

CERTIFIED REFERENCE MATERIALS (CRM)



Sufficiently Homogenized Indian Reference Materials Certified by as per ISO 17034 used to check the quality and metrological traceability of products, to validate analytical measurement methods, or for the calibration of Instruments



prepared by



**CSIR-NATIONAL METALLURGICAL LABORATORY
JAMSHEDPUR-831007, INDIA**

METALS / ALLOYS

1	CAST IRON (CRM No. 201.8) (Turning form)		5	STEEL 0.6 % C (CRM No. 216) (Turning form)	
	Carbon (C)	2.97%		Carbon (C)	0.61%
	Silicon (Si)	2.64%		Silicon (Si)	0.25%
	Manganese (Mn)	0.44%		Manganese (Mn)	0.72%
	Phosphorus (P)	0.052%		Phosphorus (P)	0.018%
	Sulfur (S)	0.11%		Sulfur (S)	0.021%
	Chromium (Cr)	0.030%		Chromium (Cr)	0.037%
	Copper (Cu)	0.034%		Nickel (Ni)	0.0033%
	Nickel (Ni)	0.025%		Price: Rs. 7590.00 (for 100 gm pack)	
	Price: Rs. 7590.00 (for 100 gm pack)		6	STAINLESS STEEL (CRM No. 220A) (Turning form)	
2	ALLOY CAST IRON (CRM No. 207.3) (Turning form)			Carbon (C)	0.086%
	Total Carbon (C)	3.13%		Silicon (Si)	0.57%
	Silicon (Si)	1.22%		Manganese (Mn)	1.35%
	Manganese (Mn)	0.83%		Phosphorus (P)	0.031%
	Phosphorus (P)	0.20%		Sulfur (S)	0.014%
	Sulfur (S)	0.016%		Copper (Cu)	0.13%
	Nickel (Ni)	1.90%		Cobalt (Co)	0.15%
	Copper (Cu)	0.034%		Nickel (Ni)	8.74%
	Chromium (Cr)	0.37%		Chromium (Cr)	19.21%
	Price: Rs. 7590.00 (for 100 gm pack)			Price: Rs. 7590.00 (for 100 gm pack)	
3	STEEL 0.10 % C (CRM No. 213) (Turning form)		7	NICKEL STEEL (CRM No. 221) (Turning form)	
	Carbon (C)	0.10%		Carbon (C)	0.18%
	Silicon (Si)	0.07%		Silicon (Si)	0.19%
	Sulfur (S)	0.012%		Manganese (Mn)	0.39%
	Phosphorus (P)	0.017%		Sulfur (S)	0.015%
	Manganese (Mn)	0.47%		Phosphorus (P)	0.013%
	Chromium (Cr)	0.028%		Nickel (Ni)	3.22%
	Price: Rs. 7590.00 (for 100 gm pack)			Chromium (Cr)	0.67%
4	STEEL 1 % C (CRM No. 215) (Turning form)			Molybdenum (Mo)	0.23%
	Carbon (C)	1.01%		Price: Rs. 7590.00 (for 100 gm pack)	
	Silicon (Si)	0.26%			
	Manganese (Mn)	0.43%			
	Phosphorus (P)	0.038%			
	Sulfur (S)	0.046%			
	Chromium (Cr)	1.08%			
	Nickel (Ni)	0.043%			
	Price: Rs. 7590.00 (for 100 gm pack)				

METALS / ALLOYS

8	LOW ALLOY STEEL (CRM No. 223.6 A) (Turning form)		11	6% Si-Al ALLOYS (CRM No. 251.1) (Turning form)		
	Carbon (C)	0.21%		Silicon (Si)	6.09%	
	Silicon (Si)	0.28%		Iron (Fe)	0.76%	
	Manganese (Mn)	0.65%		Magnesium (Mg)	0.63%	
	Sulfur (S)	0.036%		Copper (Cu)	0.28%	
	Phosphorus (P)	0.038%		Manganese (Mn)	0.22%	
	Nickel (Ni)	0.98%		Zinc (Zn)	0.077%	
	Chromium (Cr)	0.88%		Lead (Pb)	0.054%	
	Molybdenum (Mo)	0.17%		Tin (Sn)	0.019%	
	Copper (Cu)	0.14%		Nickel (Ni)	0.020%	
	Aluminium (Al)	0.041%		Price: Rs. 7590.00 (for 100 gm pack)		
Cobalt (Co)	0.015%					
Price: Rs. 7590.00 (for 100 gm pack)				(Newly Developed)		
				GASEOUS STANDARDS IN STEEL		
9	BRASS 60:40 (CRM No. 241) (Turning form)		12	C & S, GASEOUS CRM 504* IN STEEL (Pin Shape)		
	Copper (Cu)	58.10%		Carbon (C)	0.11%	
	Zinc (Zn)	38.94%		Sulfur (S)	0.027%	
	Lead (Pb)	2.64%		Price: Rs. 10000.0 (for 100 gm pack)		
	Phosphorus (P)	0.004%		13	C & S GASEOUS CRM 505* IN STEEL (Pin Shape)	
	Tin (Sn)	0.14%			Carbon (C)	0.79%
	Nickel (Ni)	0.044%			Sulfur (S)	0.006%
	Iron (Fe)	0.13%		Price: Rs. 10000.0 (for 100 gm pack)		
Price: Rs. 7590.00 (for 100 gm pack)		14	H₂, N₂ & O₂, GASEOUS CRM 506* IN STEEL (Pin Shape)			
10	BRASS 70:30 (CRM No. 242) (Turning form)		Hydrogen (H ₂)	2.90 PPM		
	Copper (Cu)		70.20%	Nitrogen (N ₂)	0.0110%	
	Zinc (Zn)		29.51%	Oxygen (O ₂)	0.0104%	
	Lead (Pb)		0.028%	Price: Rs. 12000.0 (for 100 gm pack)		
	Phosphorus (P)	0.005%	15	H₂, N₂ & O₂, GASEOUS CRM 507* IN STEEL (Pin Shape)		
	Tin (Sn)	0.060%		Hydrogen (H ₂)	6.12 PPM	
	Nickel (Ni)	0.041%		Nitrogen (N ₂)	0.0383%	
Iron (Fe)	0.059%	Oxygen (O ₂)		0.0081%		
Price: Rs. 7590.00 (for 100 gm pack)		Price: Rs. 12000.0 (for 100 gm pack)				
				* - CRMs Not included under 17034 existing accreditation scope of CRM unit, AAC Division.		

FERRO-ALLOYS & ALLIED MATERIAL

16	L.C. Fe-CHROMIUM (CRM No. 229) (Powder form)	
	Carbon (C)	0.15%
	Silicon (Si)	0.76%
	Phosphorus (P)	0.029%
	Sulfur (S)	0.009%
	Chromium (Cr)	58.91%
	Price: Rs. 7590.00 (for 100 gm pack)	
17	H.C. Fe-CHROMIUM (CRM No. 230) (Powder form)	
	Chromium (Cr)	62.91%
	Silicon (Si)	3.53%
	Carbon (C)	7.85%
	Phosphorus (P)	0.035%
	Sulfur (S)	0.036%
	Price: Rs. 7590.00 (for 100 gm pack)	
18	Fe-SILICON (CRM No. 231) (Powder form)	
	Silicon (Si)	72.72%
	Aluminium (Al)	1.51%
	Phosphorus (P)	0.024%
	Sulfur (S)	0.005%
	Carbon (C)	0.20%
	Price: Rs. 7590.00 (for 100 gm pack)	
19	Fe-MOLYBDENUM (CRM No. 232) (Powder form)	
	Molybdenum (Mo)	56.65%
	Silicon (Si)	0.85%
	Phosphorus (P)	0.040%
	Carbon (C)	0.10%
	Sulfur (S)	0.048%
	Price: Rs. 7590.00 (for 100 gm pack)	
20	L.C. Fe-Manganese (CRM No. 233.1) (Powder form)	
	Manganese (Mn)	84.79%
	Silicon (Si)	1.65%
	Phosphorus (P)	0.13%
	Carbon (C)	0.12%
	Sulfur (S)	0.006%
	Price: Rs. 7590.00 (for 100 gm pack)	
21	H.C. Fe-MANGANESE (CRM No.233.2) (Powder form)	
	Manganese (Mn)	75.55%
	Silicon (Si)	0.36%
	Phosphorus (P)	0.20%
	Carbon (C)	6.68%
	Sulfur (S)	0.0053%
	Price: Rs. 7590.00 (for 100 gm pack)	
22	Fe-TITANIUM (CRM No. 234) (Powder form)	
	Titanium (Ti)	25.56%
	Silicon (Si)	2.84%
	Phosphorus (P)	0.041%
	Carbon (C)	0.051%
	Sulfur (S)	0.011%
	Aluminium (Al)	5.40%
	Price: Rs. 7590.00 (for 100 gm pack)	
23	Fe-VANADIUM (CRM No. 235) (Powder form)	
	Vanadium (V)	51.53%
	Silicon (Si)	1.05%
	Carbon (C)	0.054%
	Phosphorus (P)	0.040%
	Sulfur (S)	0.024%
	Price: Rs. 7590.00 (for 100 gm pack)	
ALLIED MATERIAL		
24	BLAST FURNACE SLAG (CRM No. 435.2) (Powder form)	
	Silica (SiO ₂)	32.22%
	Alumina (Al ₂ O ₃)	20.79%
	Calcium Oxide (CaO)	34.79%
	Magnesium Oxide (MgO)	7.60%
	Total Iron [Fe (T)]	0.43%
	Sulfur (S)	0.97%
	Phosphorus (P)	0.007%
	Titanium Dioxide (TiO ₂)	0.88%
	Price: Rs. 7590.00 (for 100 gm pack)	

ORES / COAL

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Proximate Composition																																																																																																																													
Gross Calorific Value (GCV)	4979kcal/kg																																																																																																																												
Volatile Matter (VM)	21.93%																																																																																																																												
Ash	35.83%																																																																																																																												
Price: Rs. 12500.00 (for 50gm pack)																																																																																																																													
32 COAL (CRM No. 151 A) (Powder form)																																																																																																																													
Ultimate Composition																																																																																																																													
Carbon (C)	52.44%																																																																																																																												
Hydrogen (H)	3.25%																																																																																																																												
Nitrogen (N)	1.13%																																																																																																																												
Total Sulfur (S)	0.64%																																																																																																																												
Price: Rs. 12500.00 (for 50gm pack)																																																																																																																													

SPECTROGRAPHIC STANDARDS

33	PLAIN CARBON STEEL (CRM No. 304A) (Disc Form)		36	STAINLESS STEEL (CRM No. 301) (Disc Form)	
	Carbon (C)	0.17%		Carbon (C)	0.072%
	Silicon (Si)	0.21%		Silicon (Si)	0.39%
	Manganese (Mn)	0.56%		Manganese (Mn)	1.42%
	Phosphorus (P)	0.098%		Phosphorus (P)	0.036%
	Sulfur (S)	0.022%		Sulfur (S)	0.021%
	Chromium (Cr)	0.0092%		Chromium (Cr)	18.00%
	Price: Rs. 10000.00 (for each piece)			Nickel (Ni)	7.86%
34	PLAIN CARBON STEEL [(CRM No. 305 (PC-1)] (Disc Form)			Molybdenum (Mo)	0.37%
	Carbon (C)	0.034%		Vanadium (V)	0.072%
	Silicon (Si)	0.031%		Cobalt (Co)	0.17%
	Manganese (Mn)	0.27%		Copper (Cu)	0.42%
	Phosphorus (P)	0.011%		Price: Rs. 8280.00 (for each piece)	
	Sulfur (S)	0.007%	37	STAINLESS STEEL (CRM No. 302) (Disc Form)	
	Chromium (Cr)	0.025%		Carbon (C)	0.072%
	Price: Rs. 8280.00 (for each piece)			Silicon (Si)	0.48%
35	PLAIN CARBON STEEL (CRM No. 309) (Disc Form)			Manganese (Mn)	1.05%
	Carbon (C)	0.57%		Phosphorus (P)	0.030%
	Silicon (Si)	0.20%		Sulfur (S)	0.017%
	Manganese (Mn)	0.80%		Chromium (Cr)	16.91%
	Phosphorus (P)	0.037%		Nickel (Ni)	10.12%
	Sulfur (S)	0.046%		Molybdenum (Mo)	2.04%
	Chromium (Cr)	0.081%		Vanadium (V)	0.061%
	Nickel (Ni)	0.034%		Cobalt (Co)	0.19%
	Price: Rs. 8280.00 (for each piece)			Copper (Cu)	0.40%
				Price: Rs. 8280.00 (for each piece)	
			38	STAINLESS STEEL (CRM No. 303) (Disc Form)	
				Carbon (C)	0.16%
				Silicon (Si)	0.40%
				Manganese (Mn)	7.15%
				Phosphorus (P)	0.035%
				Sulfur (S)	0.051%
				Chromium (Cr)	12.69%
				Nickel (Ni)	1.59%
				Molybdenum (Mo)	0.18%
				Vanadium (V)	0.067%
				Cobalt (Co)	0.060%
				Copper (Cu)	0.69%
				Price: Rs. 8280.00 (for each piece)	

BULK ORDER PROMOTIONAL OFFER FOR CRM SERVICE

1. On bulk purchase of 15 bottles (100g each) 3 bottles any of 100g may be given free.
2. On bulk purchase of 30 bottles (100g each) 8 bottles any of 100g may be given free.
3. On bulk purchase of 100 bottles (100g each) 25 bottles any of 100g may be given free.

Note: Bulk Order Promotional Offer (as free items) is not applicable for Coal Standard, Gaseous Standard and Spectrographic Standards.

ORDERING INFORMATION

Additional *@18 % GST is applicable on the listed price. The CRMs will be sent through SPEED POST PARCEL/COURIER on receipt of full payment in advance. All payments are to be made in favour of "**DIRECTOR, NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR**" by e-payment (NEFT/RTGS) or Demand Draft payable at State Bank of India, Jamshedpur. *No cash will be accepted.* The bank details are given below.

Bank Details:

Banker's detail: STATE BANK OF INDIA, NML BRANCH, JAMSHEDPUR- 831007, JHARKHAND, INDIA

Electronic A/c No.: **30271713826**

RTGS No.: SBIN 0003329

MICR No.: 831002013

PAN No.: AAA TC 2716R

*GST No.: 20AAATC2716R2ZS

HSN/SAC Code: 998346

Accreditation Information:

CRM Unit, AAC Division, CSIR-National Metallurgical Laboratory has been accredited by **NABL as per ISO 17034:2016 for the production of Certified Reference Material** for above materials having **Certificate No.: RC-1019 on 13.01.2022 valid up to 12.01.2024.**

Contact Details:

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