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Indian Standard

**METHOD OF MEASUREMENT OF
BUILDING AND CIVIL ENGINEERING WORKS**

PART VI REFRACTORY WORK

(Second Revision)

(Incorporating Amendment Nos. 1 & 2)

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Price Group 2

*Indian Standard***METHOD OF MEASUREMENT OF
BUILDING AND CIVIL ENGINEERING WORKS****PART VI REFRACTORY WORK***(Second Revision)*

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Indian Standard
METHOD OF MEASUREMENT OF
BUILDING AND CIVIL ENGINEERING WORKS
PART VI REFRACTORY WORK
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Part VI) (Second Revision) was adopted by the Indian Standards Institution on 8 February 1974, after the draft finalized by the Civil Works Measurement Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Measurement occupies a very important place in the planning and execution of any civil engineering work from the time of first estimates to the final completion and settlement of payments for a project. Methods followed for measurement are not uniform and considerable differences exist among practices followed by different construction agencies and also among various Central and State Government departments. While it is recognized that each system of measurement has to be specifically related to administrative and financial organizations within a department responsible for the work, a unification of various systems at technical level has been accepted as very desirable specially as it permits a wider range of operation for civil engineering contractors and eliminates ambiguities and misunderstanding of various systems followed.

0.3 Among various civil engineering items, measurement of buildings was the first to be taken up for standardization and this standard having provisions relating to building work was first published in 1958 and was revised in 1964. In the course of usage of this standard by various construction agencies in the country, several clarifications and suggestions for modifications were received and as a result of study, the technical committee responsible for this standard decided that its scope besides being applicable to buildings should be expanded to cover method of measurement of civil engineering works like industrial and river valley projects.

0.4 Since different trades are not related to one another, the Sectional Committee decided that each trade as given in IS : 1200-1964* shall be issued separately as a different part. This will also be helpful to users in using the specific standard. This part covers method of measurement of refractory work.

*Method of measurement of building works (*revised*).

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0.5 This edition 3.2 incorporates Amendment No. 2 (May 1986). Side bar indicates modification of the text as the result of incorporation of the amendment. Amendment No. 1 had been incorporated earlier.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a measurement, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part VI) covers the method of measurement of refractory work.

2. GENERAL RULES

2.1 Clubbing of Items — Items may be clubbed together provided that the break up of the clubbed items is agreed to be on the basis of the detailed description of the items stated in this standard.

2.2 Booking of Dimensions — In booking dimensions, the order shall be consistent and generally in the sequence of length, breadth or width and height or depth or thickness.

2.3 Measurement — Unless otherwise stated hereinafter all work shall be measured net in the decimal system, as fixed in place, as given in 2.3.1 to 2.3.4.

2.3.1 Dimensions shall be measured to the nearest 0.01 m.

2.3.2 Areas shall be worked out to the nearest 0.01 m².

2.3.3 Cubic contents shall be worked out to the nearest 0.01 m³.

2.3.4 Weight shall be worked out to the nearest 0.001 tonne.

2.4 Description of Items — The description of each item shall, unless otherwise stated be deemed to include, where necessary, conveyance, delivery, handling, unloading, storing waste, return of packing, necessary scaffoldings, platforms, walkways, tools and tackles, stacking item wise, opening of packages and disposal of wood, straw etc. This shall also include use of necessary equipments, safety appliances, lighting at place of work, ventilation facilities, where necessary.

2.5 Waste — All measurement of cutting shall, unless otherwise stated, be deemed to include consequent wastage.

2.6 Deduction — Where a minimum area is defined for the deduction of opening voids or both, such area shall refer only to openings or voids within the space measured.

*Rules for rounding off numerical values (*revised*).

2.7 Work to be Measured Separately — The refractory work to be carried out in hot conditions shall be so specified indicating range of temperature and work shall be measured separately.

2.8 Bills of Quantities — The bills of quantities shall fully describe the materials and workmanship and accurately represent the work to be executed.

3. METHOD OF MEASUREMENT

3.1 The items of work wherever necessary and unless otherwise stated shall be deemed to include the following:

- a) Dressing of the bricks/blocks including cutting, grinding and chipping to achieve proper thickness of joint and alignment as required in the drawings for all classes of work.
- b) Dressing of bricks/blocks including cutting, grinding and chipping wherever necessary for expansion joints, sliding joints, binding joints, etc, to ensure proper curvature and keying in arches, curved surface, etc.
- c) Forming of expansion joints, sliding joints, etc, excluding filling (for filling *see* 3.8).
- d) Finishing, pointing, clearing and cleaning of masonry joints, gaps, hollows, cavities, opening passages, ducts etc. for up to 0.1 m^2 each (*see* 3.3).

3.2 The refractory and insulation bricks and blocks, types of mortars and powders to be used shall be fully described. Other auxiliary and filling materials, such as paper, cardboard, asbestos materials, mineral wool, water glass, coke pitch, carbon mass, special sands, crumbs, powders, admixtures and plasticizers required to be incorporated in the works shall also be described.

3.3 All refractory work unless otherwise specified shall be measured in cubic metres. The measurement shall be inclusive of mortar joints, expansion joints and sliding joints. Deductions for voids, openings, etc, shall be made only when the area of each such opening and voids exceeds 0.01 square metre.

3.4 The method of measurement on volumetric basis as specified in 3.3 shall also apply for castable refractory work or refractory concreting, rammed mass filling; filling of loose insulation materials, such as mica crumbs, slag wools, asbestos powders, fireclay mass and carbon mass.

3.5 Where the brick/blocks lining is separated from the shell or wall surface by the use of asbestos, cardboard, etc, such insulating material shall be fully described and measured separately in square metres.

3.6 Where insulation plaster is applied over the refractory surface, the same shall be fully described and measured separately in square metres.

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3.7 Refractory grout work shall be fully described and measured in cubic metres on the basis of theoretical volume to be grouted.

3.8 Filling of expansion joints, sliding joints with paper, cardboard, etc, shall be fully described and measured separately in running square metres.

3.9 Unless otherwise stated fixing of anchors, hangers and supporting steel members for the refractory brickwork shall be separately measured [*see IS : 1200 (Part VIII) - 1974**].

3.10 Unless otherwise stated painting of finished masonry with cement or fireclay mortars, water glass, etc, shall be measured separately [*see IS : 1200 (Part XIII) - 1971†*].

*Method of measurement of building and civil engineering works : Part VIII Steel work and iron work (*third revision*).

†Method of measurement of building and civil engineering works : Part XIII Plastering and pointing (*second revision*).

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