

TECHNICAL DATA SHEET



PRODUCT NAME

40kg/m; 48kg/m & 57kg/m rail

CATEGORY

General Freight and Sidings

COMPLIANCE

EN 13674-1 (European Standard)

SUPPLIER

ZAK Steel (Pty) Ltd

PRODUCT OVERVIEW

ZAK 40–57 kg/m rail series provides a comprehensive solution for Africa's rail infrastructure. By bridging the gap between heavy-haul mainline reliability (57 kg/m) and specialized industrial sidings (40 kg/m), these rails offer the high-load capacity and wear resistance required for both national freight networks and private industrial sidings. Available in high-strength grades like R260, our rails are designed for maximum durability in high-traffic environments.

Technical Standards & Quality Compliance

ZAK rail products are manufactured under stringent quality control protocols to ensure dimensional precision and metallurgical integrity. Our production processes align with both local and international benchmarks:

- **Manufacturing Specifications:** Produced in accordance with ISCOR (South African Standard) and EN 13674-1 (European Standard) for mainline and industrial applications.
- **Quality Management:** All facilities are ISO 9001:2015 certified, ensuring consistent chemical composition and mechanical properties across all batches.
- **Standard Profiles:**
 - 40 kg/m: Optimized for high-density industrial sidings.
 - 48 kg/m: Engineered for standard mainline and general freight.
 - 57 kg/m: Reinforced profile for heavy-haul export corridors and high-axle loads.

KEY FEATURES

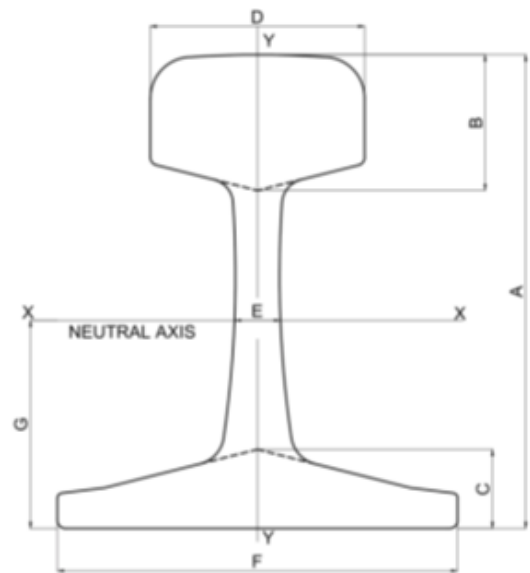
- **Load Capacity:** The 57 kg/m profile is specifically designed for heavy-haul corridors (e.g., coal and iron ore lines) with high axle loads, whereas 40 kg/m is the standard for locomotive tracks.
- **Branding:** Mainline rails (48kg and 57kg) typically branded on the web with the profile size, the "AMRAS" mark, and the manufacturing year.



Manufacturing & Quality

- Lengths: Standard supply lengths are 9 m, 12 m, and 18 m.
- Tolerances: Height tolerance is typically +1.2 mm / -0.5 mm, while head and flange widths are ± 1.6 mm.

SAR40kg/m, SAR48kg/m & SAR57kg/m as per drawing



CHEMICAL COMPOSITION BY GRADE

The following table provides the typical ladle analysis for the grades used in 40–57 kg/m rail production.

	Dimension in mm						
Rail Size kg/m	A	B	C	D	E	F	G
40kg/m	127	4,048	19.45	63.5	14	127	-
48kg/m	150	43	25	68	14	127	722
57kg/m	165	475	265	70	16	140	7,879

Rolling Tolerances

Profile Tolerance Class Y		
Height of rail	+1.2 mm	- 0.5 mm
Width of flange	+ 1.6 mm	-1,6 mm
Width of head	+ 1.6 mm	-1.6 mm
Thickness of web	+1.2 mm	- 0,8 mm
Off center of head /flange (verticality)	1.6 mm max	
Fishing angle stand off	4.0 mm max	
Concavity on base	1.0 mm max	
End squareness	1.2 mm max	

TECHNICAL SUMMARY

ZAK 40–57 kg/m rail range is engineered to meet the demands of Africa's diverse rail infrastructure, from high-density industrial sidings to heavy-haul export corridors. Manufactured in accordance with EN 13674-1 (European Standard) and ISCOR (South African Standard), and produced under ISO 9001:2015 certified quality management systems, these rails deliver consistent dimensional precision and metallurgical integrity across every batch.

All products are backed by Material Test Certificates (MTC) and Certificates of Conformance (CoC).



CHEMICAL COMPOSITION BY GRADE

The following table provides the typical ladle analysis for the grades used in 40–57 kg/m rail production.

Steel Grade	Carbon (C) %	Manganese (Mn) %	Silicon (Si) %	Standard
Grade 700	0.40 – 0.60	0.80 – 1.25	0.05 – 0.35	UIC 860
900A	0.60 – 0.80	0.80 – 1.30	0.10 – 0.50	UIC 860
R260	0.62 – 0.80	0.70 – 1.20	0.15 – 0.58	EN 13674-1

Material Grade Comparison

These grades define the mechanical performance and durability of the rail. Grade R260 is the standard for mainline tracks, while 900A is frequently used for high-strength industrial and mining applications.

Feature	Grade 700 (Standard)	Grade 900A (High Strength)	Grade R260 (Mainline)
Common Uses	Light rail, sidings	Mining, heavy industrial	National mainlines
Tensile Strength	≥700 MPa	≥880–900 MPa	≥880 MPa
Min. Hardness	200 HBW	260 HBW	260–300 HBW
Min. Elongation	12%	10%	10%
Microstructure	Ferrite-Pearlite	Full Pearlite	Fine Pearlite