ROBUST INFRASTRUCTURE FOR TOMORROW

Ramsarup Industries Limited

Unit : Ramsarup Nirmaan Wires

About us

Ramsarup Group – the manufacturer of steel wires and TMT bars in India is a name resounding reliability and quality in the country's wire and steel space. Since its inception in 1966, Ramsarup has charted commendable progress. The group is currently pursuing its project of setting up an integrated steel plant aimed at a capacity of 0.7 million MTS per annum.

'Ramsarup Industries Ltd' and 'Ramsarup Lohh Udyog Ltd.' are in the process of being merged. M/s. Balasore Minerals Company with iron ore, dolomite and limestone mines is also part of the group. Ramsarup Group is set to be one of the most integrated players in the world i.e. from iron ore to transmission lines.

Ramsarup has a networth of Rs.300 Crores (US $ 75 million) and registered a total group turnover of more than Rs. 1800 Crore (US $450 million) in the fiscal of 2006-2007. This is a Rs.400 Crore- leap from the 2006 figure of Rs.1400 Crore (US $350 million).

In the course of an expansive journey of almost 40 years, Ramsarup has not only consolidated and strengthened its operations but also has been enjoying excellent industrial relations. Ramsarup follows a policy of strong Corporate Social Responsibility.

Sl. No.	Unit	Location	Product	Capacity (tonnes per annum)
1.	Ramsarup Indutrial Corporation	Kalyani Industrial Area, Nadia, West Bengal	Coated & Uncoated Steel Wires	2,00,000
2.	Ramsarup Utpadak I & II	Shayamnagar, West Bengal	Wire TMT Bars	36,000 2,20,000
3.	Ramsarup Vidyut	Dhule, Maharastra	Wind Energy	3.75 MW
4.	Ramsarup Infrastructure	Spread out in India	Laying of Power Transmission & Distribution Lines and other infrastructure activities	
5.	Ramsarup Nirmaan Wires	Durgapur, West Bengal	Low Relaxation Prestressed Concrete Steel Wires and other specialty wires	55,000 MPTA (1st Phase)

Our product porfolio

The range of wires produced by Ramsarup include

1. H.B. Wires for Nails
2. Galvanised Wire (Hot Dipped & Electroplated)
3. G.I. Stay Wire
4. G.S. Earth Wire
5. ACSR Core Wire (Single)
6. Cable Armour Wires (Round/ Flats)
7. Bright Spoke Wire
8. Shutter Spring Wire
9. Spring Steel Wire
10. Telegraph Wire
11. Umbrella Rib Wire
12. Chain Link Wire
13. Cotton Bailing Wires
14. Gabion Wires
15. P.C. Wire (Normal Relaxation)
16. LRPC (Strands)

Future products

1. Tyre Cord
2. Staple Wires
3. Hose Wires
4. Patented Wires
5. Phosphate Coated Wires
6. Rope Wire (Black & Galvanised)
7. LRPC Single Wire
8. Staples
9. Steel Fibres
10. Gabions
11. Wire Nettings
12. Wire Mesh

LRPC the way forward

The LRPC wires manufactured by Ramsarup conform to global standards and are utilized in construction of pre-stressed concrete girders for roads, river & railway bridges and flyovers, pre-stressed atomic rector domes, slabs, silos, hangars, aqueducts, high-rise buildings and railway sleepers.

Low Relaxation – It is the concept of pre-stressed steel strands loosing applied stress in mathematical proportion with the passage of time, when forcibly embedded in concrete. ‘Stress Relaxation’ symbolizing descent of stress and is significantly linked to the design of pre-stressed concrete structures.

These ‘Low Relaxation’ wires have been invented to lessen the degree of relaxation in stress, contemplating a number of added advantages as a result. It has been calculated that ‘Low Relaxation’ wires and strands have the capacity of limiting loss of relaxation at only 2.5%, after been heated for 1000 hours at a temperature of 20°C (68°F), provided the initial loading is at 70% of the specified minimum breaking strength. This advantage is far superior to the 5% relaxation-loss delivered by stress-relieved wires and strands of the ‘Normal Relaxation’ type.

The ‘Low Relaxation Strands’ produced by Ramsarup are processed through the globally preferred mechanism of ‘stabilizing’. As the steel, in the course of action, emanates heat when stressed, the process is also popularly termed ‘hot stretching’.

Despite being extensively used in developed countries, the Low Relaxation Strands had minimal use in India, owing to restricted availability. However, with the gradual ushering in of premium technology from all over the world, the designs and constructions in India aren’t anymore deprived of the benefits of the product.

The quality quotient

The name of Ramsarup surfaces in the industry due to its strict adherence to quality control. Uncompromising standards of inspection guarantee congruity and trustworthiness for the LRPC product. The stages of production that undergo strict monitoring range from covering steel to the final yield, sequencing of testing equipments to effective training sessions for enhanced and updated sets of worker. The internal audit also comes under the purview of quality standardization.

Low Relaxation scoring over Normal Relaxation Strand

- Reduction in stress-loss at ambient as well as rising temperature
- Extended limit of proportionality
- A balanced stress-strain ratio
- Tendons charged with better effective force generating from lowered loss of relaxation
- A significant slash in the number of anchorages, ducts, sheaths and wedges used as well as in overall labour expenditure.
- An anticipated minimization in the size of structures not only saves concrete but also promises a lighter output.
- A fool-proof system of online checking during manufacturing ensures zero rate of failure of strands at the construction sites. Certification of quality while manufacturing marks the product with absolute reliability.
- Hot-stretching facilitates near-perfect straightening of the strands. This once again helps in doing away with the system of post-straightening.
- Lower Relaxation ensures a commendable diminution in the quantity of raw material (steel) used. It is undoubtedly a steel-saving process.

Manufacturing process

Ramsarup employs the latest technology to shape up its LRPC wires.
Each step that Ramsarup takes objectifies excellence in service and quality. The internationally admired stranding machines from GCR Group add on to the product's credibility.

Packing

The LRPC products of Ramsarup are distinguished for their standard of packing. The automatic wrapping machines ensure impeccably packed wires that symbolize quality and reliability. Weighing and tag printing is done online to guarantee zero-errors.

Wire drawing machines with following facilities

a) high speed
b) block air and water cooling
c) die cooling
d) rotating die boxes
e) DDA system to allow remote supervision
f) laser measurement system to monitor machine productivity, quality, tolerance of the wire
g) large spools to assist in higher coil weights

Laboratory with following world class facilities

a) complete chemical and metallurgical testing facilities
b) tensile machines with capacity of 400 kn and 200 kn
c) low relaxation testing facility with auto loading having capacity of 25 mts (for 1000 hrs test)
d) bend test machine
e) torsion testing machine
f) optical microscope

LRPC strand line with following facilities

a) high speed
b) 800 kw induction furnace with water heat exchanger
c) optical pyrometer to ensure precise final temperature of the product
d) main machine functions are electronically controlled to avoid any human error
e) post forming group with two sets of rollers
f) layer winder to produce cheese coils from 1000 mtrs to 5000 mtrs (800 kgs to 4000 kgs)

Dimensions of Reel-less Coil

The LRPC strands are delivered in form of cheese coils from 1 MT to 3.5 MT, specified by requirement. Customers' specification also determine whether the coils, strapped for compactness, would be packed or palletized. The starting end of the strand is made clearly identifiable in the coil.

Nominal Diameter of Strand (Inches)	Outside Diameter (A) - (Inches)	Inside Diameter (B) - (Inches)	Width (C) - (Inches)	Approximate length per pack (feet) (Correspond to coil weight to 2.5 to 3.5 MT)
3/8	49 Max	29 Min	30 Max	22,000
7/16				16,000
1/2				12,000

Instructions for Onsite Storage and Handling

Storage and use of LRPC strands at construction sites demand appropriate care. Lapse in precaution against probable damage and corrosion otherwise may lead to severe repercussions at a later stage.

The Dry and Oiled types of Ramsarup strands

Oiled type

The strands conditioned in aqua-soluble oils are protected from corrosion while being stored. This oil is easily removed by washing, as and when needed.

Dry type

The LRPC strands are protected by rust-preventive VCI paper and polyethylene. However, for maximum storage on site and minimum risk of corrosion or localized pitting, absolute external protection is recommended.

Recommended procedure for proper storage and handling onsite

Handling

Pull direction: Place the pack of strand in cage such that the arrow indicating the direction of pull faces the opening.

Space Consideration: No space should be allowed between the pack of strands and the frame of the cage before the steel straps are strapped.

Insert spacers to fill up the gaps, if any, before slashing the banding straps.

Note: the strands might get entangled if the pack is expanded excessively.

Storage

Unloading should necessarily be done under shade or cover.

Short-term outdoor storage requires the coils to be stacked on timber support with a protective covering of waterproof sheet. It is essential to ensure air circulation and avoid condensation.

For long-term outdoor storage, small bag/s of vapour phase inhibitor is a must add-on to the above measures.

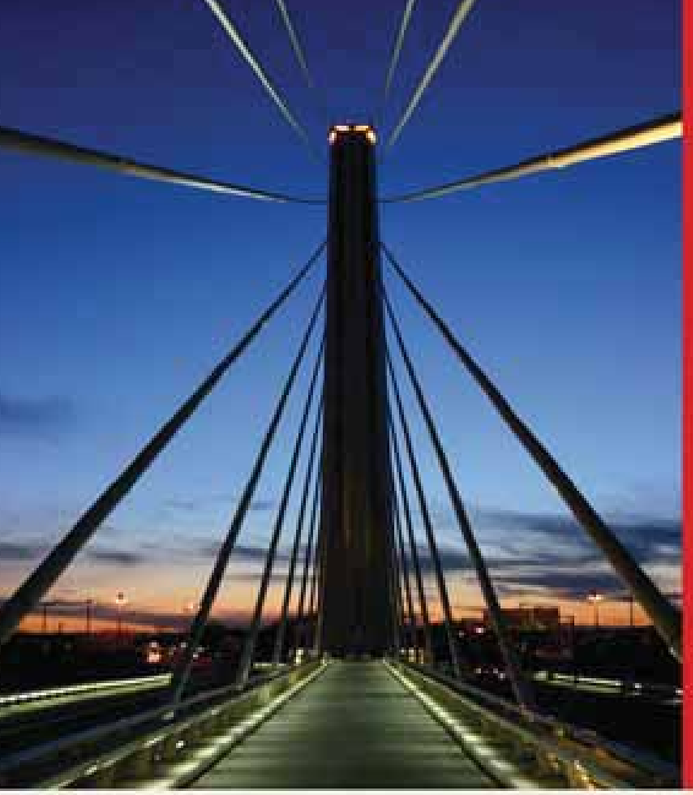
Abrasive disc cutters or shears should be used for cutting steel. Flame cutters that expose steel to the source of heat have the power to alter micro structure and modify the inherent properties/characteristics of steel.

Caution

The LRPC wires are treated to high-tension coiling and thus require adequate safety measures while uncoiling.

Ramsarup Group believes in an elevated level of business ethics, philosophy and professional values. The work atmosphere and environment provided to the employees reflect safety, health, dependability and motivation.

We treasure valuable suggestions and constructive criticism from our customers in order to improve our occupational environment, service and performance and move towards a brighter future.



Indian Standards :IS-14268/1995

The Indian standard for uncoated low relaxation seven ply strand for pre-stressed concrete is covered under IS 14268-1995. The properties specified in IS 14268: 1995 are reproduced below:

Class	Nominal Diameter of Strand	Tolerance	Nominal Area of Strand	Min. Breaking Strength of Strand		0.2% Proof load (90% of Breaking Strength)		Minimum % Elongation GL = 600mm	Nominal Weight of Strand (Approx.)	Relaxation Loss	Chemical Com-position
	(mm)	(+mm)	(mm2)	(kN)	(Kg)	(kN)	(Kg)		(Kg/Km)	(%)	%
	9.50	±0.40	51.6	89	9078	80.1	8170		405	2.5 max.at 70% of specified min. breaking load after 1000 hours OR 1.8 max. at 70% of specified min. breaking load after 100 hours	S = 0.04 max. P = 0.04 max
	11.11	±0.40	69.7	120.1	12250	108.1	11026		548		
I	12.70	±0.40	92.9	160.1	16330	144.1	14698	3.5	730		
	15.20	±0.40	139.4	240.2	24500	216.2	22052		1094		
	9.50	+0.66	54.8	102.3	10434	92.1	9394		432		
		-0.15									
	11.11	+0.66	74.2	137.9	14065	124.1	12658		582		
II		-0.15						3.5			
	12.70	+0.66	98.7	183.7	18737	165.3	16860		775		
		-0.15									
	15.20	+0.60	140.0	260.7	26592	234.6	23929		1102		
		-0.15									

International Standards

Japanese Specification - JIS 3536

Grade	Nominal Diameter		Min. Yield Strength			Elongation	1000 Hr relaxation loss
	(mm)	(inch)	(kgf)	(lbf)	(kN)	(%)	
SWPR7AL	9.30	3/8	7633	16973	75.50	3.5	2.5% Max with initial load
	10.80	7/16	10312	22930	102.00		
	12.40	1/2	13750	30573	136.00		equal to 70% of minimum
	15.20	6/10	20624	45860	204.00		
SWPR7BL	9.50	3/8	8776	19513	86.80	3.5	
	11.10	7/16	11930	26527	118.00		specified breaking load
	12.70	1/2	15772	35069	156.00		
	15.20	6/10	22444	49906	222.00		

Japanese Specification - JIS 3536

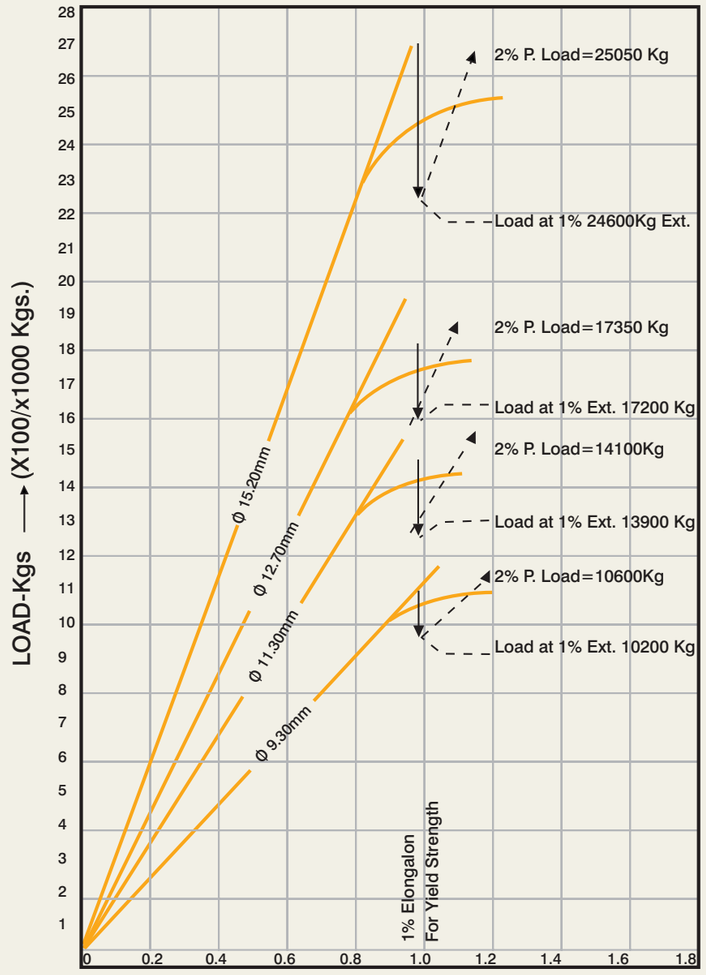
Grade	Nominal Diameter		Diameter Tolerance		Nominal Area		Nominal weight		Min. Breaking strength		
	(mm)	(inch)	(+mm)	(+inch)	(mm2)	(inch2)	(kg/1000m)	(lb/1000m)	(kgf)	(lbf)	(kN)
SWPR7AL	9.30	3/8			51.61	0.080	405	272	8978	19963	88.80
	10.80	7/16	+0.40	+0.016	69.68	0.108	546	367	12132	26976	120.00
	12.40	1/2	-0.20	-0.008	92.9	0.144	729	490	16176	35968	160.00
	15.20	6/10			138.7	0.215	1101	740	24264	53952	240.00
SWPR7BL	9.50	3/8			54.84	0.085	432	290	10312	22930	102.00
	11.10	7/16	0.40	+0.016	74.19	0.115	580	390	13952	31023	138.00
	12.70	1/2	-0.20	-0.008	98.71	0.153	774	520	18500	41139	183.00
	15.20	6/10			138.7	0.215	1101	740	26390	58673	261.00

American Specification - ASTM A 416-98a

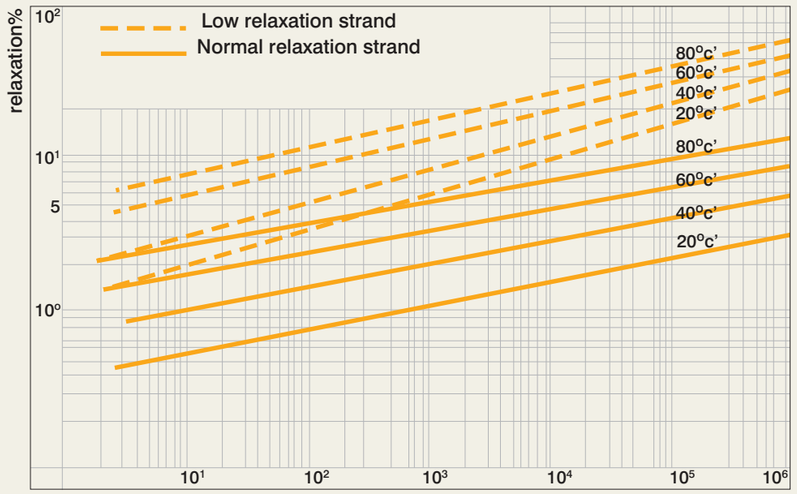
Grade	Nominal Dia. of Strand		Tolerance		Nominal area of Strand		Min. Breaking strength of Strand		Min Load at 1%Extension		Min. Elong GL= 600mm	Nominal weight of Strand (Approx)		1000 hr relaxation Loss
	Inch	mm	Inch	mm	Inch2	mm2	lb	KN	lb	KN	%	kg/1000m	lb/ 1000ft	%
250	3/8	9.53	±0.016	±0.40	0.08	51.61	20000	89	18000	80.10	3.5	405	272	2.5 max at 70 % of specified min breaking load
	7/16	11.11			0.108	69.68	27000	120.1	24300	108.10		548	367	
	1/2	12.7			0.144	92.9	36000	160.1	32400	144.10		730	490	
	6/10	15.24			0.216	139.35	54000	240.2	48600	216.20		1094	737	
270	3/8	9.53	+0.026 -0.006	+0.66 -0.15	0.085	54.84	23000	102.3	20700	92.100	3.5	432	290	3.5 max at 80 % of specified min breaking load
	7/16	11.11			0.115	74.19	31000	137.9	27900	124.10		582	390	
	1/2	12.7			0.153	98.71	41300	183.7	37170	165.30		775	520	
	6/10	15.24			0.217	140	58600	260.7	52740	234.60		1102	740	

British Specification - BIS 589

Type of Strand	Nominal Diameter	Tolerance on		Nominal Area of Strand	Nominal Tensile Strength	Specified Characteristic Breaking Strength	Specified Characteristic 0.1% proof load	Load at 1% elongation	Relaxation			Minimum Elongation at max load L 500 min	Nominal Mass kg/1000m
									Initial load (% of actual breaking load)	Max Relax after 1000 hrs			
										Relax Class-I	Relax Class-2		
	mm	mm		mm2	N/mm2	KN	KN	KN					
7 Wire Standard	9.3	+0.30	+4%	52	1770	92	78	81	For all strands			For all strands 3.50%	408
	11.0	-0.15		71	1770	125	106	110					557
	12.5	+0.40	-2%	93	1770	164	139	144	60%	4.50%	1.00%		730
	15.2	-0.20		139	1670	232	197	204	70%	8.00%	2.50%		1090
7 Wire Super	9.6	+0.30	+4%	55	1860	102	87	90					432
	11.3	-0.15		75	1860	139	118	122	80%	12.00%	4.50%		590
	12.9	+0.40	-2%	100	1860	186	158	163					785
	15.7	-0.20		150	1770	265	225	233					1180



Typical Load Elongation Carves for Grade 270K Strand



Relaxation Values for Normal & Low Relaxation Strand at different temparatures

(Initial stress = 0.70 x Specified Characteristic Strength)

“Your range of available choices, right now is limitless.”

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