इंटरनेट मानक

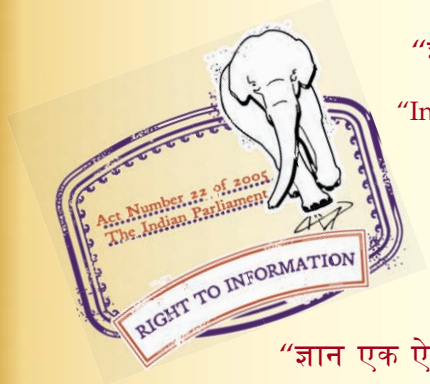
Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 3921 (1985): Aluminium channels - [CED 7: Structural Engineering and structural sections]



"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

IS : 3921 - 1985
(Reaffirmed 2006)

Indian Standard

SPECIFICATION FOR ALUMINIUM CHANNELS

(First Revision)

UDC 669·71-423·5

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

Gr 2

June 1986

Indian Standard

SPECIFICATION FOR ALUMINIUM CHANNELS

(First Revision)

Structural Sections Sectional Committee, SMDC 6

Chairman	*Representing*
SHRI M. DHAR	KEC International Ltd, Bombay
Members	
SHRI V. K. AGRAWAL	Hindustan Aluminium Corporation Ltd, Renukoot
SHRI N. G. SHARMA (*Alternate*)	
SHRI R. N. AGGARWAL	Steel Authority of India Ltd (Bokaro Steel Plant), Bokaro
SHRI B. K. SRIVASTAVA (*Alternate*)	
SHRI S. BANERJEE	Steel Re-Rolling Mills Association of India, Calcutta
SHRI N. BHATTACHARYA	Garden Reach Shipbuilders & Engineers Ltd, Calcutta
SHRI A. P. BHATNAGAR	Steel Authority of India Ltd (Durgapur Steel Plant), Durgapur
SHRI P. K. DEBNATH (*Alternate*)	
SHRI B. B. CHAKRAVERTI	Superintendence Co of India (Pvt) Ltd, Calcutta
SHRI A. K. SHOME (*Alternate*)	
SHRI D. S. DESAI	M. N. Dastur & Co Pvt Ltd, Calcutta
SHRI B. K. DUTTA	Iron & Steel Control, Calcutta
SHRI S. S. SAHA (*Alternate*)	
SHRI S. K. GANGULY	Institution of Engineers (India), Calcutta
SHRI S. B. GUPTA	Directorate General of Supplies & Disposals (Inspection Wing), New Delhi
SHRI M. P. JASUJA	Steel Authority of India Ltd (Research & Development Centre for Iron & Steel), Ranchi
JOINT DIRECTOR STANDARDS (WAGON I), RDSO	Ministry of Railways
JOINT DIRECTOR STANDARDS (B & S) SB, RDSO (*Alternate*)	
SHRI A. J. JOSHI	Steel Authority of India Ltd (Bhilai Steel Plant), Bhilai
SHRI A. G. RAMA RAO (*Alternate*)	
LT-COL KULWANT SINGH	Engineer-in-Chief's Branch, Army Headquarters, New Delhi
MAJOR S. B. PURI (*Alternate*)	

(*Continued on page* 2)

(*Continued from page* 1)

Members	*Representing*
SHRI S. K. MITRA	Indian Iron & Steel Co Ltd, Burnpur
SHRI S. DUTTA (*Alternate*)	
SHRI P. K. MUKHERJEE	Braithwaite & Co Ltd, Calcutta
SHRI AMIT KUMAR BHATTACHARYA (*Alternate*)	
SHRI M. V. NAGESHAIAH	Metallurgical & Engineering Consultants (India) Ltd Ranchi
SHRI KAMMAL PRAKASH (*Alternate*)	
SHRI P. V. NAIK	Richardson & Cruddas Ltd, Bombay
SHRI N. S. R. V. RAJU	Hindustan Shipyard Ltd, Visakhapatnam
SHRI D. KRISHNAMURTHY (*Alternate*)	
SHRI S. K. SADHU	Jessop & Co Ltd, Calcutta
SHRI S. C. CHAKRAVARTI (*Alternate*)	
SHRI M. C. SARANGDHAR	Stup & Co Ltd, Bombay
SHRI M. K. CHATTERJEE (*Alternate*)	
SHRI K. R. SENGUPTA	Joint Plant Committee, Calcutta
SHRI B. P. GHOSH (*Alternate*)	
SHRI S. N. SINGH	EMC Steelal Ltd, Calcutta
SHRI C. K. NAG (*Alternate*)	
SHRI K. S. SRINIVASAN	National Buildings Organization, New Delhi
SHRI A. K. LAL (*Alternate*)	
SHRI K. SURYANARAYANAN	Indian Aluminium Co Ltd, Calcutta
SHRI G. M. MENON (*Alternate*)	
SHRI D. THIRUVENGADAM	Tube Products of India, Madras
SHRI K. V. VIJAYARAGHAVAN (*Alternate*)	
SHRI S. G. TUDEKAR	Steel Authority of India Ltd (Rourkela Steel Plant), Rourkela
SHRI J. N. BHAMBRY (*Alternate*)	
SHRI K. RAGHAVENDRAN, Director (Struc & Met)	Director General, ISI (*Ex-officio Member*)

Secretary

SHRI S. S. SETHI
Joint Director (Struc & Met), ISI

Panel for Structural Sections in Aluminium and Aluminium Alloys, SMDC 6 : P3

Convener

DEPUTY DIRECTOR STANDARDS, CARRIAGE I — Ministry of Railways

Members

DEPUTY DIRECTOR STANDARDS (B & S) SB (*Alternate* to Deputy Director Standards, Carriage I, RDSO)	
SHRI V. D. AGGARWAL	Bharat Aluminium Co, Calcutta
SHRI V. K. AGRAWAL	Hindustan Aluminium Corporation Ltd, Renukoot
SHRI N. G. SHARMA (*Alternate*)	

(*Continued on page* 8)

Indian Standard

SPECIFICATION FOR ALUMINIUM CHANNELS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 20 December 1985, after the draft finalized by the Structural Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Aluminium because of its lightness, strength and better resistance atmospheric corrosion has gained popularity in structures especially for use in hilly areas and in defence installations.

0.3 A large number of variety of aluminium sections are being produced in the country. In order to standardize these sections for their economic production, the Sectional Committee had formulated an Indian Standard series covering angles, channels, beams and tee sections for structural use and other applications.

0.4 This Indian Standard was first published in 1966. In this revision alloys with new designations as covered in IS : 733-1983* have been used.

0.5 In the preparation of this standard, the Sectional Committee kept in view manufacturing and trade practices followed in the country in this field.

0.6 A code of practice for use of aluminium alloys in structures, namely, IS : 8147-1976† has already been published which covers provisions for the design of structures (except bridges and pressure vessels) using aluminium alloys.

0.7 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 : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

*Specification for wrought aluminium and aluminium alloy bars, rods and sections (for general engineering purposes) (*third revision*).

†Code of practice for use of aluminium alloys in structure.

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

1. SCOPE

1.1 This standard covers the material, dimensions and sectional properties of aluminium channels for structural use and other applications.

2. TERMINOLOGY

2.0 For the purpose of this standard the following definitions shall apply.

2.1 Y-Y Axis — A line parallel to the axis of the web and passing through the centre of gravity of the profile of the section.

2.2 X-X Axis — A line passing through the centre of gravity of the profile of the section, and at right angles to the Y-Y axis.

3. SYMBOLS

3.1 Letter symbols used in the standard have been indicated in the figure appearing along with Table 1. The letter symbols used in Table 1 shall have the meaning indicated against each as given below:

a = sectional area,

M = mass of the section, per unit length,

I_x = moment of inertia about the X-X axis,

I_y = moment of inertia about the Y-Y axis,

e_x = distance of extreme fibre from the X-X axis = C_x,

e_y = distance of extreme fibre from the Y-Y axis = $b - C_y$,

$Z_x = I_x/e_x$ = modulus of section about the X-X axis,

$Z_y = I_y/e_y$ = modulus of section about the Y-Y axis,

$r_x = \sqrt{\frac{I_x}{a}}$ = radius of gyration about the X-X axis, and

$r_y = \sqrt{\frac{I_y}{a}}$ = radius of gyration about the Y-Y axis.

4. DESIGNATION

4.1 Aluminium channels shall be designated as ALC followed by the depth of channel in mm, flange width in mm and mass of the section in kg/m,

Example: ALC 80 × 40 — 3·21

5. MATERIAL

5.1 Aluminium sections covered in this standard shall be manufactured from the following alloys in appropriate temper: 19000, 24345, 24534, 52C00, 53000, 63400, 64423, 64430, 65032 and 74530.

5.1.1 Aluminium alloys and temper selected shall conform to the provisions of IS : 733-1983*.

6. DIMENSIONS AND SECTIONAL PROPERTIES

6.1 Dimensions and mass of Indian Standard aluminium channels shall be as given in Table 1. For convenience of reference sectional properties are also given in Table 1.

6.1.1 Sections of dimensions other than those included in Table 1 may also be manufactured subject to the agreement between the purchaser and the manufacturer.

6.1.2 Sections without root radius (square fillet) may also be manufactured subject to the agreement between the purchaser and the manufacturer.

6.2 Dimensional tolerances for the sections shall be as specified in IS : 3965-1981†.

7. PACKING

7.1 Aluminium channels shall be securely bundled and wrapped in bitumanized hessian cloth or in wooden boxes or as mutually agreed. Weight of each bundle may be as agreed to between the purchaser and the manufacturer.

8. MARKING

8.1 Aluminium channels shall be clearly marked with the designation, alloy and temper, manufacturer's name and lot number/year of manufacture.

8.2 Channels may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

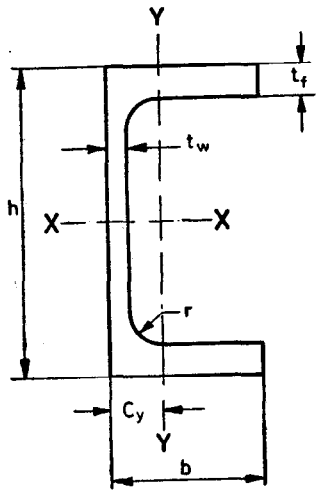
---

*Specification for wrought aluminium and aluminium alloys bars, rods and sections (for general engineering purposes) (*third revision*).

†Dimensions for wrought aluminium and aluminium alloys, bars, rods and sections (*first revision*).

TABLE 1 INDIAN STANDARD ALUMINIUM CHANNELS

(*Clauses* 3.1, 6.1 *and* 6.1.1)



Designation	Mass* per Metre (M)	Sectional Area (a)	Depth of Section h	Width of Flange b	Thickness of Web t_w	Thickness of Flange t_f	Radius at Root r	Centre of Gravity C_y	Moment of Inertia		Radius of Gyration		Modulus of Section	
									I_x	I_y	r_x	r_y	Z_x	Z_y
	kg/m	cm²	mm	mm	mm	mm	mm	cm	cm⁴	cm⁴	cm	cm	cm³	cm³
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
ALC 40×20-0·44	0·44	1·63	40	20	2·0	2·0	5·0	0·56	3·98	0·58	1·56	0·60	1·99	0·40
ALC 40×20-0·63	0·63	2·33	40	20	3·0	3·0	5·0	0·60	5·37	0·81	1·52	0·59	2·69	0·58
ALC 50×30-0·88	0·88	3·27	50	30	3·0	3·0	6·0	0·91	12·75	2·79	1·97	0·92	5·10	1·33
ALC 50×30-1·14	1·14	4·23	50	30	4·0	4·0	6·0	0·95	15·80	3·52	1·93	0·91	6·32	1·72

ALC 60×30-1·13	1·13	4·17	60	30	3·0	4·0	7·0	0·94	23·62	3·59	2·38	0·93	7·87	1·75
ALC 60×30-1·55	1·55	5·73	60	30	4·0	6·0	7·0	1·03	31·10	4·89	2·33	0·92	10·37	2·48
ALC 60×30-1·95	1·95	7·21	60	30	5·0	8·0	7·0	1·09	37·14	6·05	2·27	0·92	12·39	3·17
ALC 60×40-1·87	1·87	6·93	60	40	4·0	6·0	7·0	1·46	39·88	11·05	2·90	1·26	13·29	4·35
ALC 60×40-2·38	2·38	8·81	60	40	5·0	8·0	7·0	1·53	48·04	13·76	2·84	1·25	16·01	5·57
ALC 80×40-2·10	2·10	7·79	80	40	4·0	6·0	8·0	1·32	79·19	12·22	3·19	1·25	19·80	4·56
ALC 80×40-2·67	2·67	9·87	80	40	5·0	8·0	8·0	1·40	96·72	15·28	3·13	1·24	24·18	5·87
ALC 80×40-3·21	3·21	11·87	80	40	6·0	10·0	8·0	1·46	111·67	18·09	3·07	1·23	27·91	7·11
ALC 100×40-2 95	2·95	10·95	100	40	5·0	8·0	9·0	1·29	166·03	16·52	3·89	1·23	33·21	6·09
ALC 100×40-3·55	3·55	13·15	100	40	6·0	10·0	9·0	1·35	193·29	19·60	3·83	1·22	38·66	7·39
ALC 100×50-3·39	3·39	12·55	100	50	5·0	8·0	9·0	1·70	199·97	31·06	3·99	1·57	39·99	9·40
ALC 100×50-4·09	4·09	15·15	100	50	6·0	10·0	9·0	1·76	233·96	37·01	3·93	1·56	46·79	11·44
ALC 100×50-4·98	4·98	18·43	100	50	8·0	12·0	9·0	1·78	267·54	43·34	3·18	1·53	53·51	13·46
ALC 120×50-3·68	3·68	13·63	120	50	5·0	8·0	10·0	1·59	308·82	33·07	4·76	1·56	51·47	9·69
ALC 120×50-4·43	4·43	16·43	120	50	6·0	10·0	10·0	1·65	363·14	39·48	4·70	1·55	60·52	11·80
ALC 120×60-4·98	4·98	18·43	120	60	6·0	10·0	10·0	2·07	493·81	66·04	4·80	1·89	70·63	16·80
ALC 120×60-6·08	6·08	22·51	120	60	8·0	12·0	10·0	2·08	489·62	77·97	4·66	1·86	81·60	19·87
ALC 150×60-5·51	5·51	20·42	150	60	6·0	10·0	12·0	1·90	722·88	71·41	5·95	1·87	96·38	17·43
ALC 150×60-6·77	6·77	25·10	150	60	8·0	12·0	12·0	1·91	843·19	84·30	5·80	1·83	112·42	20·60
ALC 150×80-6·59	6·59	24·42	150	80	6·0	10·0	12·0	2·74	919·22	159·60	6·14	2·56	122·56	30·34
ALC 150×80-8·07	8·07	29·90	150	80	8·0	12·0	12·0	2·73	072·29	190·37	5·99	2·52	142·97	36·09
ALC 150×80-10·26	10 26	38·02	150	80	10·0	16·0	12·0	2·87	311·20	233·10	5·87	2·50	174·83	46·41
ALC 200×80-9·28	9·28	34·38	200	80	8·0	12·0	16·0	2·43	140·69	210·38	7·89	2·47	214·07	37·80
ALC 200×80-11·74	11·74	43·50	200	80	10·0	16·0	16·0	2·58	638·55	268·98	7·79	2·46	263·86	48·72
ALC 200×100-13·47	13·47	49·90	200	100	10·0	16·0	16·0	3·40	181·61	495·96	7·99	3·15	318·16	75·20
ALC 200×100-15·33	15·33	56·78	200	100	12·0	18·0	18·0	3·41	499·65	·552·64	7·85	3·12	349·97	83·84

*Based on density of 2·7 g/cm³.

(*Continued from page* 2)

Members	*Representing*
SHRI D. K. BARAI	Cochin Shipyard Ltd, Cochin
SHRI B. S. BRAHMACHARI	Metallurgical & Engineering Consultants (India) Ltd, Ranchi
SHRI A. S. LAKRA	Delhi Transport Corporation, Delhi
SHRI A. V. KELKAR	Maharashtra State Road Transport Corporation, Pune
SHRI B. Y. DESHPANDE (*Alternate*)	
SHRI K. B. PATEL	Gujarat State Road Transport Corporation, Ahmadabad
SHRI D. K. NIMAVAT (*Alternate*)	
SHRI K. PURKAYASTHA	Indian Aluminium Co Ltd, Calcutta
SHRI V. RAMASWAMY (*Alternate*)	
SHRI K. R. RAGHUNATH	Jindal Aluminium Ltd, Bangalore
REPRESENTATIVE	Integral Coach Factory, Perambur
REPRESENTATIVE	Hindustan Shipyard Ltd, Visakhapatnam
REPRESENTATIVE	Garden Reach Shipbuilder & Engineers Ltd, Calcutta
SHRI K. K. SUD	Ministry of Defence (R & D)

INDIAN STANDARDS INSTITUTION

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 331 0131 331 1375 Telegrams : Manaksanstha (Common to all Offices)

Regional Offices:	*Telephone*
*Western : Manakalaya, E9 MIDC, Marol Andheri (East) BOMBAY 400093	6 32 92 95
†Eastern : 1/14 C. I. T. Scheme VII M. V. I. P. Road, Maniktola, CALCUTTA 700054	36 24 99
Northern : SCO 445-446, Sector 35-C CHANDIGARH 160036	2 18 43 3 16 41
Southern : C. I. T. Campus, MADRAS 600113	41 24 42 41 25 19 41 29 16

Branch Offices:	
'Pushpak', Nurmohamed Shaikh Marg, Khanpur AHMADABAD 380001	2 63 48 2 63 49
'F' Block, Unity Bldg, Narasimharaja Square, BANGALORE 560002	22 48 05
Gangotri Complex, 5th Floor, Bhadbhada Road, T. T. Nagar, BHOPAL 462003	6 67 16
Plot No. 82/83, Lewis Road, BHUBANESHWAR 751002	5 36 27
53/5 Ward No. 29, R. G. Barua Road, 5th Byelane, GUWAHATI 781003	—
5-8-56C L. N. Gupta Marg, HYDERABAD 500001	22 10 83
R14 Yudhister Marg, C Scheme, JAIPUR 302005	6 34 71 6 98 32
117/418 B Sarvodaya Nagar, KANPUR 208005	21 68 76 21 82 92
Patliputra Industrial Estate, PATNA 800013	6 23 05
Hantex Bldg (2nd Floor), Rly Station Road, TRIVANDRUM 695001	52 27

Inspection Office (With Sale Point):

Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005	5 24 35

*Sales Office in Bombay is at Novelty Chambers, Grant Road, BOMBAY 400007 — 89 65 28

†Sales Office in Calcutta is at 5 Chowringhee Approach, P.O. Princep Street, CALCUTTA 700072 — 27 68 00

Printed at Printograph, New Delhi, India