Graphite India Limited, Powmex Steels Division

Largest manufacturer of HSS in India

Commenced in **1992**

ISO 9001 ISO 45001 ISO 14001 ISO 50001

Company Profile & Logistics

Licensed Capacity: 6,750 MT/A

Location: At-Turla, PO-Jagua, Titilagarh, Dist : Balangir, Odisha, India

Connectivity Section

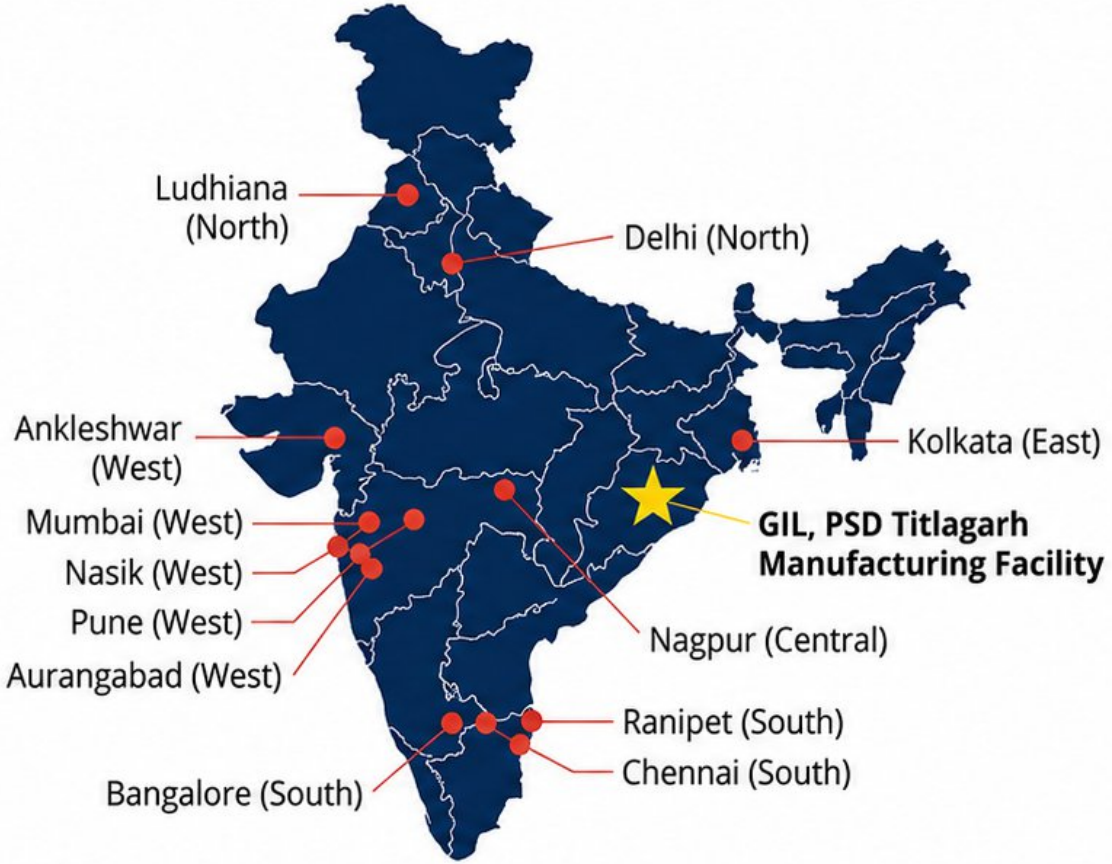
Road: 250 kms from Raipur airport (Capital of Chattisgarh)

Rail: Direct connectivity from all major cities in India.

PSD: GLOBAL REACH & DOMESTIC FOOTPRINT

PSD Footprints in India (Domestic Network)

Extensive Sales & Office Network: Many strategic locations across North, West, East, and South India.

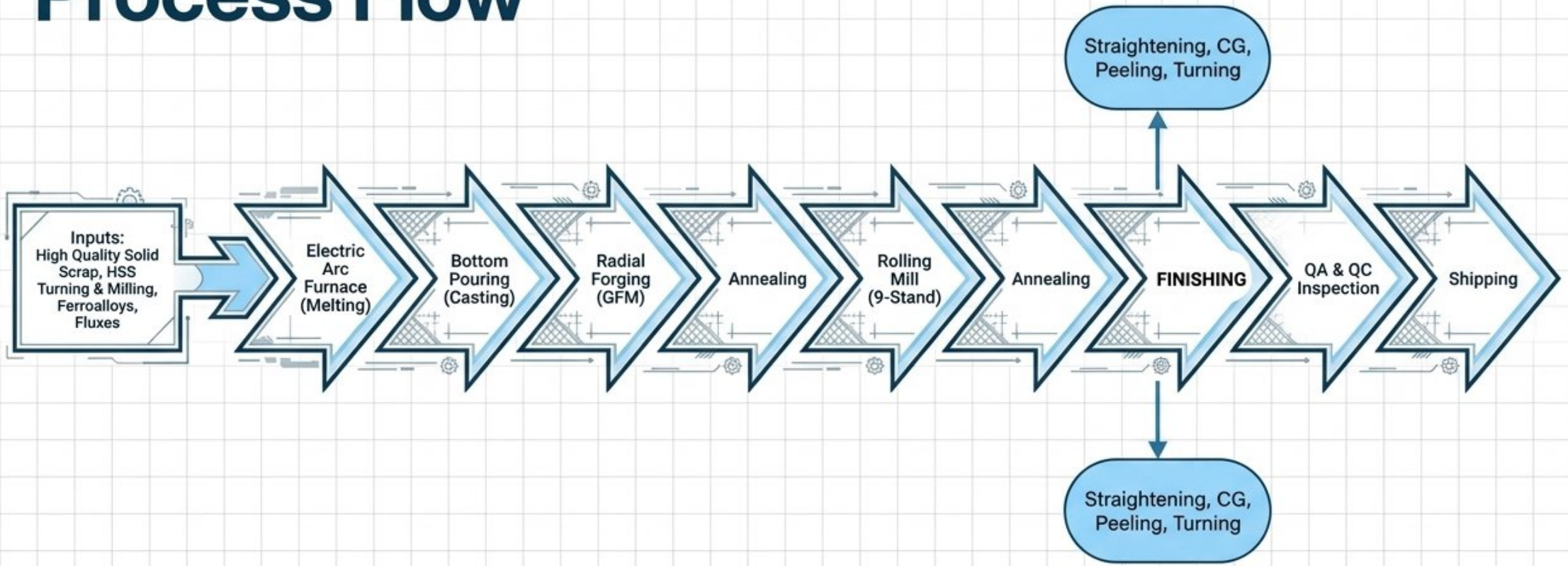


PSD In World (Global Export Reach)

Strategic International Exports: Active distribution to key markets.

Growing Asian & African Presence: Established export channels.

Manufacturing Process Flow



WORLD-CLASS PRODUCTION FACILITIES

Steel Melting Shop (SMS)

9 MT Electric Arc Furnace used to melt the charge.

Make: GEC.

Forge Shop

CNC Horizontal Precision Forging Machine (LFM).

Make: GFM, Austria.
Function: Radial forging of ingots.

Rolling Mill

9-stand hot rolling mill.
Make: MECON.

Function: Rolling products into different sizes.

Annealing

Specialized heat treatment facilities for material stress relief and structural refinement.

Finishing & Quality Assurance

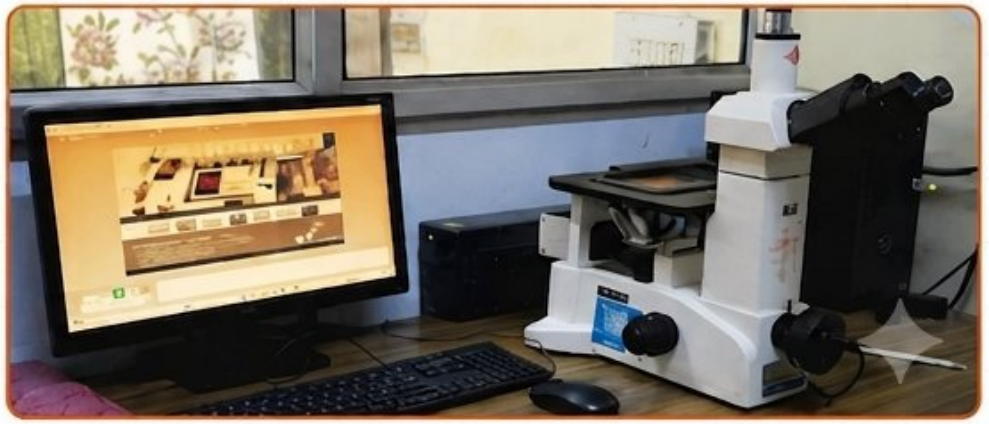
Finishing Processes

- Straightening
- Turning
- Centreless Grinding (CG)
- Peeling

Quality Assurance

Inspection, testing, identification, and traceability in accordance with IS, DIN, ASTM specifications.

- Spectrometer (AMETEK, Germany)
- Metallurgical Microscope (Chennai Metco)



Other Facilities –

- Hardness testers
- UT
- MPI
- HT facilities (Salt medium)

PRODUCT PORTFOLIO OVERVIEW

High-Speed Tool Steel (HSS)

- T1, T4, T15, T42
- M2, M3
- M35, M42
- 4341
- M15, M50

Alloy Tool Steels (ATS)

- D2 (1.2379), D3 (1.2080)
- S5, S7
- A2

Chemical Composition of High-Speed Tool Steel (HSS) (Average values in %)

This technical specification outlines the average chemical composition (by weight percentage) for various T-series (Tungsten) and M-series (Molybdenum) High-Speed Tool Steel grades. It highlights the specific ranges of alloying elements such as Carbon, Chromium, and Tungsten that define the material's properties.

Grade	C	Si	Mn	P	S	Cr	Mo	V	W	Co
T1	0.65	0.15	0.20	0.035	0.03	3.75	0.70	1.00	17.50	
	0.80	0.45	0.40	max	max	4.50	max	1.30	19.00	
T4	0.75	0.45	0.40	0.035	0.03	4.50	0.50	1.40	17.50	4.50
	0.85	max	max	max	max	4.50	0.80	1.70	18.50	5.00
T15	1.40	0.15	0.15	0.035	0.03	3.75	1.00	4.50	11.75	4.50
	1.60	0.40	0.40	max	max	5.00	max	5.25	13.00	5.50
T42	1.20	0.15	0.20	0.035	0.03	5.75	3.00	2.80	8.80	8.80
	1.40	0.45	0.40	max	max	4.50	4.00	3.50	10.70	10.70
M2	0.82	0.15	0.15	0.035	0.03	3.75	4.70	1.70	5.75	
	0.94	0.45	0.40	max	max	4.50	5.50	2.05	6.75	
M3	1.15	0.15	0.20	0.035	0.03	3.75	4.70	2.20	6.00	
	1.27	0.45	0.40	max	max	4.50	5.20	3.25	6.75	
M35	0.85	0.15	0.15	0.035	0.03	3.75	4.70	1.70	6.75	4.50
	0.96	0.45	0.45	max	max	4.50	5.50	2.20	6.75	5.25
M42	1.05	0.15	0.15	0.035	0.03	3.50	9.00	0.95	1.15	7.50
	1.15	0.60	0.40	max	max	4.50	10.00	1.85	6.25	8.75
M15	0.75	0.40	0.40	0.030	0.03	4.00	2.75	4.75	6.25	4.50
	1.60	max	max	max	max	5.00	3.25	5.25	7.00	5.50
M50	0.77	0.25	0.35	0.030	0.03	3.75	4.00	0.90		
	0.85	max	max	max	max	4.80	4.50	1.10		
4341	0.85	0.80	0.20	0.035	0.03	3.80	2.50	1.00	3.50	
	0.93	MAX	0.40	max	max	4.40	3.50	1.20	4.20	

Technical Specifications: Alloy Tool Steel

Chemical Composition (Average values in %)

Grade	C	Si	Mn	P	S	Cr	Mo	V	W	Co
D2	1.50	0.20	0.15	0.03	0.03	11.00	0.70	0.90		
	1.60	0.60	0.45	max	max	12.00	0.90	1.10		
D3	1.90	0.10	0.15	0.03	0.03	11.00				
	2.20	0.40	0.45	max	max	12.00				
S5	0.50	1.75	0.60	0.04	0.03	0.35	0.20	0.35		
	0.65	2.25	1.00	max	max	max	1.35	max		
S7	0.45	0.20	0.20	0.03	0.03	3.00	1.30	0.35		
	0.55	1.00	0.90	max	max	3.50	1.80	max		
A2	0.95	0.10	0.40	0.03	0.03	4.75	0.90	0.15		
	1.05	0.50	1.00	max	max	5.50	1.40	0.50		

Manufacturing Range: High Speed Steel (HSS)

ROUNDS

- 6.30 - 13.40 mm (Condition: CG)
- 13.50 - 54.00 mm (Condition: HRAP)
- 57.00 - 160.00 mm (Condition: FAT)
- 13.00 - 56.00 mm (Condition: HRA)

SQUARES

- 7.2, 8.8, 10.3, 10.5, 11, 13.5, 17, 17.5, 20.5, 21, 22, 26.5, 27 mm (Condition: HRA)
- 60 - 120 mm (Condition: FA)

FLATS

- Thickness (T): 8-30mm
  Width (W): 18-60mm (W-T > 8) (Condition: HRA)
- Thickness (T): 30mm-120mm
  Width (W): 60-120mm (Condition: FA)

Manufacturing Range: Alloy Tool Steel (ATS)

ROUNDS

- 10.00 - 60.00 mm (Condition: HRA)
- 61.00 - 180.00 mm (Condition: FA)

SQUARES

- 21 & 22 mm (Condition: HRA)
- 60 – 120 mm (Condition: FA)

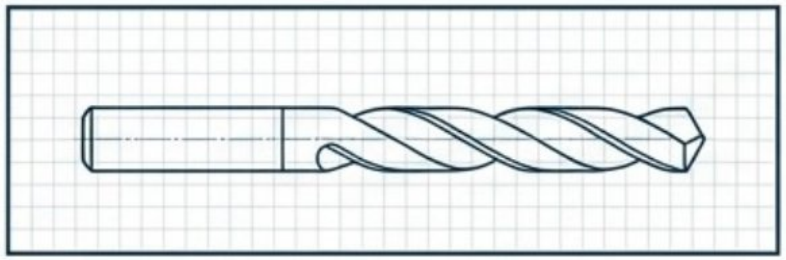
FLATS

- Thickness: 32 – 120 mm
- Width: 60 - 120 mm

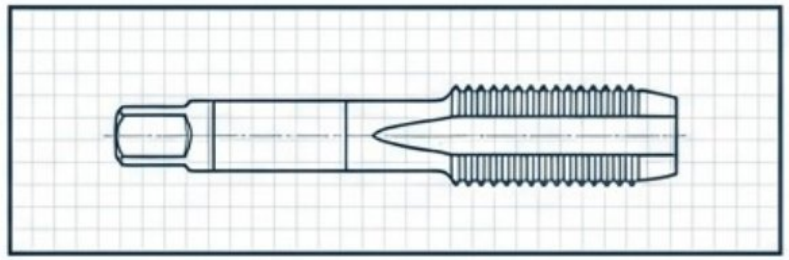
(Condition: FA)

Industries & Applications

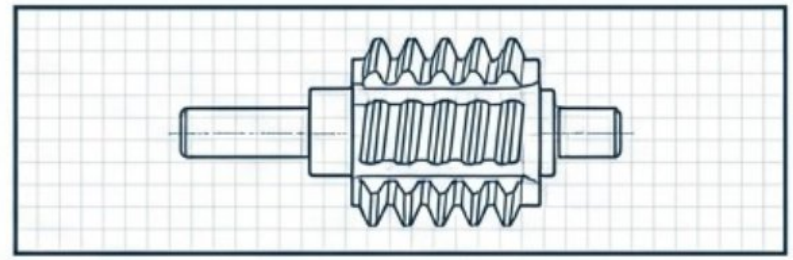
Core Sector: Cutting Tool Industry



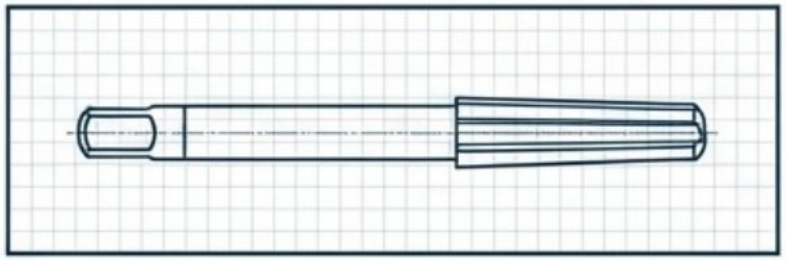
Drill



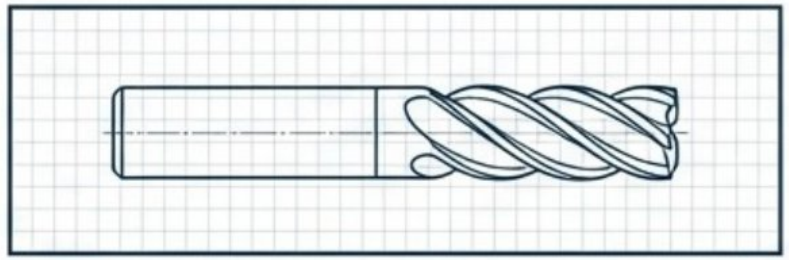
Tap



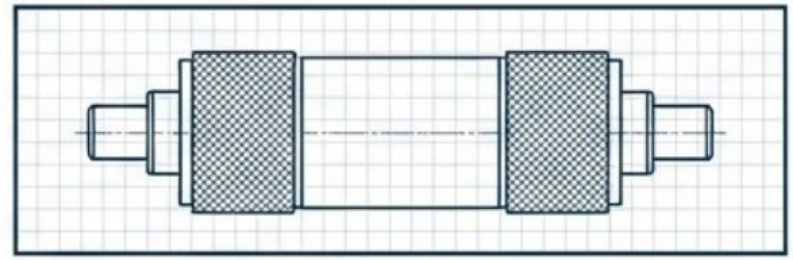
Gear Cutting Tools



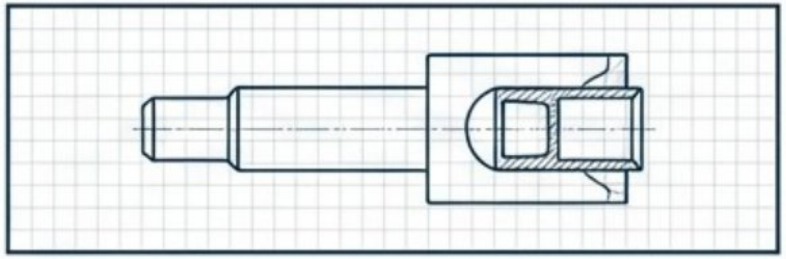
Broaches and Reamers



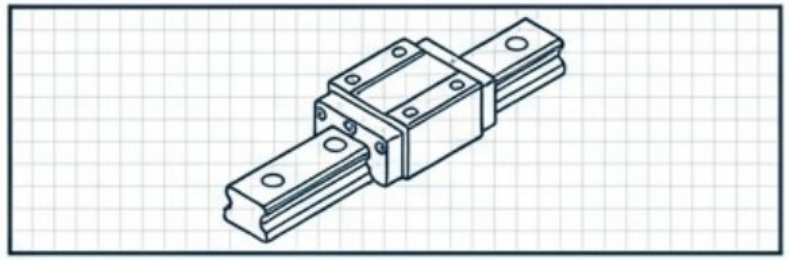
End Mill



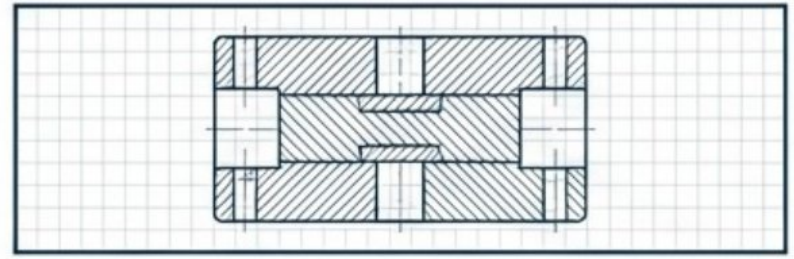
Industrial Rolls



Punches



Guides



Trimming & Extrusion Dies

Contact Directory: Graphite India Limited (Powmex Steels Division)

DIVISION & LOCATION

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