



STAINLESS STEEL COAL TRANSPORTATION

For a fleet that lasts longer, resists rust and
pays for itself in just **18 months**



20-25%

Weight Reduction



20+ YEARS

Vehicle Life



₹25-30LAKH

Savings/15 Yrs



18 MONTHS

Payback Period



Coal Tippers • Tip-Trailers • Side Wall Trailers

A STAINLESS LEGACY

India's leading stainless-steel manufacturer, Jindal Stainless, achieved a consolidated annual turnover of INR 38.562 crore (USD 4.7 billion) in FY24. The company is expanding its facilities to reach 4.2 million tonnes of annual melt capacity by 2026. Jindal Stainless operates 16 manufacturing and processing facilities across India, Spain, and Indonesia, with a global network of 12 locations, as of March 2024.

Committed to a greener future, Jindal Stainless Steel scrap in electric arc furnaces, reducing greenhouse gas emissions, and ensuring high recyclability without quality loss. The company targets a 50% reduction in carbon emission intensity before FY35 and aims for Net Zero by 2050.

COAL TRANSPORTATION SOLUTION FROM JSL

Since 1970, Jindal Stainless has been at the forefront of making India self-reliant in stainless steel. As India's largest stainless steel manufacturer, we don't just supply material, we engineer solutions that transform industries.

In coal transportation, where corrosion, heavy loads, and rough terrain combine to destroy conventional steelbodies within years, JSL's stainless grades rewrite the rules. Our SM650 grade is purpose-engineered for exactly this application, delivering the strength, corrosion resistance, and weight advantage that fleet owners need to stay profitable.

Made in India
Backed by India's largest stainless steel producer, with steady availability and zero import dependency.

Proven Track Record
Successfully deployed in coal transport applications in Chhattisgarh, Odisha, and Madhya Pradesh.

100% Recyclable
Stainless steel retains strong value at end of life, helping you recover more from every body.

Engineering Support
We work with your team at every step from BOM redesign to fabricator training.



THE COAL TRANSPORT LANDSCAPE

THE SCALE OF INDIA'S COAL ECONOMY

India is the world's second-largest coal producer, with coal forming the backbone of power generation, steel, and cement industries. The scale and growth of coal production continue to drive massive demand for efficient and durable transportation solutions.

Key Industry Highlights

1,047 Million Tonnes (MT)
Total Coal Production
(FY25)

4-5% CAGR
Projected growth over
the next 5 years

1.3-1.5 Billion Tonnes
Expected production
by 2030

Key Coal Producing States

Chhattisgarh · Odisha · Jharkhand · Madhya Pradesh · Maharashtra · Telangana

Indian Coal Classification

Category	Description / Usage
Coking Coal	Used in steel industry (to make coke for blast furnaces); low ash & sulphur.
Non-Coking Coal	Used for power generation and cement industries; high ash.
Washed Coal	Beneficiated coal with reduced ash content.
Lignite	Used in thermal power plants near mines (e.g., Neyveli).

Chemical Composition of Indian Coal

Constituent	Percentage Range (%)
Carbon	35-60
Hydrogen	2.5-5
Oxygen	5-15
Nitrogen	0.5-1.5
Sulphur	0.4-1.0
Ash	15-45
Moisture	2-15

India's Coal Transportation

Coal Production	Annual Tipper Production In India	Chhattisgarh Share
700-750 MT/Annum	60,000-70,000	40% (24,000/Annum)
Non-coking coal produced annually in India	Tipplers & Tip-Trailers produced per year	Market share held by Chhattisgarh fabricators

Problem Areas



CORROSION & RUST

Wet and beneficiated coal contain moisture (~11%) and sulphur (1.8%) which attack carbon steel quickly at joints, welds, and exposed panels leading to rust.

Impact: Vehicle scrapped in 8-10 years



HIGH REPLACEMENT COSTS

Heavy corrosion destroys carbon steel bodies in just 8 years, resulting in a mandatory replacement cost of ₹2.0-₹2.5 lakh per trailer – a massive recurring expense that harms profit.

Impact: ₹5 lakh wasted/12 years



DEAD WEIGHT & LOST PAYLOAD

Convention steel body is heavier which adds unnecessary dead weight. Every extra kilogram reduces the payload per trip, directly cutting into the revenue.

Impact: Losing 620kg of revenue/trip



THE IMPORT TRAP

Using Hardox (imported wear steel) exposes profit margins to sudden price volatility and supply disruptions caused by fluctuating foreign exchange rates.

Impact: 100% import risk



SM650 vs THE COMPETITION

While fleet owners currently use E250/E350 carbon steel, BSK-46, or imported Hardox, JSL's SM650 (equivalent to SS 415) changes the game. Here is the direct side-by-side comparison:

Material Comparison Table

Mechanical Properties

S. No.	Mechanical Properties	IS 2062 E 250	IS 2062 E 350	SS JT (N7 In BIS 6911)	SS JT (Tube)	BSK-46 (ref SAIL)	SM 650	Hardox 450 (ref SSAB)
1	Y.S. MPa (Min)	250	350	400	700	451-560	650	1250 (typical, not guaranteed)
2	U.T.S MPa (Min)	410	490	800	900	490-640	800	
3	%El (Min)	23	22	30	30	21	15(5 <= thk <= 60mm)	
							10(2 <= thk < 5mm)	

Chemical Composition

S. No.	Grade	% C (Max)	% Mn (Max)	% P (Max)	% S (Max)	% Si (Max)	% Cr (Max)	% Ni (Max)	% Mo (Max)	% N (Max)	BSK-46 (ref SAIL)
1	IS 2062 E 250	0.22	1.50	0.045	0.045	0.40	---	---	---	---	---
2	IS 2062 E 350	0.20	1.55	0.045	0.045	0.45	---	---	---	---	---
3	BSK-46 (ref SAIL)	0.12	1.4	0.03	0.025	0.25	---	---	---	---	Nb-0.080 max, Al-0.02 min
4	Hardox 450 (ref SSAB)	0.26	1.6	0.025	0.01	0.7	1.4	1.4	0.6		B-0.005 max
5	SS JT (N7 in BIS 6911)	0.14	9.75-11.00	0.100	0.015	0.75	14.0-15.25	0.40-0.95	----	---	---
6	SM 650	0.05	0.50-1.00	0.030	0.030	0.60	12.0-14.0	3.5-5.5	0.5-1.0	---	---

*SM650 is JSL's proprietary Super Martensitic Stainless Steel grade (equivalent to SS 415). SS JT Tubes (N7 in BIS 6911) is used for stiffeners and structural sections.

THE LIGHTWEIGHTING ADVANTAGE

SM650 – SUPER MARTENSITIC STAINLESS STEEL

Component-by-component substitution of BSK-46 with SM650 delivers a verified 22% weight reduction on a 32 CBM tip-trailer without any compromise in structural integrity.

32 CBM Tip-Trailer Body Weight Comparison: BSK-46 vs SM650

Component	BSK-46 Thk (mm)	BSK-46 Wt (kg)	SM650 Thk (mm)	SM650 Wt (kg)	Saving (kg)
Side Board Plate	4	686.8	3	515.1	171.7
Top Rail	4	213.4	3	160.1	53.4
Front Stiffener	4	60.6	3	45.4	15.2
Middle Stiffener	4	116.5	3	87.4	29.1
Rear Stiffener	5	61.3	4	49.0	12.3
Head Board Plate	4	195.8	3	146.8	49.0
Tail Door Plate	4	120.4	3	90.3	30.1
Floor Plate	5	901.3	4	721.0	180.3
Body Runner	5	198.3	4	158.7	39.6
Cross Members	3-5	285.2	3-4	244.8	40.3
TOTAL		2,839.5	SM650	2,218.6	620.9

620 KG SAVED PER TRAILER Each kilogram saved is a kilogram more coal per trip. At ₹1/kg freight rate with 22 trips/month, that translates to **₹13,660/month in additional freight revenue** — plus ₹1,525/month in diesel savings. Total: **₹15,185/month in extra earnings.**



THE NUMBERS DON'T LIE

Life Cycle Cost Analysis — SM650 vs BSK-46

STANDARD SUMMARY - MAJOR COMPONENTS-CUBED BOX - 32 CBM TIP TRAILER

S.NO	DESCRIPTION	THICKNESS	GRADE	WEIGHT
1	SIDE BOARD PLATE	4	BSK-46	686.83
2	TOP RAIL	4	BSK-46	213.4
3	FRONT STIFFENER	4	BSK-46	60.58
4	MIDDLE STIFFENER	4	BSK-46	116.52
5	REAR STIFFENER	5	BSK-46	61.28
6	HEAD BOARD PLATE	4	BSK-46	195.79
7	TAIL DOOR PLATE	4	BSK-46	120.35
8	FLOOR PLATE	5	BSK-46	901.29
9	BODY RUNNER	5	BSK-46	198.31
10	MIDDLE LONG CROSS MEMBER	4	BSK-46	30.81
11	MIDDLE SMALL CROSS MEMBER	4	BSK-46	96.23
12	FRONT CROSS MEMBER	3	BSK-46	115
13	REAR CROSS MEMBER	5	BSK-46	43.13
TOTAL WT IN MS (KG)				2839.52

STAINLESS STEEL SUMMARY - MAJOR COMPONENTS-CUBED BOX - 32 CBM TIP TRAILER

S.NO	DESCRIPTION	THICKNESS	GRADE	WEIGHT
1	SIDE BOARD PLATE	3	SS 415	515.12
2	TOP RAIL	3	SS 415	160.05
3	FRONT STIFFENER	3	SS 415	45.44
4	MIDDLE STIFFENER	3	SS 415	87.39
5	REAR STIFFENER	4	SS 415	49.02
6	HEAD BOARD PLATE	3	SS 415	146.84
7	TAIL DOOR PLATE	3	SS 415	90.26
8	FLOOR PLATE	4	SS 415	721.03
9	BODY RUNNER	4	SS 415	158.65
10	MIDDLE LONG CROSS MEMBER	3	SS 415	23.11
11	MIDDLE SMALL CROSS MEMBER	3	SS 415	72.17
12	FRONT CROSS MEMBER	3	SS 415	115
13	REAR CROSS MEMBER	4	SS 415	34.50
TOTAL WT IN SS (KG)				2218.59



Incremental Cost to Upgrade	Payback Period (ROI Recovery)	Additional Monthly Earnings	Body Replacement Cost Avoided	Total Life Cycle Savings / 15 Yrs
₹2.70 Lakh	18 Months	₹15,200/Month	₹5 Lakh (2X Replacements)	₹25-30 Lakh



Advantages

20-25% Lighter Body

20-25% Lighter Body
Higher strength allows thinner walls, increasing payload per trip.

Negligible Corrosion

Self-healing chromium layer protects against sulphur, moisture, and acidic coal.

20+ Year Life

Built to outlast the truck, unlike carbon steel bodies.

Near-Zero Maintenance

Near-Zero Maintenance
No repainting, rust treatment, or patch welding needed.

No Import Risk

Made in India by JSL with stable pricing and supply.

Scrap Advantage

Higher scrap value; up to 55% more than carbon steel.

2-3
nanometres

What makes Stainless Steel Corrosion Resistant?

Stainless steel forms an invisible passive film of chromium oxy-hydroxides just 2-3 nanometres thick. This film is transparent, adherent, and most crucially - self-repairing. Even when scratched, it reforms instantly in the presence of oxygen, providing permanent protection that carbon steel and Hardox simply cannot match.



FROM PROBLEM TO PROFIT: THE OFC STORY

A leading fleet owner from Maharashtra operating in coalfields switched to SM650 and continues to deploy it across operations.

The Story

THE CHALLENGE

A major Maharashtra-based fleet operator (OFC) running coal tippers across Western Coalfields was facing **severe corrosion near joints and rapid wear with E250 carbon steel.**

Imported Hardox was the only perceived upgrade but costs and supply risk were mounting.

Local fabricator from Chattisgarh, Vandana Agro was tasked with finding a better solution.

THE SOLUTION

Jindal Stainless engaged with Vandana Agro, presenting SM650 as a domestically available, higher-yield, corrosion-resistant alternative.

The BOM was redesigned: SM650 for flooring only and BSK-46 for side walls.

Total SM650 per truck: 660 kg for floor only

THE RESULTS

The conversion from 4mm to 3mm thickness delivered a verified 202 kg weight reduction per truck. The fleet owner reported satisfaction with corrosion performance and the payload advantage.

A 40 MT follow-up order was placed.



Results

660 KG	202 KG	10 MT	40 MT
SM650 used for floor per truck	Weight saved per truck	Initial order fulfilled	Repeat order placed

Testimonial

“We’re proud to partner with a homegrown brand, JSL, that delivers both authenticity and real value. The material finish is consistently smooth, which brings ease of loading and overall operations, something we haven’t experienced with imported alternatives like Hardox.

One of the biggest advantages for us has been the lightweighting of our vehicles, helping improve efficiency without compromising performance. What truly sets the experience apart is the JSL team’s support—they’ve been with us at every step, ensuring a seamless and reliable partnership.”

Hemant Jaiswal, MD of Vandana Group, Sakti, Chhattisgarh

OUR STAINLESS GRADES FOR COAL TRANSPORT

SM650-SUPER MARTENSITIC SS Floor, Body Runners & Chassis	SS JT Tubes (N7 BIS 6911) - Austenitic SS Stiffeners, Top Rails & Structural
Yield Strength: 650-700 MPa (min)	Yield Strength: 700 MPa (min)
UTS: 800 MPa (min)	UTS: 900 MPa (min)
Elongation: 10-15% min	Elongation: 30% min
Hardness: 302 HBW max	Hardness: 100 HBW max
Chromium: 12-14%	Chromium: 14-15%
Nickel: 3.5-5.5%	Nickel: max 1.0%
Thickness Available: 2.0-60 mm (sheets & plates)	Thickness Available: Tubes (available in all sizes)
Best Application: Floor, Chassis, Body Runners	Best Application: Stiffeners, Top Rails, Structural





READY TO BUILD A STAINLESS FLEET?

Talk to JSL's transportation solutions team

Rishi Kumar Bajpai | Email: rishi.bajpai@jindalstainless.com | Number: +91 9996619560

JINDAL STAINLESS LIMITED