

फाउंड्रीज में उपयोग के
लिए ट्रोवल्स - विशिष्टि
ढलाई में प्रयुक्त क्रोमाइट रेत — विशिष्टि
(पहला पुनरीक्षण)

**Trowels for Use in Foundries —
Specification**
(First Revision)

ICS 77.180

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Price Group 6

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Foundry and Steel Castings Sectional Committee had been approved by the Metallurgical Engineering Division Council.

The standard was originally published in 1970. This revision has been brought out to bring the standard in the latest style and format of the Indian Standards. In addition, the following changes have been made:

- a) Reference clause has been included;
- b) In 4.1, blade material is substituted with C80U of IS 3748 : 2022 for 80T3 of IS 3748;
- c) In 4.2, tang material is substituted with E450, E550, E600 and E650 of IS 2062 for St 58 – HT IS 961;
- d) In 4.3, handle material is substituted with Grade PF2A1 of IS 1300 for Grade 2 of IS 1300;
- e) In 7, hardness testing standard IS 1586/ISO 6508-1 is included; and
- f) Marking clause has been modified.

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

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 test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***TROWELS FOR USE IN FOUNDRIES — SPECIFICATION***(First Revision)***1 SCOPE**

This standard specifies the requirements for trowels for use in foundries for making, finishing and repairing the moulds.

2 REFERENCE

The standards listed in Annex A contain provisions, which through references in this text constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 DIMENSIONS

The types and dimensions of trowels shall be as specified in Table 1 to Table 5.

4 MATERIAL**4.1 Blade**

The material shall be in accordance with tool steel C80U of IS 3748.

4.2 Tang

The tang material shall be high tensile steel with grade designation E450, E550, E600 and E650 of IS 2062.

4.3 Handle

The handle is made of phenolic moulding material shall be in accordance with Grade PF2A1 of IS 1300.

5 ASSEMBLY

The tang shall be rigidly joined with blade either by welding or riveting.

6 COATING**6.1 Blades**

The blades shall be electroplated in accordance to IS 1337.

6.2 Handle

The handle shall be properly coated with lacquer.

7 HARDNESS

The hardness of blade, when tested in accordance

to IS 1586/ISO 6508-1 shall be HRC 50 to 55 on the blade.

8 TOLERANCES**8.1 Blade**

The blade shall have values of standard tolerance grade as **IT 14** of IS 919 (Part 1)/ISO 286-1 and IS 919 (Part 2)/ISO 286-2.

8.2 Tang and Handle

The tang and handle shall have values of standard tolerance grade as **IT 16** of IS 919 (Part 1)/ISO 286-1 and IS 919 (Part 2)/ISO 286-2.

9 General

Heat treated surfaces shall be free from cracks, burrs, scales, rust, etc.

10 SUPPLY

General requirements relating to supply of the materials to this specification shall be as laid down in IS 1387.

11 PACKING

Wrapped separately in moisture-proof paper. Protective oil shall be applied on tang. Tools of the same type and size shall be placed in cartons containing twelve tools. Cartons may be placed in wooden boxes weighing not more than 50 kg overall.

12 MARKING

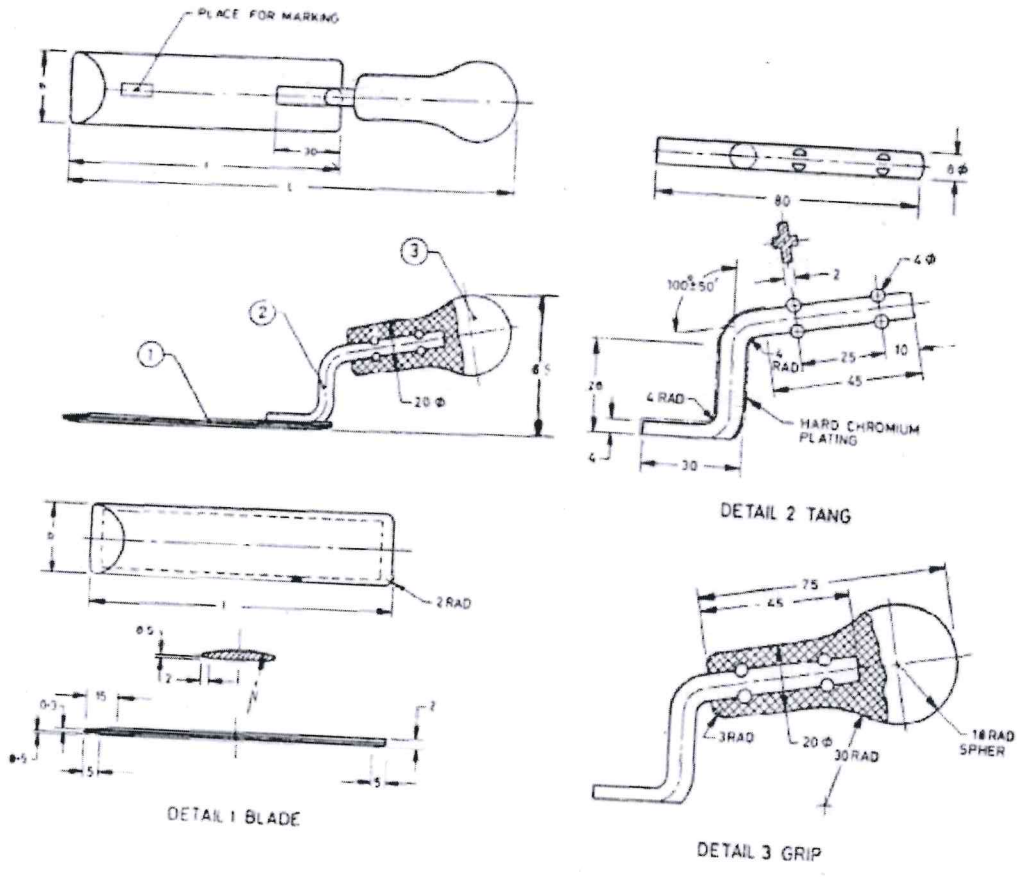
12.1 The Trowels shall be marked with the following:

- a) Indication of the source of manufacture;
- b) Grade designation;
- c) Quantity;
- d) Batch No; and
- e) Date of manufacture.

12.2 BIS Certification Marking

The products(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provision of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product may be marked with the Standard Mark.

Table 1 Dimensions of Rectangular Trowels, Type A
(Clause 3)



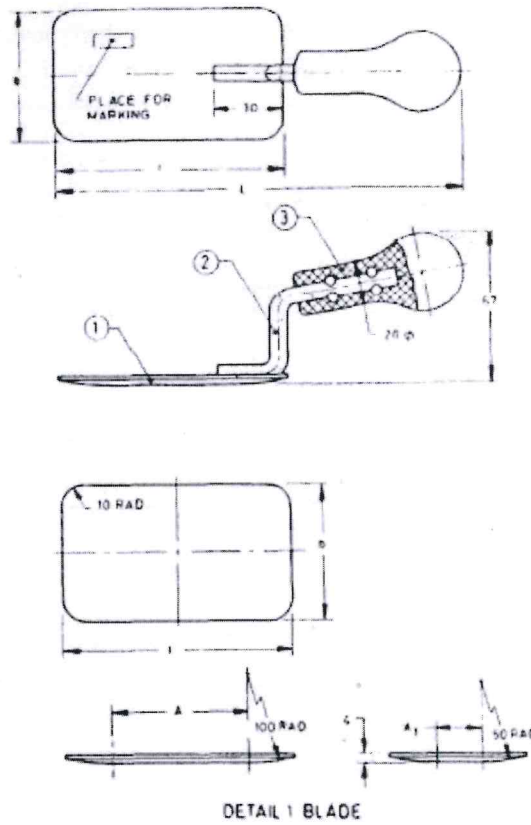
All dimensions in millimetres.

Sl No.	l	L	b	r
(1)	(2)	(3)	(4)	(5)
(i)	125	205	32	120
(ii)	160	240	40	160

Designation — Rectangular trowels of length 205 mm and blade length 125 mm shall be designated as: Trowel A-125 IS 6013.

ordinary

Table 2 Dimensions of Trowels for Big Moulds, Type B
(Clause 3)



All dimensions in millimetres.

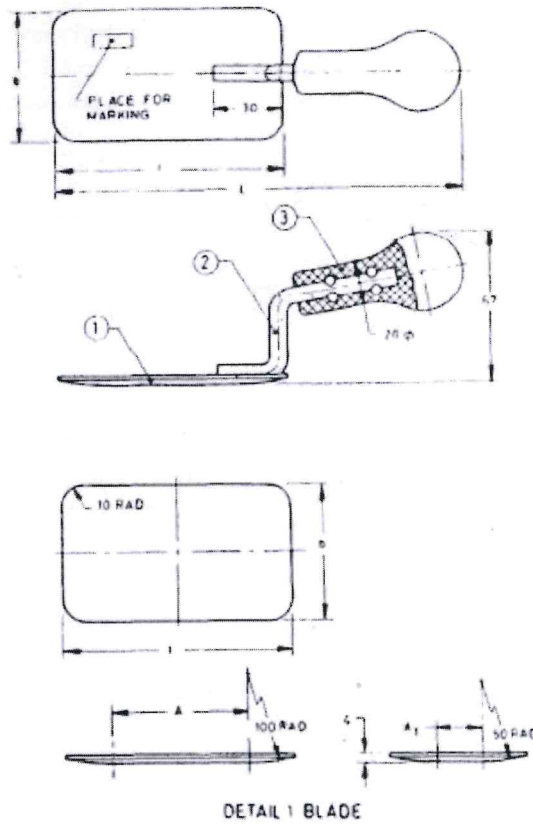
SI No.	L	l	b	A	A ₁
(1)	(2)	(3)	(4)	(5)	(6)
(i)	180	100	60	60	20
(ii)	240	160	80	110	40

Ordinary

Designation — Trowel for big-moulds of length 180 mm and blade length 100 mm shall be designated as: Trowel B-100 IS 6013.

NOTE— Details 2 and 3 are same as given in Table 1.

Table 2 Dimensions of Trowels for Big Moulds, Type B
(Clause 3)



All dimensions in millimetres.

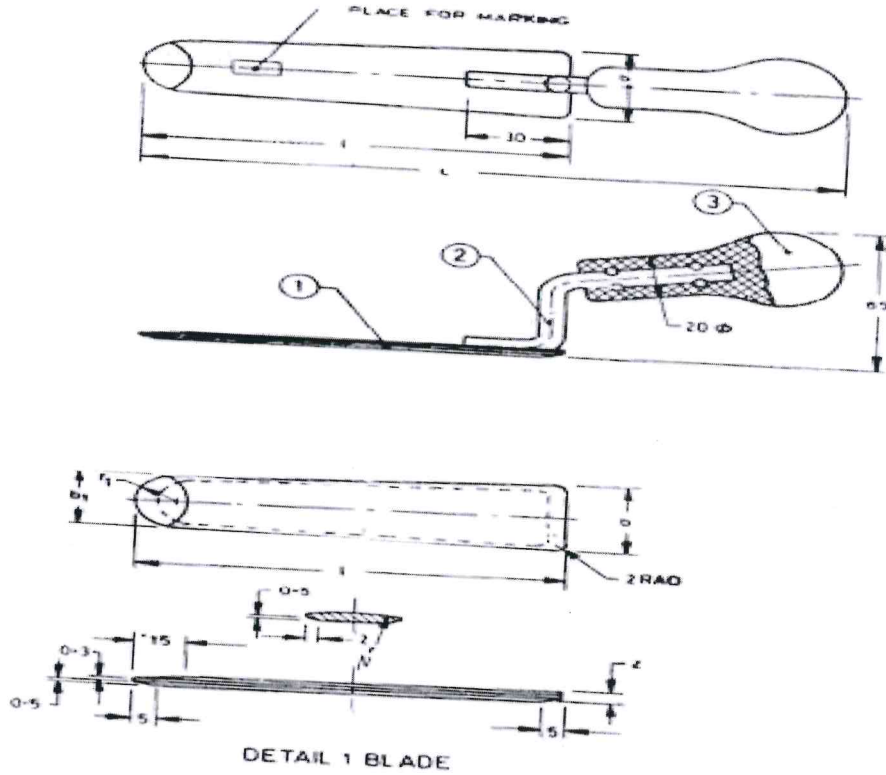
SI No.	L	l	b	A	A ₁
(1)	(2)	(3)	(4)	(5)	(6)
(i)	180	100	60	60	20
(ii)	240	160	80	110	40

Ordinary

Designation — Trowel for big-moulds of length 180 mm and blade length 100 mm shall be designated as: Trowel B-100 IS 6013.

NOTE— Details 2 and 3 are same as given in Table 1.

Table 3 Dimensions of Narrow Trowels, Type C
(Clause 3)



All dimensions in millimetres.

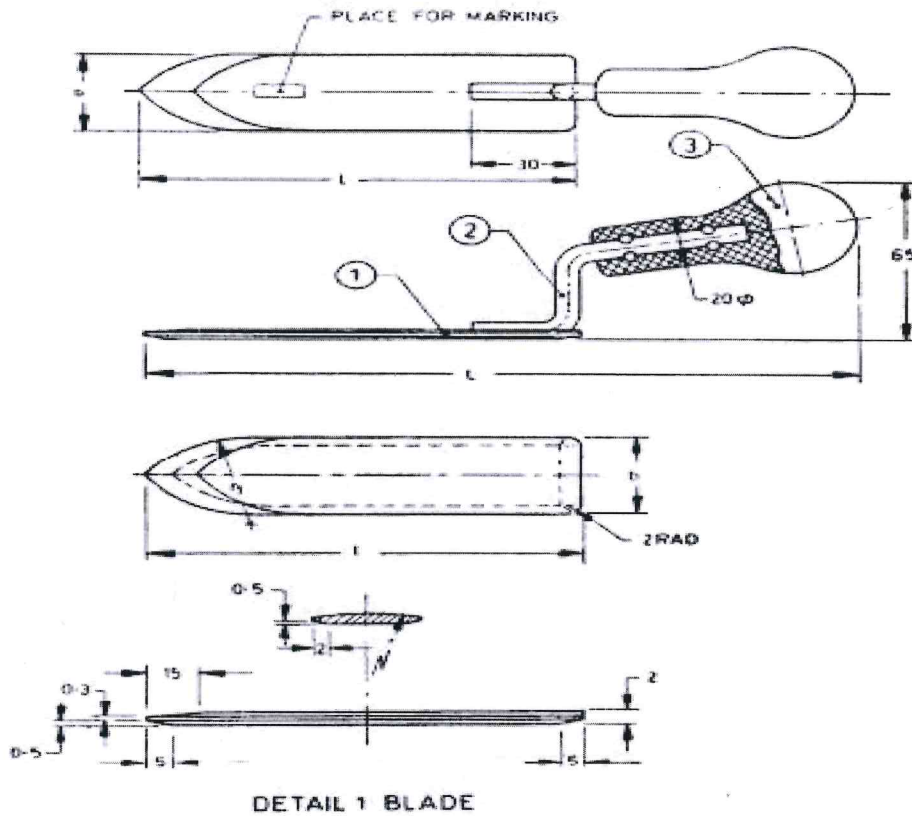
SI No.	L	l	b	b ₂	r	r ₁
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	205	125	32	24	120	12
ii)	240	160	40	32	160	16

Designation — Narrow trowels of blade length 125 mm shall be designated as: Trowel C-125 IS 6013.

NOTE— Details 2 and 3 are same as given in Table 1.

Ordinary

Table 4 Dimensions of Pointed Trowels, Type D
(Clause 3)



All dimensions in millimetres.

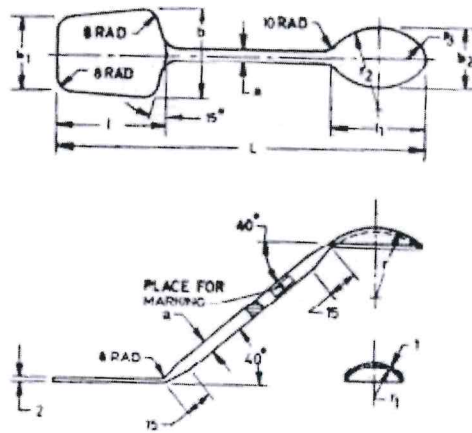
Sl No.	L	l	b	r	r ₁
(1)	(2)	(3)	(4)	(5)	(6)
i)	180	125	32	120	36
ii)	240	160	40	160	36

Designation — Pointed trowels of blade length 125 mm shall be designated as: Trowel D-125 IS 6013.

NOTE — Details 2 and 3 are same as given in Table 1.

ordinary

Table 5 Dimensions of Trowels with Scoops, Type E
(Clause 3)



All dimensions are in millimetres.

Sl No.	L	l	l ₁	b	b ₁	b ₂	r	r ₁	r ₂	r ₃	a
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	160	40	36	32	25	20	34	13	23	5	6
ii)	200	60	50	50	40	32	38	20	32	10	7

Designation — Trowels with scoop of length 160 mm shall be designated as: Trowel E-160 IS6013.

Ordinary

ANNEX A

(Clause 2)

LIST OF REFERED STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
IS 919	Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes:		engineering purposes (<i>third revision</i>)
(Part 1) : 2014/ ISO 286-1 : 2010	Basis of tolerance, deviation and fits (<i>third revision</i>)	IS 1387 : 1993	General requirements for the supply of metallurgical materials (<i>second revision</i>)
(Part 2) : 2010/ ISO 286-2 : 2010	Tables of standard tolerance classes and limit deviation for holes and shafts (<i>second revision</i>)	IS 1586 (Part 1) : 2018/ISO 6508-1 : 2016	Metallic materials — Rockwell hardness test: Part 1 Test method (<i>fifth revision</i>)
IS 1300 : 1994	Phenolic moulding materials — Specification (<i>third revision</i>)	IS 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (<i>seventh revision</i>)
IS 1337 : 1993	Electroplated coatings of hard chromium for	IS 3748 : 2022/ ISO 4957 : 2018	Tool steels — Specification (<i>third revision</i>)

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Foundry and Steel Castings Sectional Committee, MTD 14

<i>Organization</i>	<i>Representative(s)</i>
BHEL (CFFP), Haridwar	SHRI V. K. RAIZADA (<i>Chairperson</i>)
Bharat Heavy Electricals Ltd, HPEP, Hyderabad	SHRI ABHINAV AGRAWAL
BHEL, Haridwar	SHRI A. N. SUDHAKAR SHRI RANJITH LAKRA (<i>Alternate</i>)
Bhilai Engineering Corporation Limited, Bhilai	SHRI AKHIL DUBEY SHRI SHIV DUTT MISHRA (<i>Alternate</i>)
CSIR - Central Mechanical Engineering Research Institute, Durgapur	DR SUDIP SAMANTHA
CSIR - National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram	DR TPD RAJAN DR M. RAVI (<i>Alternate</i>)
Directorate General of Quality Assurance, Ichhapur	SHRI ASHOK KUMAR SHRI S. ROY CHOWDHURY (<i>Alternate</i>)
Disa India Ltd, Bangalore	SHRI SUNIL KUMAR GHOSH SHRI SURESH KUMAR A. (<i>Alternate</i>)
Forace Polymers Private Limited, Haridwar	SHRI D. K. GHOSH
Hindustan Aeronautics, Foundry and Forge Division, Bengaluru	SHRI K. SATYENDRA KUMAR
Indian Institute of Technology, Kharagpur	PROF SHIV BRAT SINGH PROF RAHUL MITRA (<i>Alternate</i>)
Indian Ordnance Factory Board, Kolkata	SHRI G. JHA SHRI A. K. LALA (<i>Alternate</i>)
Indian Ordnance Factory, Grey Iron Foundry, Jabalpur	SHRI M. P. YADAV SHRI ARUNANSHU PRAMANIK (<i>Alternate</i>)
Indian Register of Shipping, New Delhi	DR K. K. DHAWAN SHRI S. VELMURUGAN (<i>Alternate</i>)
Institute of Technology (BHU), Varanasi	DR INDRAJIT CHAKRABARTY DR JAYANT KUMAR SINGH (<i>Alternate</i>)
Leader Valves Ltd, Jalandhar	SHRIMATI PURNIMA BERI SHRI SARABJIT SINGH (<i>Alternate</i>)
Ministry of Defence (DGQA), Ichapur	SHRI ASHOK KUMAR SHRI RUPESH BANAIT (<i>Alternate</i>)
Ministry of Railway, RDSO, Lucknow	SHRI C. SENGUPTA SHRI RAJ KISHORE PRASAD (<i>Alternate</i>)
Ministry of Science & Technology, New Delhi	MS TAMANNA ARORA SHRI K. S. P. RAO (<i>Alternate</i>)

<i>Organization</i>	<i>Representative(s)</i>
National Institute of Foundry & Forging Technology, Ranchi	DR KAMLESH KUMAR SINGH DR AMITESH KUMAR (<i>Alternate</i>)
National Metallurgical Laboratory, Jamshedpur	DR D. N. PASWAN MS MINAL SHAH (<i>Alternate</i>)
NIT Manipur, Langol, Imphal	PROF (DR) GOUTAM SUTRADHAR DR ANIL KUMAR BIRRU (<i>Alternate I</i>) DR SABINDRA KACHHAP (<i>Alternate II</i>)
Steel Cast Ltd, Bhavnagar	SHRI V. K. MODI SHRI B. C. ROUSTRAY (<i>Alternate</i>)
Tata Motors, Jamshedpur	SHRI S. KUMAR DR D. S. PADAN (<i>Alternate</i>)
The Institute of Indian Foundry Men, New Delhi	SHRI DINESH GUPTA SHRI SANJEEV KUMAR (<i>Alternate</i>)
The Wesman Engineering Co Pvt Ltd, Kolkata	SHRI RANJAN GUHA SHRI ASHUTOSH MONDAL (<i>Alternate I</i>) SHRI PARTHA CHATTERJEE (<i>Alternate II</i>)
Versatile Equipments Pvt Ltd, Kolhapur	SHRI PUSHKRAJ JANWADKAR SHRI KIRAN PANDIT (<i>Alternate</i>)
BIS Directorate General	SHRI SANJIV MAINI, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (METALLURGICAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI KUNAL KUMAR
SCIENTIST 'D'/JOINT DIRECTOR
(METALLURGICAL ENGINEERING), BIS