



**THE INSTITUTE  
OF INDIAN  
FOUNDRYMEN**

# FIC DARPAN

Monthly Bulletin of The Institute of Indian Foundrymen



## COVER FEATURE

**Interpretation of Thermal Analysis Cooling Curve in Cast Iron: Integration of Thermodynamics and Solidification Principles for Foundry Practice**

### IFC & EVENTS

Government news, Industry Updates, Directory updates and key national & international events.

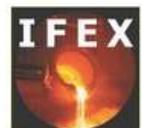


### INDUSTRY MARKET PULSE

CNH India to resume US tractor exports; invest ₹1,800 cr after tariff cut



**THE INSTITUTE  
OF INDIAN  
FOUNDRYMEN**



# CONTENTS

**1. Cover Feature: [Pg 3]**

Design of lightweight castable multicomponent alloys through high-throughput Calphad and machine learning

**2. Partner Feature [Pg 7]**

Smart solutions for the foundry and engineering sector

-

**3. Government Watch [Pg 8]**

Policy, defence and trade developments impacting Indian industry.

**4. Industry News [Pg 11]**

Auto, steel, MSME and energy news that signal demand for castings

**5. Government Schemes [Pg 14]**

IC Scheme, Udyam, ZED, PMS and SC/ST credit-linked subsidy for MSMEs

**6. Raw Material Price Trends [Pg 24]**

Key inputs and price movement snapshot

**7. National & International Events [Pg 25]**

IFC, IFEX, Cast India Expo and global foundry exhibitions

# Interpretation of Thermal Analysis Cooling Curve in Cast Iron: Integration of Thermodynamics and Solidification Principles for Foundry Practice

## Abstract

Thermal analysis has become an essential tool in modern cast iron foundries for evaluating melt quality and predicting solidification behaviour. The cooling curve obtained during thermal analysis provides valuable information about thermodynamic phase transformations, nucleation behaviour, graphite formation, and solidification kinetics. This paper presents a practical interpretation of the thermal analysis cooling curve for cast iron, linking key parameters such as pouring temperature, liquidus temperature, undercooling, eutectic temperature, recalescence, and solidification time with thermodynamic and solidification principles. The study explains how these parameters influence graphite morphology, defect formation, and casting quality. Special emphasis is placed on practical understanding for foundrymen so that thermal analysis can be used as an effective tool for process control. The paper bridges the gap between theoretical metallurgy and shop-floor practice, enabling improved casting quality, reduced defects, and enhanced productivity.

## 1. Introduction

Cast iron remains one of the most widely used engineering materials due to its excellent castability and economic advantages (Callister and Rethwisch, 2018). However, achieving consistent casting quality requires proper control over melting and solidification processes. Traditionally, foundrymen relied on experience to judge melt condition, but modern foundries increasingly use scientific tools such as thermal analysis (ASM Handbook, 2017). Thermal analysis provides a cooling curve that reflects how molten metal behaves during cooling and solidification. This curve contains important information about phase transformations, heat flow, and microstructure formation (Stefanescu, 2008). Understanding this curve allows Foundrymen to predict casting behaviour, control defects, and improve overall process efficiency.



**Dr Ashok Sharma**

Former Professor, Metallurgical  
& Materials Engineering  
MNIT Jaipur, India  
Email: ashok.mnit12@gmail.com

## 2. Thermal Analysis Cooling Curve

The thermal analysis cooling curve represents temperature variation with time as molten cast iron cools. The curve shows distinct regions corresponding to different stages of solidification and phase transformation. Each portion of the curve provides valuable insight into melt quality and solidification behaviour (Stefanescu, 2008). The cooling curve is governed by thermodynamic principles, which determine the temperatures at which phase transformations occur. The liquidus and eutectic temperatures are defined by the equilibrium conditions of the Fe–C–Si system (Gaskell, 2012). These temperatures remain constant for a given composition but may appear shifted in practice due to non-equilibrium effects such as cooling rate and nucleation behaviour. During solidification, latent heat is released, which temporarily slows down or reverses cooling. This phenomenon is clearly visible on the cooling curve and represents the energy balance described by thermodynamics (Flemings, 1974). At the beginning of the curve, the molten metal is at the pouring temperature. The difference between pouring temperature and liquidus temperature is called superheat. Superheat plays a crucial role in determining fluidity and mould filling (Campbell, 2015). Excessive superheat increases oxidation and reduces nucleation efficiency, while insufficient superheat leads to poor mould filling and casting defects. Therefore, maintaining optimal superheat is essential for achieving sound castings (ASM Handbook, 2017).

## 3. Explanation of Thermal Analysis Cooling Curve (Cast Iron)

The thermal analysis cooling curve represents temperature variation of molten cast iron with time during cooling and solidification. As the temperature decreases, the metal reaches the liquidus temperature, where solidification begins. At this stage, primary austenite dendrites start forming. The slope of the cooling curve in this region represents the cooling rate, which influences dendrite size and microstructure (Flemings, 1974). Higher cooling rates produce finer dendritic structures, while lower cooling rates result in coarser microstructures, affecting mechanical properties.

Figure 1 shows the thermal analysis curve for cast iron. The pouring temperature is the initial temperature of molten metal at the start of the curve. The difference between pouring temperature and the liquidus temperature ( $T_L$ ) is called superheat, which indicates how much the metal is heated above the start of solidification. The cooling rate ( $dT/dt$ ) represents how fast temperature decreases. At the liquidus temperature ( $T_L$ ), solidification begins with the formation of primary austenite. A slight flattening near this point is called liquidus arrest ( $T_{LA}$ ) due to release of latent heat. Undercooling occurs when the temperature drops below the equilibrium eutectic temperature before nucleation begins. This phenomenon is caused by insufficient nucleation sites in the molten metal (Stefanescu, 2008). High undercooling is undesirable as it promotes carbide formation instead of graphite, leading to hard and brittle castings. Proper inoculation increases nucleation sites and reduces undercooling, promoting graphite formation (Campbell, 2015). As cooling continues, the temperature may fall below the equilibrium eutectic temperature, producing

producing undercooling ( $\Delta T$ ), and the lowest value reached is the maximum undercooling ( $\Delta T_{max}$ ). After this, the eutectic reaction starts at the eutectic temperature ( $T_E$ ), where, liquid transforms into austenite and graphite. During this transformation, heat is released, causing a rise in temperature known as recalescence, bounded by  $T_{Emin}$  (minimum eutectic temperature) and  $T_{Emax}$  (maximum eutectic temperature). The eutectic transformation involves the conversion of liquid metal into austenite and graphite. During this process, latent heat is released, causing a temporary increase in temperature known as recalescence (Flemings, 1974). The extent of recalescence indicates the effectiveness of graphite nucleation. Higher recalescence is associated with better graphite formation and improved casting quality, while low recalescence suggests inadequate inoculation (Stefanescu, 2008).

The local solidification time represents the duration over which the metal transforms from liquid to solid. This parameter is important in determining feeding behaviour and shrinkage formation (Campbell, 2015). Longer solidification times increase the risk of shrinkage defects due to insufficient feeding, while shorter times may lead to incomplete filling or rapid cooling defects. The time interval during which eutectic solidification occurs is called local solidification time, and after complete solidification, the curve shows continuous cooling of solid metal.

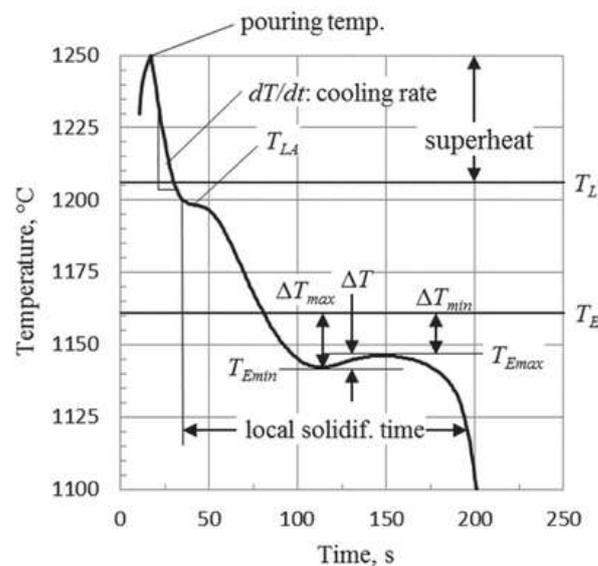


Figure 1: Thermal analysis cooling curve of cast iron showing pouring temperature, liquidus temperature ( $T_L$ ), undercooling ( $\Delta T$ ), eutectic temperature ( $T_E$ ), recalescence, and local solidification time, illustrating the relationship between thermodynamics and solidification behaviour. [The representative chemical composition of iron is approximately 3.2–3.8% C, 1.8–2.8% Si, 0.5–1.0% Mn, with minor amounts of S (0.05–0.12%) and P (0.05–0.15%), balance Fe.]

#### 4. Link with Thermodynamics, Solidification and Industrial Practice

The thermal analysis cooling curve represents a direct combination of thermodynamic principles, solidification behaviour, and practical foundry operations. Thermodynamics determines phase stability and transformation temperatures, while solidification kinetics controls nucleation and growth processes (Gaskell, 2012; Stefanescu, 2008). Undercooling reflects delayed nucleation, while recalescence indicates latent heat release during eutectic transformation. These features connect theoretical thermodynamics with real casting behaviour. From an industrial perspective, thermal analysis is widely used for melt quality control and process standardization. By analysing the cooling curve, workers can detect potential defects such as carbides or poor graphite formation before pouring (ASM Handbook, 2017).

Corrective actions such as adjusting inoculation, controlling temperature, or modifying composition can be taken, reducing rejection rates and improving casting quality (Campbell, 2015).

Based on thermal analysis interpretation, the following guidelines are recommended:

- a) Maintain optimal pouring temperature and superheat.
- b) Ensure proper inoculation to reduce undercooling.
- c) Monitor recalescence to evaluate graphite formation.
- d) Control cooling rate to avoid carbides.
- e) Design proper feeding systems to minimize shrinkage.
- f) Use thermal analysis as a decision-making tool before pouring.

Table: 1 Summary for Foundrymen

Parameter	Meaning	Action
High undercooling	Poor nucleation	Increase inoculation
Low recalescence	Weak graphite	Improve melt treatment
High superheat	Oxidation	Reduce temperature
Long solidification time	Shrinkage	Improve feeding
Fast cooling	Carbides	Control section thickness

#### 5. Conclusions

The thermal analysis cooling curve provides a practical and scientific method for understanding the solidification behaviour of cast iron. It integrates thermodynamic principles and solidification kinetics to provide real-time insights into melt quality. By interpreting key parameters such as superheat, liquidus temperature, undercooling, eutectic temperature, and recalescence, foundry workers can improve casting quality, reduce defects, and enhance productivity. The study demonstrates that combining thermodynamic understanding with practical tools like thermal analysis leads to better control of foundry processes and consistent casting performance.

#### References

1. ASM International (2017). ASM Handbook, Volume 15: Casting.
2. Callister, W.D. and Rethwisch, D.G. (2018). Materials Science and Engineering. Wiley.
3. Campbell, J. (2015). Complete Casting Handbook. Elsevier.
4. Flemings, M.C. (1974). Solidification Processing. McGraw Hill.

# Spark Spectrometers for Metals Analysis

Speed up the production process and reduce tap-to-tap time with **Hitachi High-Tech spark spectrometers**. A range of precision tools that ensure the right ingredients are in the melt, so you can quickly deliver outstanding results.

See our OES range at [hha.hitachi-hightech.com](http://hha.hitachi-hightech.com)



Hitachi High-Tech optical emission spectrometers  
[contact@hitachi-hightech-as.com](mailto:contact@hitachi-hightech-as.com) +91 88796 29558

**OE  
Series**



## Inter-Ministerial Briefing on Recent Developments in West Asia

**CGD companies offering incentives to promote PNG connections**

**LPG supply continues to be monitored in view of prevailing geopolitical situation**

**Domestic LPG production increases by 36 percent**

**Online LPG cylinder bookings increase from about 84% to around 90%**

**State Governments undertaking enforcement measures to prevent hoarding and black marketing**

**LPG Carrier Shivalik to Reach India Today; Nanda Devi Expected Tomorrow Morning**

**Around 2,20,000 passengers returned from the West Asia and Gulf region to India since February 28th**

**Embassy of India in Tehran remains fully operational**

Inter-Ministerial Media Briefings on developments in West Asia are being organised regularly at the National Media Centre. In today's briefing (16 March 2026), the Ministries of Petroleum and Natural Gas, Ports, Shipping and Waterways, and External Affairs shared updates on energy supplies, maritime operations, the welfare of Indian nationals in the region and related public information efforts. Earlier briefings were held on 11th, 12th, 13th and 14th March. Energy Supply and Fuel Availability

In the context of the situation arising from the closure of the Strait of Hormuz, the Ministry of Petroleum and Natural Gas briefed the media on the status of fuel supplies and the measures being taken to ensure continued availability of petroleum products and LPG. As per the Ministry:

Crude and Refineries

·All refineries are operating at high capacity and maintaining adequate crude oil inventories. India remains self-sufficient in petrol and diesel production and no imports of these fuels are required to meet domestic demand [read more..](#)

## MSME Champion Scheme progresses towards achieving its intended objectives and exceeding stipulated targets

The MSME Champion Scheme has substantially progressed towards achieving its intended objectives, with key deliverables having achieved and exceeded the stipulated targets. A third-party impact evaluation of the Scheme is currently under process, to assess its impact on the objectives of its sub-components. Under the MSME Sustainable (ZED) Certification Scheme, MSME Competitive (LEAN) Scheme, and MSME Innovative (IPR) Scheme, MSMEs are supported through quality improvement, process optimization, and facilitation of IPR filing, including reimbursement of expenses incurred for filing foreign and domestic patents, trademarks, and design registration. These initiatives have helped MSMEs to improve their competitiveness in domestic and export markets.

The MSME Sustainable (ZED) Certification Scheme encourages MSMEs to adopt quality and environmentally sustainable manufacturing practices, thereby enhancing their overall competitiveness. This helps in improved market credibility and hence greater opportunities for integration with supply chains of large industries and participation in wider markets. Under the Scheme, graded incentives are provided to certify MSMEs by Financial Institutions and Banks, such as concessions in processing fees and interest rates. These measures facilitate improved access to credit and support the long-term growth and sustainability of enterprises [read more..](#)

## Ministry of Micro, Small and Medium Enterprises organises first National Workshop on MSME Online Dispute Resolution Portal



The Ministry of Micro, Small and Medium Enterprises, Government of India, organised the first National Workshop on the MSME Online Dispute Resolution Portal on 16<sup>th</sup> March 2026 at New Delhi. The workshop was organised to promote faster, cost-effective and technology-enabled mechanisms for resolving commercial disputes involving micro and small enterprises. The workshop brought together MSME industry associations, MSEF Councils, ADR institutions, policymakers and legal experts to deliberate the strengthening of dispute resolution mechanisms and to familiarise the stakeholders with the functionality of the MSME ODR Portal [read more..](#)

## Significant growth in credit disbursement to MSME sector by Scheduled Commercial Banks

Various measures taken to reduce financial stress for MSMEs across the country by the Government

As informed by Reserve Bank of India, the credit disbursement to Micro, Small and Medium Enterprises (MSME) sector by Scheduled Commercial Banks has shown significant growth in the last three years, as given below:

S No.	Financial Year	Amount disbursed (in Rs. crore)
1.	2022-23	16,96,738.26
2.	2023-24	22,04,454.98
3.	2024-25	26,43,448.95

The Government has taken various measures to improve credit penetration and reduce financial stress for MSMEs across the country, which inter-alia includes:

- i. Ministry of MSME implements Credit Guarantee Scheme (CGS) for MSEs through Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) to provide credit guarantee for loans extended to new as well as existing MSEs by Member Lending Institutions without collateral security and third-party guarantee. The ceiling for guarantee coverage is Rs. 10 crore under the scheme.
- ii. Self-Reliant India (SRI) Fund has been set up to infuse Rs. 50,000 crore as equity funding in MSMEs with a provision of Rs. 10,000 crore from the Government of India and Rs. 40,000 crore through Private Equity/Venture Capital Funds [read more..](#)

## Government undertakes many initiatives to support MSMEs and boost their competitiveness in global value chain

The Government has undertaken the following initiatives to support Micro, Small and Medium Enterprises (MSMEs) and boost their competitiveness in global value chain:

1. Export Promotion Mission (EPM): - The Mission will provide a comprehensive, flexible, and digitally driven framework for export promotion, with a total outlay of Rs.25,060 crore for FY 2025-26 to FY 2030-31. EPM marks a strategic shift from multiple fragmented schemes to a single, outcome-based, and adaptive mechanism that can respond swiftly to global trade challenges and evolving exporter needs.

The Mission will operate through two integrated sub-schemes:

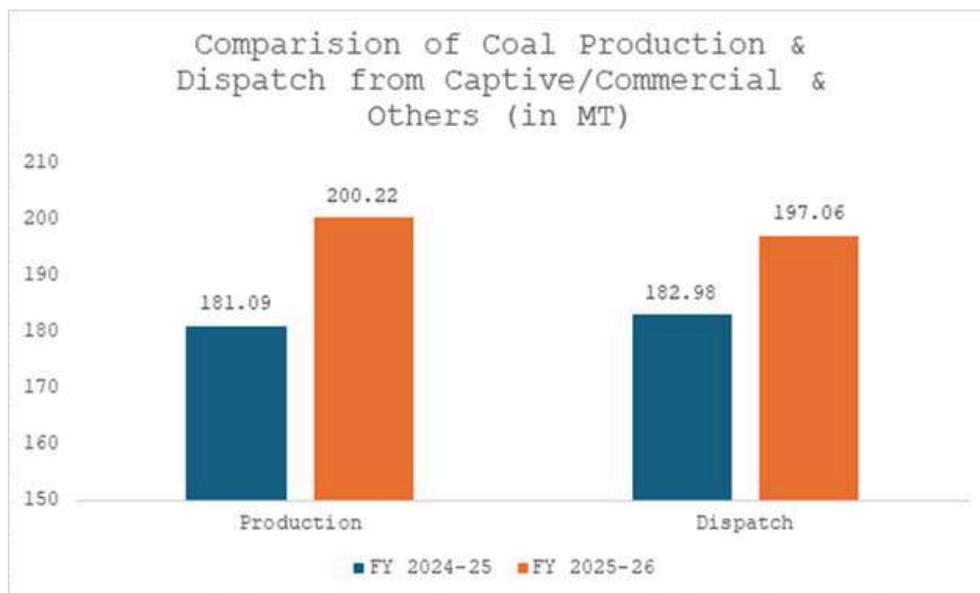
- NIRYAT PROTSAHAN – focuses on improving access to affordable trade finance for MSMEs through a range of instruments such as interest subvention, export factoring, collateral guarantees, credit cards for e-commerce exporters, and credit enhancement support for diversification into new markets.
- NIRYAT DISHA – focuses on non-financial enablers that enhance market readiness and competitiveness, including export quality and compliance support, assistance for international branding, packaging, and participation in trade fairs, export warehousing and logistics, inland transport reimbursements, and trade intelligence and capacity-building initiatives [read more..](#)

## Record Coal Production from Captive/Commercial & Other Mines

Posted On: 13 MAR 2026 4:16PM by PIB Delhi

India's coal sector has achieved a significant milestone as Captive/Commercial & Other mines crossed the landmark of 200 Million Tonnes (MT) of coal production on 11 March 2026 during FY 2025-26. This achievement reflects the collective efforts and unwavering commitment of various Central and State Public Sector Undertakings (CPSUs/SPSUs) along with private sector participants, whose relentless work and resilience have played a crucial role in strengthening the nation's coal production.

Out of the total production, Captive and Commercial Coal Mines contributed 194.17 MT, while Other Mines have contributed 6.06 MT, taking the overall production beyond the historic 200 MT mark. Notably, coal production in FY 2025-26 surpassed the total production of FY 2024-25 (197.32 MT) on 07 March 2026, achieving this milestone 24 days ahead of last year. The sector has continued to demonstrate strong momentum, recording a year-on-year growth of 10.56% during the same period [read more..](#)



## DGFT Extends Export Obligation Period for Advance Authorisations and EPCG Authorisations till August 31, 2026

In view of the prevailing geopolitical developments impacting global shipping routes, logistics corridors and international supply chains, the Directorate General of Foreign Trade (DGFT), under the Ministry of Commerce & Industry, has announced a facilitation measure for exporters by extending the Export Obligation (EO) period for certain export promotion schemes.

Through Public Notice No. 51/2025-206 issued on March 06, 2026, DGFT has provided for automatic extension of the Export Obligation (EO) period or Block-wise EO fulfillment period up to August 31, 2026, for specified Advance Authorisations and Export Promotion Capital Goods (EPCG) Authorisations where the EO period is expiring between March 01, 2026, and May 31, 2026.

The extension shall be granted automatically, and exporters will not be required to submit any separate application or pay any composition fee to avail the benefit. This measure has been introduced to provide additional operational flexibility to exporters facing disruptions arising from current geopolitical developments affecting global trade and logistics [read more..](#)

## Iran hits Gulf neighbours, chokes oil shipping as energy crisis fears grow



Explosions echoed across Beirut early on Monday as Israel struck the Lebanese capital. It also launched a new wave of attacks on Tehran, while Dubai was forced to temporarily close its airport after an Iranian drone hit a fuel tank.

Since being attacked by the United States and Israel more than two weeks ago, Iran has been regularly hitting Israel, American bases and its Gulf Arab neighbours' energy infrastructure with drones and missiles.

It has also effectively stopped shipping traffic in the Strait of Hormuz, through which a fifth of the world's oil is transported, giving rise to growing fears of a global energy crisis and putting pressure on Washington as consumers are already feeling the pain at the pump [read more..](#)

## MSMEs face operational crisis as LPG shortage threatens jobs, growth



A critical shortage of LPG is pushing micro, small and medium enterprises towards an operational crisis, the Association of Indian Entrepreneurs said, calling for urgent intervention of central and state governments to prevent job losses in the sector.

Association of Indian Entrepreneurs National Chairman K E Raghunathan highlighted that for thousands of small industries, commercial kitchens, and food processors, "LPG is not just a fuel, it is a lifeline of daily production." In a statement on Sunday, he said, "When supply becomes uncertain and prices rise sharply, MSMEs simply cannot absorb the shock." "Unlike large corporations, MSMEs operate on extremely thin margins. A sudden spike in energy costs or irregular LPG supply can force many units to cut production, reduce workforce, or temporarily shut down operations. If this situation continues, it could trigger a chain reaction impacting employment, supply chains and local economies, [read more..](#)

## AI can help manufacturing MSMEs create up to \$150 bn in value by 2035



Artificial Intelligence can contribute value creation of around \$135.6–149.9 billion to manufacturing MSMEs by 2035, under a scenario where MSMEs account for 50 per cent of India's gross manufacturing value added, a study by PwC India and Observer Research Foundation said.

AI is no longer the preserve of large enterprises. Deployed as a co-pilot — not a replacement — it can help MSMEs break out of the low-productivity trap and compete on quality, speed, and innovation, while strengthening jobs and supply-chain resilience," said Sanjeev Krishan, chairperson, PwC India, in a press statement.

The report said that by lowering capability barriers and reducing the cost of scale, AI can help small firms improve consistency, meet global standards, and expand output faster.

It said that MSMEs could participate by supplying non-tech-intensive capital goods such as harnesses, cooling equipment, and industrial components — opening a \$100–150 billion manufacturing opportunity over time, given the large investments expected in data centres [read more..](#)

## India's auto boom at risk as West Asia conflict disrupts gas supply

India's automakers and parts suppliers are bracing for production slowdowns and assembly-line disruptions as the Iran conflict chokes gas availability, threatening growth in the world's third-largest car market.

Some parts suppliers to India's leading carmakers like Maruti Suzuki, Tata Motors and Mahindra are already reporting a shortage of gas to power operations, an early sign that supply chain issues are developing, according to two dozen executives at car companies, part makers and dealers.

The disruption comes at a time when India's car demand is soaring to record levels, with sales expected to cross 4.5 million units in the current fiscal year to March 31, leaving little excess inventory with manufacturers and dealers.

"At this point in time it is about survival. First and foremost we need to ensure production continues. The buffer stocks will not last long," said a senior executive with a leading carmaker [read more..](#)

## Don't dampen MSME ambition: Compliance must ease without lowering standards

There has been wide coverage in the media and by professional bodies of some of the recommendations of the High-level Committee on Non-financial Regulatory Reforms relating to micro, small and medium enterprises (MSMEs). They are both welcome and worrisome. Any effort to simplify processes, reduce time, cost, and human energy spent on regulation and compliance is welcome. However, anything that potentially inhibits a small business's desire or ability to scale is worrisome.

To become stronger and more resilient, they need to be encouraged and enabled to aggressively grow revenue and generate the surplus and borrowings needed for investing — to drive customer acquisition, acquire productivity- and efficiency-enhancing tools, move up value chains, improve and widen market offerings and footprint, or hire skilled people. This is especially true for micro companies, the bulk of MSMEs, that are precarious because their small size and well-known difficulty in borrowing make them vulnerable to even small shocks.

We know from experience how incentives, financial or otherwise, have perversely encouraged companies to remain small, instead of enabling them to seize opportunities to grow and flourish, buoyed by India's steadily growing economy and increasing global cachet [read more..](#)



## Tractor volumes to dip amid weak outlook; HSBC trims M&M, Escorts target

HSBC has cut tractor volume estimates for M&M and [Escorts Kubota](#) by 5-7 per cent for FY27 and FY28 and now expects industry tractor volumes to grow at a compound annual rate of 0-2 per cent over FY26-FY28, compared with an estimated 21 per cent growth in FY26.

However, reservoir levels currently stand 24 per cent above the long-term average, which could help cushion the impact of a weak monsoon. Elevated water levels are expected to support Kharif sowing, although a strong [El Nino](#) may affect Rabi sowing later in the year.

The brokerage also highlighted that replacement demand is likely to remain robust over the next two to three years, supported by a nearly 16 per cent compound annual growth in tractor volumes during FY09-FY14 [read more..](#)

## CNH India to resume US tractor exports; invest ₹1,800 cr after tariff cut

Italian-American agriculture equipment firm CNH's India unit plans to resume full-scale tractor exports to the US and invest approximately ₹1,800 crore over the next two to three years, capitalising on a recent India-US trade agreement that reduced tariffs on Indian goods to 18 per cent from as high as 50 per cent.

The New Delhi-based subsidiary, which operates brands like New Holland and Case IH, halted most US-bound shipments late last year after higher duties made them unprofitable. Production for the US market was paused in the final months of 2025, except for limited-compact tractor models used for testing and customer trials.

In an interview with PTI at its Pune plant site, CNH India President and Managing Director Narinder Mittal said the company has now given the green light to restart production and supplies [read more..](#)

## Crude above \$100: What it means for India's economy and energy

The ongoing crisis in West Asia has pushed up global crude prices to over \$100 per barrel, from \$65 per barrel in the period before the conflict began on February 28. At least three factors will ensure prices remain at the current level for some time. These include continued attacks on critical oil and gas infrastructure in the region, the muted response from allies so far to the US' plans to jointly escort commercial vessels through the Strait of Hormuz, and the limited positive impact of the release of strategic oil volumes by International Energy Agency (IEA) member countries.

That being the case, the key question facing India, the world's third-largest energy consumer that imports almost 90 per cent of its crude requirement, is what the \$100 per barrel crude scenario means and what the implications will be for the energy shock it will create for the country in the long run [read more..](#)

## BEML receives export order worth USD 60 million

BEML has received a letter of intent for design, manufacture, supply, testing, and commissioning of Standard Gauge Metro Rolling Stock for African region. The order comprises of stainless-steel standard gauge metro rolling stock valuing of approximately USD 60 million. This is the first ever overseas order secured by BEML for supply of metro rolling stock [read more..](#)



75th ANNIVERSARY  
GOVERNMENT OF INDIA  
75th  
MINISTRY OF  
MICRO, SMALL AND MEDIUM  
ENTERPRISES



# National Small Industries Corporation

National Small Industries Corporation (NSIC), is an ISO 9001:2015 certified Government of India Enterprise under Ministry of Micro, Small and Medium Enterprises (MSME).

A

Promotes, aids and fosters the growth of micro, small and medium enterprises in the country.



B

Operates through a countrywide network of offices and technical Centers in the Country.



C

In addition, NSIC has set up a number of training cum Incubation Centres managed by professional manpower.



Follow Ministry of MSME on @minmsme | Scan the QR Code





भारत सरकार  
GOVERNMENT OF INDIA  
सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय  
MINISTRY OF  
MICRO, SMALL AND MEDIUM  
ENTERPRISES



# MSME Sustainable ZED Certification

## Steps to Avail ZED Incentives

01

**Free online registration & pledge**

Quick and simple process to get your ZED ID & Pledge Certificate

02

**Basic Information & Document Upload**

Provide Systems & Processes information.

03

**Desktop/ Onsite Assessment**

Third-party assessment based on Documents uploaded / Information provided.

04

**Get Certified!**

You can download your Certificate online or from the mobile app.

05

**Avail Incentives**

Check under "My Incentives".

Follow Ministry of MSME on     @minmsme | Scan the QR Code





MSME  
GOVERNMENT OF INDIA  
सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय  
MINISTRY OF  
MICRO, SMALL AND MEDIUM  
ENTERPRISES

# Credit Guarantee Scheme for Micro & Small Enterprises

Implemented through CGTMSE, encourages first generation entrepreneurs to venture into self-employment opportunities by facilitating credit guarantee support for collateral free loans/third party guarantee free loans to Micro and Small Enterprises (MSES).

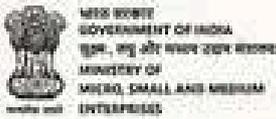
## Key Benefits:

- Credit guarantee for loans up to **Rs. 10 crore**, w.e.f 01.04.2025 without collateral and third-party guarantee.
- Guarantee coverage ranges from **75% to 90%**

**Scheme applicable for: Micro and Small Enterprises**



Follow Ministry of MSME On     @minmsme | For more information, Scan the QR Code



**The MSME ODR Portal is a government-backed digital portal created to facilitate Micro and Small Enterprises (MSEs) resolve payment delayed disputes quickly, fairly, and online.**

### What does the MSME ODR Portal do?



### Why does it matter?

The portal reduces delays, lowers costs, and removes the need for physical visits -helping MSEs recover dues faster and focus on enterprise growth.

Follow Ministry of MSME on  @minmsme | Scan the QR Code





भारत सरकार  
GOVERNMENT OF INDIA  
एम्प, एम्प, एम्प एम्प एम्प  
MINISTRY OF  
MICRO, SMALL AND MEDIUM  
ENTERPRISES



## How the International Cooperation scheme helps MSME?

The International Cooperation scheme aims to build the capacity of MSMEs to enter the export market.

### These are the three ways to facilitation:

- Reimbursement of various cost incurreds in participation in international exhibitions/fairs.
- Organise international conferences/seminars/workshops in India on the theme related to MSME sectors.
  - Reimbursement of various costs involved in the export of goods and services.

### Components of the International Cooperation Scheme:

- Market Development Assistance
- Capacity Building of First-Time MSE Exporters



Follow Ministry of MSME on     @minmsme

Scan Qr Code



GOVERNMENT OF INDIA  
MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES

# Password Management

## Best Practices



### Use Strong and long passwords

Always prefer to create lengthy passwords. Short length passwords are easy to crack

### Don't use dictionary words as passwords

Such passwords are too easy to crack.

⚠ *Dictionary words are vulnerable to brute-force attack by hackers*



### Create passwords using special characters

Passwords mixed with uppercase, lowercase, numerals and special characters are difficult to crack

### Change passwords periodically

Avoid using guessable patterns of password.



### Enable Multi Factor Authentication

MFA adds another layer of security to your accounts.

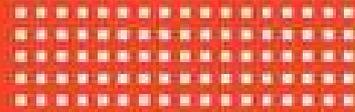
Cyber & Information Security Group and IT & Planning Division

Scammed Online? Act Fast! Call Cyber Helpline 1930

Follow Ministry of MSME On     @minmsme



भारत सरकार  
GOVERNMENT OF INDIA  
सूक्ष्म, लघु और मध्यम उद्यम विभाग  
MINISTRY OF  
MICRO, SMALL AND MEDIUM  
ENTERPRISES



# Udyam Registration

## One Registration. Many Benefits

- Register your enterprise on the Udyam Portal and become part of India's MSME growth story.
- No documents required Instant recognition Easy and Hassle-Free
- Register today by scanning the QR code:



Follow Ministry of MSME On @minmsme

# INDIA-US TRADE DEAL



**ALIGNING  
STANDARDS,  
ACCELERATING  
EXPORTS**



Helps avoid repetitive testing & certifications for our exporters



Lower costs & time for Indian goods to enter U.S. markets



Support Indian MSMEs integrate into global value chains



Help Indian goods meet global standards



Bring down costs for consumers



**ENHANCING  
EASE OF DOING  
BUSINESS**





# Duty Deferment Scheme for

# ELIGIBLE MANUFACTURER IMPORTERS

## Eligibility Criteria



### Importer & Manufacturer Status

- Must be an importer as defined under the Customs Act, and must be a manufacturer as defined under the CGST Act.
- If not a manufacturer, an importer sending inputs/capital goods, without payment of tax, to a job worker for job work under Section 143 of the CGST Act.



### Valid IEC

- Must have a valid Importer Exporter Code (IEC).



### Customs Footprint

- At least 25 EXIM documents filed (10 for MSMEs).



### GST Compliance

- All due GSTR-3B returns must have been filed, no tax dues pending.



### Financial Solvency

- Must be financially solvent, no insolvency or bankruptcy proceedings.



### No Criminal Record

- Must not have been arrested, convicted, or prosecuted under Customs, Excise, Service Tax or GST laws.



### No Past Rejection/Suspension

- No previous rejection or suspension for fraud or forgery.



# The **Eligible** Manufacturer Importer Scheme

is now accepting registrations on the

## **AEO Portal**

([aeoindia.gov.in](http://aeoindia.gov.in))



**The Eligible Applicants May Register.**



On successful registration, the Applicant shall be intimated by e-mail.

Thereafter, the Applicant may submit the application.



 @cbicindia

 @cbic\_india

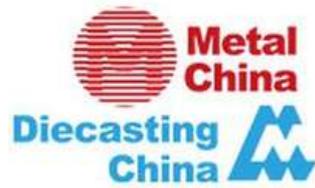
 @cbicindia

 @CBICINDIA

 @CBIC india

**RAW MATERIAL PRICE TRENDS**

SI No.	Particulars	Location	prices	Remarks
1	Copper Armature Scrap, Cu 99%	Delhi	1,120,000	As on 13 Mar
2	Copper Armature Scrap,BME, Cu 98%	Mumbai	1,167,000	As on 13 Mar
3	Copper primary CC Wire rods (CCR),BME, 8 mm, Cu 99.99%	Mumbai	1,261,000	As on 13 Mar
4	Copper primary CC Wire rods (CCR), 8 mm, Cu 99.99%	Delhi	1,240,000	As on 13 Mar
5	Copper secondary CC Wire rods (CCR), 8 mm, Cu 99.99%	Delhi	1,208,000	As on 13 Mar
6	Ferro Manganese, HC 70%, 25-150 mm	Durgapur	74,100	As on 13 Mar
7	Ferro Manganese, HC 70%, 25-150 mm	Raipur	74,200	As on 13 Mar
8	Ferro Manganese,MC (Mn 70% min), 10-150mm	Durgapur	94,300	As on 12 Mar
9	Ferro Molybdenum (FeMo60%), Mo 60%, 10-100mm	Nagpur	3,528,000	As on 13 Mar
10	Ferro Silicon, FeSi 70%,25-100 mm	Guwahati	100,000	As on 13 Mar
11	GP 120 GSM, 0.6 mm	Mumbai	73,500	As on 12 Mar
12	GP 120 GSM, 0.6 mm	Chennai	77,500	As on 12 Mar
13	GP 120 GSM, 0.6 mm	Delhi	72,000	As on 12 Mar
14	GP 120 GSM, 0.6 mm	Hyderabad	73,800	As on 12 Mar
15	GP 120 GSM, 0.8 mm	Mumbai	72,000	As on 12 Mar
16	GP 120 GSM, 0.8-1.6 mm	Chennai	76,000	As on 12 Mar
17	GP 120 GSM, 0.7 mm	Delhi	70,500	As on 12 Mar
18	GP 120 GSM, 0.8 mm	Hyderabad	72,300	As on 12 Mar
19	HC Ferro Chrome (Low Silicon), HC 60%, Si -2%, 10-150 mm	Jajpur	125,300	As on 12 Mar
20	HC Ferro Chrome (Medium Silicon), HC 60%, Si-4%, 10-150 mm	Jajpur	119,800	As on 13 Mar
21	Melting Scrap ,CR Bushelling (Loose)	Ludhiana	38,200	As on 13 Mar
22	Melting Scrap ,CR Bushelling (Loose)	Mandi Gobindgarh	38,500	As on 13 Mar
23	Melting Scrap ,CR Bushelling (Loose)	Jalna	35,900	As on 13 Mar
24	Melting Scrap ,CR Bushelling (Bundle)	Chennai	35,800	As on 13 Mar
25	Melting Scrap ,CR Bushelling (Bundle)	Ahmedabad	35,500	As on 13 Mar
26	Melting Scrap, HMS (80:20)	Mumbai	34,000	As on 13 Mar
27	Melting Scrap, HMS (80:20)	Jalna	32,900	As on 13 Mar
28	Melting Scrap, HMS (80:20)	Alang	34,500	As on 13 Mar
29	Melting Scrap, HMS (80:20)	Raipur	34,950	As on 13 Mar
30	Melting Scrap, HMS (80:20)	Durgapur	35,600	As on 13 Mar
31	Melting Scrap, HMS (80:20)	Mandi Gobindgarh	34,900	As on 13 Mar
32	Nickel Cathode, BME, Ni 99.99%	Mumbai	1,632,000	As on 13 Mar
33	Pig Iron, Foundary Grade	Ludhiana	43,300	As on 13 Mar
34	Pig Iron, Foundary Grade	AHMEDABAD	44,000	As on 13 Mar
35	Pig Iron, Foundary Grade	Delhi	42,500	As on 13 Mar
36	Pig Iron, Foundary Grade	Durgapur	41,500	As on 13 Mar
37	Pig Iron, Foundary Grade	Kolhapur	43,800	As on 13 Mar
38	Pig Iron, Steel Grade	Durgapur	37,750	As on 13 Mar
39	Pig Iron, Steel Grade	Raipur	37,750	As on 13 Mar
40	Pig Iron, Steel Grade	Hyderabad	37,500	As on 13 Mar
41	Pig Iron, Steel Grade	Ludhiana	40,000	As on 13 Mar
42	Pig Iron, Steel Grade	Raigarh	38,400	As on 13 Mar
43	Tin Pure Ingot, BME, Sn 99.99%	Mumbai	4,663,000	As on 13 Mar



**Metal China & Diecasting China & Nonferrous  
China 2026**

06.05.2026-09.05.2026

NECC, Shanghai, China



**CastForge 2026**

09.06.2026 - 11.06.2026

Messeplazza 1 70629 Stuttgart



**75th INDIAN FOUNDRY CONGRESS,  
IFEX 2027 & CAST INDIA EXPO**

08.02.2027 - 10.02.2027

India Exposition Mart Limited (IEMML), Greater Noida



**GIFA 2027**

21.06.2027 - 25.06.2027

Düsseldorf, Germany

<https://www.gifa.com/>