

Memorandum of Understanding

Between

LK ENGICONS

114, Village Bhawanpur, Kila Road, Meerut (U.P.) 250001

And

Cosmo Analytical lab

C- 423, Sector-10, Noida
Uttar Pradesh -201301

This Memorandum of Understanding (here in after called MOU) was made between LK Engicons(Here in after called LK Engicons) and Inspection & Testing Engineers (Here in after called CAL Noida) for conducting Industrial Radiographic Testing, UT Testing, Microstructure Grain Testing, Mechanical Testing and Chemical Testing for the raw material, equipment manufactured / fabricated by LK Engicons at its works and various projects CALs.

The MOU made and entered on the 26th day of December 2023 between LK Engicons & Cosmo Analytical Lab Whereas LK Engicons requires different tests for Weld Joints and raw materials including Mechanical & Chemical testing, Ultrasonic Testing and Radiography Testing of its raw material and components. Now LK Engicons and CAL come to an understanding that CAL (approved by BARC for RT & NABL for Mechanical & Chemical Testing) will require NDT / Destructive tests as and when required at LK Engicons, works and other Projects CALs.

Whereas LK Engicons requires different tests for rubber/neoprene raw materials including Hardness, Tensile Strength, Elongation at fracture, Tear Propagation strength, Shock elasticity, Abrasion, Residual Compression Strain, Ageing test in hot air and ozone, Swelling behaviour in oil, Cold Hardening point, density, compression set, water absorption, Adhesive Strength, Low temperature stiffness, Ash content, Polymer identification test of its raw material and components. Now LK Engicons and CAL come to an understanding that CAL (approved by BARC for RT & NABL for rubber raw material and component Testing) will require Destructive tests as and when required at LK Engicons, works and other Projects CALs.



For Cosmo Analytical Lab


Partner

Note: (1) The above results are related only to the tests performed on the sample. Endorsement of product is neither inferred nor implied. (2) This report is not to be reproduced wholly or in part & forbidden to be used as an evidence in the court of law & ought not to be used in any advertising media without our special permission in writing. (3) Samples will be destroyed after 90 days from the date of reporting unless otherwise specified. (4) Total liability of our laboratory is limited to the invoiced amount. (5) Report refers to the sample received by Cosmo Analytical Lab. unless mentioned otherwise.

Further it was agreed that :-

- CAL will provide required testing equipment along with qualified / approved manpower to conduct the tests. The equipment must be as per the client's specification and may differ from client to client.
- CAL will be responsible for safe transportation and storage of equipment as per AERB guideline. LK Engicons shall provide required storage facilities and security arrangements at works and other projects CALs.
- It is the responsibility of CAL to provide certificates on demand by client and requirements may differ from client to client.
- LK Engicons has to send the samples (as prescribed standards) to CAL's Noida Lab for destructive & chemical analysis tests.
- The prices shall be mutually agreed from time to time depending on quantum of tests, client requirements & location of tests.
- LK Engicons will provide one month's schedule by 25th of preceding month.
- 100% Payment shall be released at the time of submission of samples.
- Testing and reporting shall be done as per CAL's approved format and procedures based on requirements of the customer.
- Termination of the MOU shall be on mutually agreed terms & conditions.

The MOU is valid for 60 (Sixty) months from the date of signature i.e.: 26th December 2023 to 25th December 2028.

For LK Engicons
Authorized Signatory



For CAL
Authorized Signatory

For Cosmo Analytical Lab



Partner



COSMO ANALYTICAL LAB LLP

An ISO 9001: 2015 Certified Laboratory
 C-423, Sector-10, Noida, U.P.-201301, INDIA
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Format No. CAL/7.8F-01

TEST REPORT

Job Order No:	CAL25A882-1	ULR No.	TC15127250 00003907 F
Issue To:	KONKAN RAILWAY	Issue Date:	01.02.2025
		Page Number:	01 of 01
Sample Description:	MILD STEEL-40MM, BATCH/HEAT NO. 996457, GRADE-E250 B0	Sample Receipt Date:	30.01.2025
Customer Ref No./Dated:	30.01.2025		
Project:	Civil Work Including Earthwork for Railway formation, Blanketing work, Minor Bridges, Major Bridges, ROBS, RUBS, station building and other service buildings, Staff Quarters, Platform works including general electrical works between Bhadi (95 Km) (including) to pendra Road (135 Km) Double Line in connection with the construction of New BD Electrified Double Railway Line Chhattisgarh East West Rail Corridor from Gevra Road (Km 0) to Pendra Road (Km 135) via Dipka, Kathghora, Sendurgarh and Pasanin the state of Chhattisgarh over South East Central Railway. (Package-3B).		
Agency Name:	M/S L.K ENGICONS, MEERUT		
Discipline:	Chemical/Mechanical Testing	Group:	Chem./Mech. Properties of Metals

Lab Code- CAL25A882-1

Testing Date :- 31.01.2025 to 01.02.2025

Mechanical Test :-

S.No.	Test Parameter	Results		Requirement as per IS: 2062 Gr. E250 B0	Confirmity	Test Method
		Sample-1	Sample-2			
1	Tensile Strength (MPa)	478.25	484.62	410 Min	Yes	IS:1608 (Part-1) 2022
2	Yield Stress(MPa)	310.72	306.84	240 Min	Yes	
3	Elongation (%)	26.88	27.46	23 Min	Yes	
4	Impact at 0°C (Joule)	84	86	27 Min	Yes	IS: 1757 P-1 2020
		Average:- 86.00				

Chemical Test :-

1	Carbon %	0.168	0.22 Max	Yes	ASTM E415:2021
2	Silicon %	0.155	0.40 Max	Yes	
3	Manganese %	1.26	1.50 Max	Yes	
4	Phosphorus %	0.0214	0.045 Max	Yes	
5	Sulphur %	0.0089	0.045 Max	Yes	

Remarks :- The Above Test Parameters Meet The Requirement as per Specifications IS: 2062 Gr. E250 B0

*** End of Report***

Reviewed By
 Mr. Anuj Kumar Mishra
 Sr. Analyst



Authorized Signatory
 Mr. Narinder Kumar Khullar
 Technical Manager



COSMO ANALYTICAL LAB LLP

An ISO 9001: 2015 Certified Laboratory

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Format No. CAL/7.8F-01

TEST REPORT

Job Order No:	CAL25A882-1	Report No.	00003907
Issue To:	KONKAN RAILWAY	Issue Date:	01.02.2025
Sample Description:	MILD STEEL-40MM, BATCH/HEAT NO. 996457, GRADE-E250 BO	Page Number:	01 of 01
Customer Ref No./Dated:	30.01.2025	Sample Receipt Date:	30.01.2025
Project:	Civil Work Including Earthwork for Railway formation, Blanketing work, Minor Bridges, Major Bridges, ROBS, RUBS, station building and other service buildings, Staff Quarters, Platform works including general electrical works between Bhadi (95 Km) (including) to pendra Road (135 Km) Double Line in connection with the construction of New BD Electrified Double Railway Line Chhattisgarh East West Rail Corridor from Gevra Road (Km 0) to Pendra Road (Km 135) via Dipka, Kathghora, Sendurgarh and Pasanin the state of Chhattisgarh over South East Central Railway. (Package-3B).		
Agency Name:	M/S L.K ENGICONS, MEERUT		
Discipline:	Chemical Testing	Group:	Metals & Alloys

Lab Code- CAL25A882-1

Testing Date :- 31.01.2025

Chemical Test :-

S.No.	Test Parameter	Results	Requirement as per IS: 2062 Gr. E250 B0	Confirmity	Test Method
1	Carbon Equivalent %	0.385	0.41 Max	Yes	By Calculation
Remarks :- The Above Test Parameters Meet The Requirement as per Specifications IS: 2062 Gr. E250 B0					

*** End of Report***

Reviewed By
Mr. Aakash
Sr. Analyst

Authorized Signatory
Mr. Narinder Kumar Khullar
Technical Manager

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Format No. CAL/7.8F-01

TEST REPORT

Job Order No:	CAL25A882-4	ULR No.	TC15127250 00003910 F
Issue To:	KONKAN RAILWAY	Issue Date:	01.02.2025
Sample Description:	CAST IRON, BATCH/HEAT NO. CS-008-24-25, GRADE-340-570W	Page Number:	01 of 01
Customer Ref No./Dated:	30.01.2025	Sample Receipt Date:	30.01.2025
Project:	Civil Work Including Earthwork for Railway formation, Blanketing work, Minor Bridges, Major Bridges, ROBS, RUBs, station building and other service buildings, Staff Quarters, Platform works including general electrical works between Bhadi (95 Km) (including) to pendra Road (135 Km) Double Line in connection with the construction of New BD Electrified Double Railway Line Chhattisgarh East West Rail Corridor from Gevra Road (Km 0) to Pendra Road (Km 135) via Dipka, Kathghora, Sendurgarh and Pasanin the state of Chhattisgarh over South East Central Railway. (Package-3B).		
Agency Name:	M/S L.K ENGICONS, MEERUT		
Discipline:	Chemical/Mechanical Testing	Group:	Chem./Mech. Properties of Metals

Lab Code- CAL25A882-4

Testing Date :- 31.01.2025 to 01.02.2025

Mechanical Test :-

S.No.	Test Parameter	Results	Requirement as per IS : 1030 Gr. 340-570W	Confirmity	Test Method
1	Tensile Strength(MPa)	613.84	570 Min	Yes	IS :1608 (Part-1) 2022
2	Yield Stress(MPa)	478.43	340 Min	Yes	
3	Elongation (%)	17.24	15 Min	Yes	
4	Reduction Area (%)	28.92	21 Min	Yes	

Chemical Test :-

1	Carbon %	0.162	0.25 Max	Yes	ASTM E-415-21
2	Silicon %	0.196	0.60 Max	Yes	
3	Manganese %	1.02	1.50 Max	Yes	
4	Phosphorus %	0.0224	0.040 Max	Yes	
5	Sulphur %	0.0175	0.035 Max	Yes	
6	Chromium %	0.0122	0.35 Max	Yes	
7	Nickel %	0.0139	0.40 Max	Yes	
8	Molybdenum %	0.0072	0.15 Max	Yes	
9	Copper %	0.0132	0.40 Max	Yes	
10	Vanadium %	0.0058	0.05 Max	Yes	

Remark :- The Above Test Parameters Meet The Requirement as per Specifications IS: 1030 Gr. 340-570W

*** End of Report***

Reviewed By
Mr. Anuj Kumar Mishra
Sr. Analyst



Authorized Signatory
Mr. Narinder Kumar Khullar
Technical Manager

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Format No. CAL/7.8F-01

TEST REPORT

Job Order No:	CAL25A882-5	ULR No. TC15127250 00003911 F
Issue To:	KONKAN RAILWAY	Issue Date: 01.02.2025
Sample Description:	STAIN LESS STEEL 6MM, BATCH/HEAT NO. D064269524, GRADE-AISI 316L/X02CR1 7NI12MO2	Page Number: 01 of 01
Customer Ref No./Dated:	30.01.2025	Sample Receipt Date: 30.01.2025
Project:	Civil Work Including Earthwork for Railway formation, Blanketing work, Minor Bridges, Major Bridges, ROBS, RUBs, station building and other service buildings, Staff Quarters, Plateform works including general electrical works between Bhadi (95 Km) (including) to pendra Road (135 Km) Double Line in connection with the construction of New BD Electrified Double Railway Line Chhattisgarh East West Rail Corridor from Gevra Road (Km 0) to Pendra Road (Km 135) via Dipka, Kathghora, Sendurgarh and Pasanin the state of Chhattisgarh over South East Central Railway. (Package-3B).	
Agency Name:	M/S L.K ENGICONS, MEERUT	
Discipline:	Chemical/Mechanical Testing	Group: Chem./Mech. Properties of Metals

Lab Code- CAL25A882-5

Testing Date :- 31.01.2025 to 01.02.2025

Mechanical Test :-

S.No.	Test Parameter	Results	Requirement as per IS: 6911-1992 X02Cr17Ni12Mo2 (Gr. 316L)	Confirmity	Test Method
1	Tensile Strength(MPa)	516.38	440 Min	Yes	
2	Yield Stress(N/mm ²)	394.15	200 Min	Yes	IS :1608 (Part-1) 2022
3	% Elongation	46.74	40 Min	Yes	

Chemical Test :-

S.No.	Test Parameter	Results	Requirement as per IS: 6911-1992 X02Cr17Ni12Mo2 (Gr. 316L)	Confirmity	Test Method
1	Carbon %	0.0265	0.03 Max	Yes	
2	Silicon %	0.382	1.0 Max	Yes	
3	Manganese %	1.36	2.0 Max	Yes	
4	Phosphorus %	0.0234	0.045 Max	Yes	JIS G1253-2013/ASTM E 1086:2022
5	Sulphur %	0.0188	0.030 Max	Yes	
6	Chromium %	17.12	16.0-18.0	Yes	
7	Molybdenum %	2.32	2.0-3.0	Yes	
8	Nickel %	10.24	10.0-14.0	Yes	

Remark :- The Above Test Parameters Meet The Requirement as per Specifications IS: 6911-1992 X02Cr17Ni12Mo2 (Gr. 316L)

*** End of Report***

Reviewed By
 Mr. Anuj Kumar Mishra
 Sr. Analyst



Authorized Signatory
 Mr. Narinder Kumar Khullar
 Technical Manager

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Format No. CAL/7.8F-01

TEST REPORT

Job Order No:	CAL25A882-B	ULR No.	TC15127250 00003914 F
Issue To:	KONKAN RAILWAY	Issue Date:	01.02.2025
Sample Description:	BRASS 2MM, BATCH/HEAT NO. LKE/08/SAN, GRADE-CUZN37 (HB)	Page Number:	01 of 01
Customer Ref No./Dated:	30.01.2025	Sample Receipt Date:	30.01.2025
Project:	Civil Work Including Earthwork for Railway formation, Blanketing work, Minor Bridges, Major Bridges, ROBS, RUBs, station building and other service buildings, Staff Quarters, Platform works including general electrical works between Bhadi (95 Km) (including) to pendra Road (135 Km) Double Line in connection with the construction of New BD Electrified Double Railway Line Chhattisgarh East West Rail Corridor from Gevra Road (Km 0) to Pendra Road (Km 135) via Dipka, Kathghora, Sendurgarh and Pasanin the state of Chhattisgarh over South East Central Railway. (Package-3B).		
Agency Name:	M/S.L.K ENGICONS, MEERUT		
Discipline:	Chemical/Mechanical Testing	Group:	Chem./Mech. Properties of Metals

Lab Code- CAL25A882-8

Testing Date:- 31.01.2025 to 01.02.2025

Mechanical Test :-

S.No.	Test Parameter	Results	Requirement as per IS: 410 Gr. CuZn37 HB	Confirmity	Test Method
1	Tensile Strength(N/mm ²)	438.14	380 Min	Yes	
2	Yield Stress (N/mm ²)	302.85	-	-	IS :1608 (Part-1) 2022
3	Elongation (%)	18.42	15 Min	Yes	

Chemical Test :-

1	Lead %	0.171	0.30 Max	Yes	
2	Iron %	0.0210	0.075 Max	Yes	BS EN 15079:2015
3	Zinc %	37.02	Remainder		

Remark :- The Above Test Parameters Meet The Requirement as per Specifications IS: 410 Gr. CuZn37 HB

*** End of Report***

Reviewed By
Mr. Anuj Kumar Mishra
Sr. Analyst



Authorized Signatory
Mr. Narinder Kumar Khullar
Technical Manager



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Format No. CAL/7.8F-01

TEST REPORT

Job Order No:	CAL25A882-8	Report No.	00003914
Issue To:	KONKAN RAILWAY	Issue Date:	01.02.2025
Sample Description:	BRASS 2MM, BATCH/HEAT NO. LKE/08/SAN, GRADE-CUZN37 (HB)	Page Number:	01 of 01
Customer Ref No./Dated:	30.01.2025	Sample Receipt Date:	30.01.2025
Project:	Civil Work Including Earthwork for Railway formation, Blanketing work, Minor Bridges, Major Bridges, ROBS, RUBs, station building and other service buildings. Staff Quarters, Platform works including general electrical works between Bhadi (95 Km) (including) to pendra Road (135 Km) Double Line in connection with the construction of New BD Electrified Double Railway Line Chhattisgarh East West Rail Corridor from Gevra Road (Km 0) to Pendra Road (Km 135) via Dipka, Kathghora, Sendurgarh and Pasanin the state of Chhattisgarh over South East Central Railway. (Package-3B).		
Agency Name:	M/S L.K ENGICONS, MEERUT		
Discipline:	Chemical Testing	Group:	Metals & Alloys

Lab Code- CAL25A882-8

Testing Date:-31.01.2025

Chemical Test :-

S.No.	Test Parameter	Results	Requirement as per IS: 410 Gr. CuZn37 HB	Confirmity	Test Method
1	Copper %	62.68	61.5-64.5	Yes	BS EN 15079:2015

Remark :- The Above Test Parameters Meet The Requirement as per Specifications IS: 410 Gr. CuZn37 HB

*** End of Report***

Reviewed By
Mr. Aakash
Sr. Analyst

Authorized Signatory
Mr. Narinder Kumar Khullar
Technical Manager

