- Lifters **shall be oriented with the legs pointing towards the drum axis and opposite to the direction of rotation**, forming a clear lifting shelf.
- Lifters **shall be replaced when the effective shelf width reduces below 47 mm.**
- The design **shall prevent accumulation of material** between lifters and drum shell.

Drum Door

- The drum **shall be provided with a flush-fitting door** that forms a **smooth, continuous internal surface.**
- The door **shall be rigidly secured during operation** to prevent material loss or leakage.

Mounting & Drive

- The drum **shall rotate on stub axles** welded to the drum ends using flanged construction to maintain a smooth internal profile.

- The apparatus **shall be motor-driven** with a **minimum motor power of 1.5 kW**, ensuring:
 - Attainment of full operating speed within one revolution
 - Uniform rotation
 - Complete stopping within one revolution

Rotation & Control

- **Rotational speed: 25 ± 1 rpm**
- **Total revolutions: 200**
- The system **shall be equipped with:**
 - A **digital revolution counter**
 - An **automatic shut-off mechanism** after completion of preset revolutions

Installation Height

- The height of the drum axis **shall not exceed 700 mm** from floor or receiving container level to avoid additional degradation during sample discharge.

2. Electrical Requirements

- Power supply: **230 V AC, Single Phase**
- Total connected load: ≥ 1.5 kW
- Emergency stop and overload protection **shall be provided.**

3. Mandatory Sieves (as per IS 6495:2019) (At extra cost)

Square mesh sieves with the aperture size: 40 mm, 25 mm, 16 mm, 10 mm, 6.3 mm, 500 μ m

4. Weighing Equipment

- **100 kg capacity balance**, sensitivity $\leq 0.1\%$
- **20 kg capacity balance**, sensitivity $\leq 0.1\%$
- **1 kg capacity balance**, sensitivity $\leq 0.1\%$

5. Sample Preparation Accessories

Riffle Divider

- A **riffle divider with minimum 60 mm slot opening shall be provided** for pellet samples up to 30 mm size.

Drying Equipment (External)

- Hot air oven capable of **105 ± 5 °C** for drying test samples prior to testing.
- Sample receiving trays or bins
- Sample transfer shovels
- Dust collection hood (recommended for pellet abrasion testing)
- Calibration tachometer (for RPM verification)
- Wear thickness gauge (for drum & lifter inspection)
- Safety guarding and interlocks
- Spare lifters
- Spare drive belts / couplings

Technical Specification

•Motor	: 2-HP
•Stop	: AUTO STOPS on completion of pre-set count
•Structure	: MS Channels & Angles
•Drum Size	: 1000 MM x 500 MM x 5 MM Thick
•Drum Plate Thickness	: Side portion of 10 mm and 6 mm for periphery
•RPM	: 25 rpm
•Steel angle Lifter	: 50 X 50 X 5 mm
•Height of drum axis	: 700 mm

- Overall Dimensions in Inches (L x W x H) : 37 X 60 X 58
- Total weight : 600 kg
- Electrical Power requirement : Single phase, 230 volts

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