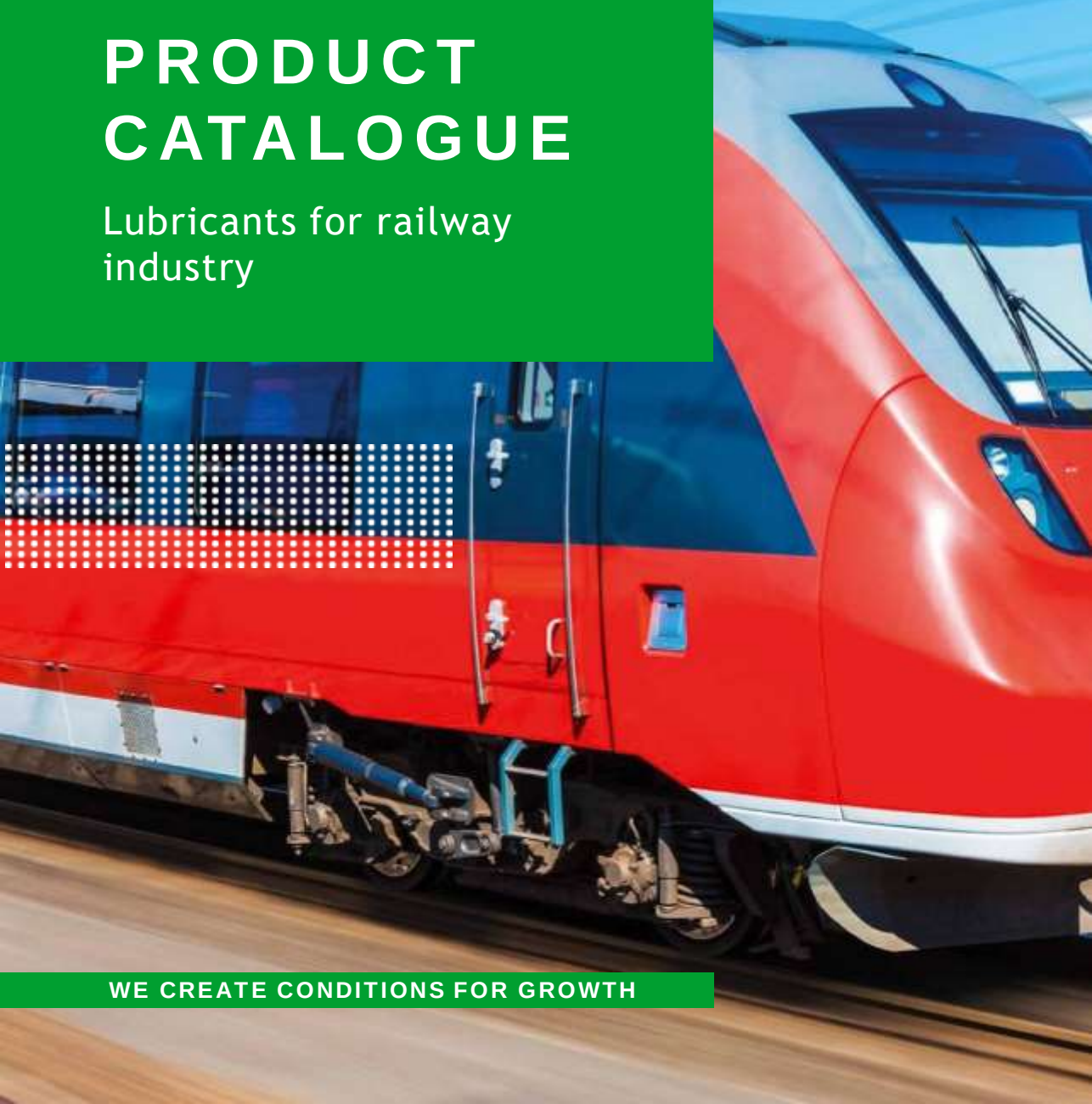
Titan-SM

PRODUCT CATALOGUE

Lubricants for railway industry



WE CREATE CONDITIONS FOR GROWTH



Group of Companies Titan

It is the largest company in Siberia, one of the key investors of Omsk region. It was founded in 1989 by Mikhail Sutyaginsky.

It includes about 20 enterprises of the petrochemical and agro-industrial complex, as well as infrastructure enterprises.

The main production site of the company is located on the territory of Omsk region; subsidiaries and affiliates are represented in the regions of Russia (Moscow, St. Petersburg, Novocherkassk, Pskov, Ufa, etc.) and the CIS countries. The number of employees of the Group's enterprises is about 4500 people

Titan-SM, Limited company

The production facilities of Titan-SM, Limited company are based on process units producing lubricants, oils and process fluids for different industries: oil and gas, mechanical engineering, metallurgy and metalworking, instrument making, automotive and railway transport industries, as well as for the defense complex. The enterprise facilities allow to produce more than 12 000 tons of lubricants and over 23 000 tons of process fluids per year.

The plant operates using a **unique technology** based on dry boiling-off due to which energy costs are significantly reduced and end product quality is maintained. The production process is practically waste-free due to the closed processing cycle.

The product quality is a determinant factor of the activity of Titan-SM Limited company. The quality control of each production stage is conducted by the Quality Control Division of the production testing laboratory possessing all the necessary modern equipment.

The center of research works is represented by an **experimental industrial laboratory** which activity is aimed at creating new products and effective production technologies.

The **range of products** includes products based on petroleum and synthetic oils - engine, transmission, hydraulic oils; greases; lubricants; metalworking fluids; release fluids; friction modifiers and drilling fluid components. The products of Titan-SM, Limited company are certified and approved by VNIIZhT JSC (All-Russian Railway Research Institute), VNIINP JSC (All-Russian Research Institute of Oil Refining), ROSNITI (Russian Research Institute of Pipe Industry) and Gazprom VNIIGAZ LLC (All-Russian Scientific Research Institute of Natural Gases and Gas Technologies).

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GREASE FOR AXLEBOX BEARINGS

Application

For use in friction units with roller bearings of locomotives, passenger and freight cars, railway multiple units, including those operated in high-speed traffic conditions up to 200 km/h.

BUKSOL	
Thickener	Lithium soap
NLGI	3
Basic characteristics	• Ensures long service life of bearings and reducing costs for equipment maintenance and repair. • Ensures excellent protection of lubricated parts from corrosion in high humidity. • Possesses high resistance to thermal, structural and oxidative degradation during operation. • It has high anti-wear, anti-corrosion and extreme pressure properties.
Dropping point, °C, min	180
Worked penetration at +25 °C, 0,1 mm	230–290
Colloidal stability, % of separated oil, max	18
Shear strength at +50 °C, Pa, within the limits	400–700
Evaporation at +100 °C, 1 hour, %, max	1.5
Critical load, N (kgf), min	784
Wear index, mm, max	0.5
Conformity to regulatory documents	Technical specifications TU 0254-107-01124328-01

Package

Drum 180 kg
Bucket 18 kg

* Approval order for application within the Russian Railways system - refer to page 16

GREASE FOR AXLEBOX BEARINGS

Application

For use in roller bearings of railway cars as well as in bearings of electric machines at temperature from -60°C to +100 °C.

LZ-TsNII(U)	
Thickener	Sodium-calcium soap
NLGI	3
Basic characteristics	• Possesses good ant-wear and extreme pressure properties • Has a wide operating temperature range.
Dropping point, °C, min	130
Worked penetration at +25 °C, 0,1 mm	200-260
Shear strength at +50 °C, Pa, within the limits	200-600
Evaporation at +100 °C, 1 hour, %, max	9
Critical load, N (kgf), min	921 (94)
Wear index, mm, max	0,55
Conformity to regulatory documents	TU 0254-013-148820-99

Package

Drum 180 kg
Bucket 18 kg

* Approval order for application within the Russian Railways system - refer to page 17

GREASES FOR REDUCTION GEARS OF LOCOMOTIVE TRACTION MOTORS

Application

They are used in traction gearboxes of wheel-motor blocks of locomotives and railway multiple units.

	Reduction gearbox grease OS-L	Reduction gearbox grease OS-3
Thickener	Sodium soap	Sodium soap
NLGI	—	—
Basic characteristics	Semifluid grease used in heavily loaded gear drives of locomotive traction motor reduction gearboxes. They are used for the lubrication of gear drives of locomotive traction motor reduction gearboxes, reduction gearboxes of agricultural machinery, equipment of metallurgical and mining enterprises. The grease OS-L is designed for operation in summer, The grease OS-Z is used in winter. • Good anti-wear properties. • Good corrosion protection. • Excellent adhesion.	
Penetration at a temperature of +25 ° C, with stirring, 0.1 mm	—	—
Effective viscosity at –30 °C, Pa·s	—	—
Apparent viscosity, conventional degrees at 100 °C	7–15	2–7
Weld point, N	1842	1842
Critical load, N, min	657	657
Load wear index, N, min	343	343
Wear scar diameter, mm, max	0.7	0.7
Corrosion attack on metals	Withstands	Withstands
Conformity to regulatory documentation	Company's Standard STO 17321872-006-2017	

Package

Drum 180 кг
Bucket 18 kg
Filling

GREASES FOR REDUCTION GEARS OF LOCOMOTIVE TRACTION MOTORS

Application

They are used in traction gearboxes of wheel-motor blocks of locomotives and railway multiple units.
A unique research and development product of the Titan-SM, Limited company.

	Reduction gearbox OS-V
Thickener	Lithium soap
NLGI	00
Basic characteristic	All-season grease for gear drives of locomotive traction gearboxes, reduction gearboxes of agricultural machinery, equipment of metallurgical and mining enterprises. • Reduces consumption by 2 times due to the elimination of grease leaks through casing leaks. • Excludes seasonal change. • Increases operational reliability of a reduction gearbox due to innovative additives. • Improves environmental situation on railways due to the elimination of grease leaks.
Penetration at a temperature of +25 ° C, with stirring, 0.1 mm	320–400
Effective viscosity at –30 °C, Pa·s	1000
Apparent viscosity, conventional degrees at 100 °C	—
Weld point, N	3479
Critical load, N, min	1098
Load wear index, N, min	500
Wear scar diameter, mm, max	0.7
Corrosion attack on metals	Withstands
Conformity to regulatory documentation	Company's Standard STO 17321872-006-2017

Package

Drum 180 кг
Bucket 18 kg
Filling

WHEEL AND RAIL CONTACT GREASES

Application

The greases are used for the wear reduction of wheel and rail systems of railway vehicles and hoisting mechanisms.

	NOVA KR-000	NOVA KR-00
Thickener	Lithium soap	
NLGI	000	00
Basic characteristics	Semifluid special water-resistant railway grease designed for the protection of wheel pair flanges and rail from wear. The grease is applied on wheel flanges and side face of rails using on-board, track lubricators, as well as mobile rail lubricators. Operating temperature range is from –50 to +100 °C	
Dropping temperature, ° C, minimum	—	—
Penetration at +25 ° C with stirring (60 double strokes), 0.1 mm, within the limits	445–480	390–440
Mass fraction of water, %	Traces	
Corrosion attack on metals	Withstands	
Effective viscosity, at –40 °C and at average deformation rate gradient 10 s^{-1}, Pa·s, max	800	900
Tribological characteristics on a four ball friction machine at (20 ± 5) °C:: **• weld point(Pw), N, min** **• critical load (Pc), N, min**	 3087 980	 3087 980
Conformity to regulatory documentation	Company's Standard STO 17321872-010-2017	

Package

Drum 180 kg
Bucket 18 kg

WHEEL AND RAIL CONTACT GREASES

Application

The greases are used for the wear reduction of wheel and rail systems of railway vehicles and hoisting mechanisms.

	NOVA KR-0	NOVA KR-1
Thickener	Lithium soap	
NLGI	0	1
Basic characteristics	Semifluid special water-resistant railway grease designed for the protection of wheel pair flanges and rails from wear. The grease is applied on wheel flanges and side face of rails using on-board, track lubricators, as well as mobile rail lubricators. Operating temperature range is from –50 to +100 °C	It is used in cylindrical and planetary reduction gearboxes and motor reduction units operating with maximum specific engagement loads of up to 2000 MPa, requiring the application of high-quality reduction gearbox lubricants with a long service life. Operating temperature range is from –35 to +120 ° C
Dropping temperature, ° C, minimum	—	120
Penetration at +25 ° C with stirring (60 double strokes), 0.1 mm, within the limits	345–385	300–340
Mass fraction of water, %	Traces	
Corrosion attack on metals	Withstands	
Effective viscosity, at –40 °C and at average deformation rate gradient 10 s^{-1}, Pa·s, max	1200	1500
Tribological characteristics on a four-ball friction machine at (20 ± 5) °C:: **• weld point(Pw), N, min** **• Critical load (Pc), N, min**	 3087 980	 3087 980
Conformity to regulatory documentation	Company's Standard STO 17321872-010-2017	

Package

Drum 180 kg
Bucket 18 kg

LOCOLIT GREASE FOR ROLLER BEARINGS

Application

It has been developed for roller and ball bearings of axleboxes, cassette bearings, axial-bearing suspension of traction electric motors and traction gearboxes of freight and passenger locomotives, railway multiple units and axleboxes of freight and passenger cars, roller and ball anchor bearings of traction electric motors of freight and passenger locomotives and railway multiple units.
It replaces the lubricants BUKSOL, LZ-TsNII (U), LZ-TsNII, ZhRO, ZhRO-M, ZUM and others, surpassing them in characteristics. It possesses a long life period and allows to reach the rolling stock mileage equal to 1 200 000 km or 10 years (for rolling stock, the frequency of repair of which is fixed in years).

Locolit grease for roller bearings	
Designation according to DIN 51502	KP1,5P-50
Colour	Light brown
Operating temperature range, ° C	от –50 до +150
NLGI grade	1,5
Penetration of mixed grease (60 double strokes), mm / 10	285–305
Kinematic viscosity of the base oil at +40 °C, mm^2/s	180
Kinematic viscosity of the base oil at +100 °C, mm^2/s	15
Dropping temperature, ° C	270
Critical load, N	980
Weld point (tests at a four ball wear test system) at +25 °C, N	2800
Wear index (test at a four ball wear test system), mm	< 0.5
Corrosion degree (roller bearings, distilled water)	0-0
Oxidation resistance, pounds/inch • **after 100 hours** • **after 500 hours**	 10 20
Flow pressure at –40 °C, Pa·s	max 1440

Package

Drum 180 kg
Bucket 18 kg

ULTRASONIC TESTING COUPLANT NKZh

Application

It is designed for providing acoustic contact during ultrasonic non-destructive testing of rails, railroad switches and welded joints by removable flaw detection tools at negative air temperature.
It provides an excellent acoustic contact and possesses an extremely low pour point (-60 ° C). Completely replaces ethyl alcohol.

Ultrasonic testing couplant NHZh	
Crystallization onset temperature, °C, max	–60
Closed cup flash point, ° C	45
Ignition point, ° C	23
Self-ignition point, ° C	458
Density at a temperature of +20 ° C, kg/m³, max	780
Coefficient of sliding friction on rails after applying the ultrasonic testing couplant	0.18
Difference between conventional sensitivity values as per SO-3R calibration block, determined while applying the ultrasonic testing coupling and ethyl alcohol at an atmospheric temperature –15 °C max, dB	2
Corrosion resistance of metals and alloys to the ultrasonic testing couplant exposure (steel - 10, brass - L63, aluminum alloy - AMg5)	Withstands

Package

Can 10 l

* Conclusion report of VNIIZhT JSC (All-Russian Railway Research Institute) on application possibility as couplant for ultrasonic rail testing - refer to page 18

GENERAL PURPOSE GREASES

Application

Anti-friction universal greases designed for the lubrication of industrial units and construction equipment, as well as automotive vehicles operating at medium and high loads.

	Solidol Zh	Graphite grease Zh
Thickener	Hydrated calcium soap	Hydrated calcium soap
Basic characteristics	For lubrication of rolling and sliding friction units of machines and mechanisms operating at temperatures from –25 ° C to + 65 °C. In loaded mechanisms (bearings, hinges, blocks etc.) it is operable at temperatures up to –50°C. It is used for filling disassembled friction units operating at temperatures from –50 °C to + 65 °C, and for filling friction units by means of manual grease guns at temperatures up to –20 ° C.	For lubrication of coarse heavily loaded mechanisms (open gears, threaded connections, spindles, springs etc.). It is operable within the temperature range from –20 ° C to +60 ° C. The grease may be used at temperatures below –20 ° C. in shock absorbers.
Penetration of stirred grease (60 double strokes), 0.1 mm	230–290	≥250
Dropping temperature, °C, min	78	76
Viscosity at 0 °C and medium deformation rate gradient 10 s^{-1} , Pa·s,	250	250
Shear strength at a temperature of +50 ° C, Pa, min	196	100
Corrosion attack on metals	Withstands	Withstands
Mass fraction of water, %, max	25	3
Content of mechanical impurities	Not available	—

Package

Bucket 18 kg

MULTIPURPOSE GREASES

Application

LITOL-24 is an anti-friction multipurpose grease. CIATIM-221 is a high-temperature lubricant for friction units and contacting metal and rubber surfaces.

	LITOL-24	CIATIM-221
Thickener	Lithium soap	Complex calcium soap
Basic characteristics	For application in roller and slide bearings, hinges, gear and other drives, friction surfaces of wheeled and tracked vehicles, industrial mechanisms, electric machines etc., operating at temperatures from –40 ° C to +120 ° C.	For lubrication of friction units and mating “metal-metal” and “metal-rubber” surfaces operating at temperatures from –60 ° C to +150 ° C (roller bearings of electric machines, control systems and devices with rotation frequency up to 10 000 min^{-1} etc)
Penetration of stirred grease (60 double strokes), 0.1 mm	220–250	280–360
Dropping temperature, °C, min	185	200
Viscosity at 0 °C and medium deformation rate gradient 10 s^{-1} , Pa·s, max		
• at a temperature of 0 °C	250	—
• at a temperature of +50 °C	—	800
Shear strength, Pa, min		
• at a temperature of +80°C,	200	—
• at a temperature of +50°C	—	120
Colloidal stability, % of separated oil, max	12	7
Tribological characteristics at a temperature (20±5) °C:		—
• weld point, N, min	1410	
• critical load, N, min	630	
• load wear index, N, min	280	
Corrosion attack on metals	Withstand (copper)	Withstand
Mass fraction of water, %, max	Not available	Not available
Content of mechanical impurities	0.05	Not available

Package

Bucket 18 kg

ENGINE OILS

Product name	Viscosity at 100°C, mm^2/s	Viscosity index	Sulfated ash, % wt	Flash point, °C	Pour point, °C
M-8G_2K	7.5–8.5	95	1.15	210	–30
M-10G_2K	10.5–11.5	95	1.15	205	–18
M-10G_2TsS	10–11	92	1.50	210	–10
M-10DM	min 11.4	90	1.50	220	–18
M-14V_2	13.5–14.5	85	1.20	210	–12
M-14G_2TsS	13.5–15	92	1.50	210	–10

TRANSMISSION OILS

Product name	Viscosity at 100°C, mm^2/s	Viscosity index	Sulfated ash, % wt	Flash point, °C	Pour point, °C
MGE-46V	≥6	90	—	190	–32
AMG-10	10 (50 °C)	—	—	93	–70
TAP-15V	14–16	—	—	185	–20

HYDRAULIC OILS

Product name	Type	Density, g/ml	Viscosity, cSt at 40 °C	Flash point, °C	Pour point, °C
TITAN HFDU	Fire resistant hydraulic fluid	0.92	32–68	310	–30
TITAN HFC	Fire resistant hydraulic fluid	1.072	32–68	—	–50
TITAN HM **TITAN HLP** **TITAN HZF** **TITAN HLPD**	Hydraulic oil	0.88	32–68	245	–30

Package
Drum180 kg Bucket 18 kg

Titan - SM

Appendix

Approval orders and conclusion report on application possibility

JOINT STOCK COMPANY
"RUSSIAN RAILWAYS" (RZD JSC)

ORDER

_____ Moscow № _____

On approval of **BUKSOL grease TU 0254-107-01124328-01** manufactured by Novocherkassk Lubricant Production Plant LLC

For the purpose of improving reliability and reducing failure rate of freight car axlebox units in operation, based on affirmative conclusions of VNIIZhT JSC (All-Russian Railway Research Institute) following the results of the performed tests complex:

1. To approve the plastic grease BUKSOL produced by Novocherkassk Lubricant Production Plant, Limited Liability Company for use in bearings of cylindrical roller freight cars according to TU 0254-107-01124328-01 (with amendments No. 1-3).
2. Deputy Head of the Central Infrastructure Directorate Kuchin A. V., Head of the Rolling Stock Department of the Central Infrastructure Directorate Sapetov M.V. and Head of the Central Directorate of Purchase and Supply Mitichkina I.M. should bring this order to the subordinate structural subdivisions and heads of organisations and ensure its execution.
3. Control over execution of this order shall be entrusted to the Head of the Rolling Stock Department of the Central Infrastructure Directorate Sapetov M.V.

Acting Deputy Director General
Chief Engineer RZD JSC Andreev V.E.

Ex. Gutorov D.N., Central Infrastructure Directorate, Rolling Stock Department

Electronic signature. Signed by: Andreev V.E.
№1735/p dd 04.08.2021

JOINT STOCK COMPANY
"RUSSIAN RAILWAYS" (RZD JSC)

ORDER

June 24, 2019 Moscow № 1262/r

On approval of railway lubricant LZ-TsNII (U)
TU 0254-013-00148820-99 manufactured by Novocherkassk Lubricant Production Plant LLC

Based on favourable results of laboratory, bench tests and under-control operation:

1. To approve the railway lubricant LZ-TsNII (U) produced by Novocherkassk Lubricant Production Plant LLC (NZSM LLC) for use in roller bearings of railway cars according to TU 0254—013-00 1 48520-99 with amendments 1-10.
2. First Deputy Head of the Central Infrastructure Directorate Boretsky A.A. and Director of Roszheldorsnab Mitichkina I.M. should bring this order to the subordinate structural subdivisions and heads of organisations and ensure its execution.
3. Control over execution of this order shall be entrusted to the Deputy Head of Technical Policy Department Ivanov B.I.

Deputy Director General
Chief Engineer RZD JSC

Official seal: Joint Stock Company "Russian Railways"
RZD JSC Administration and Organization
Department for document support (administrative office)
No.4

Ex. Chernyshev P.V., Technical Policy Department
(499) 262- 10 59

JOINT STOCK COMPANY
ALL-RUSSIAN RAILWAY RESEARCH INSTITUTE
(VNIIZhT JSC)

SEEN AND APPROVED
First Deputy Director General
of VNIIZhT JSC
/Signature/ A.B. Kosarev
September 10, 2018
Official seal: JOINT STOCK COMPANY
ALL-RUSSIAN RAILWAY RESEARCH
INSTITUTE * OGRN 1077758910900
VNIIZhT JSC

CONCLUSION REPORT

No. 1602

on application possibility of non-freezing couplant as a couplant for ultrasonic rails testing based on the results of corrosion tests

Based on the results of the tests, "Non-freezing couplant for non-destructive testing of rails. Technical requirements" complies with the technical requirements approved by the Order of RZD JSC No. 731/p dated April 17, 2017, particularly concerning the requirements to corrosion resistance of metals and alloys to the effect of the non-freezing couplant:

- Non-freezing couplant for non-destructive testing of rails according to STO 17321872-031-2017, the producer is Novocherkassk Lubricant Production Plant LLC (NZSM LLC).

Ordering customer: NZSM LLC

Contractor: VNIIZhT JSC

Director of NTs RSTM /signature/ A.V.Sukhov

Head of the NK and TD Center
VNIIZhT JSC /signature/ D.N. Barbashov

TRUE COPY / signature /
Official seal: Limited Liability Company * OGRN 1177746724044 * Novocherkassk Lubricant Production Plant LLC * Moscow * NZSM LLC

No. ЗЖТ 001463

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Titan-SM

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