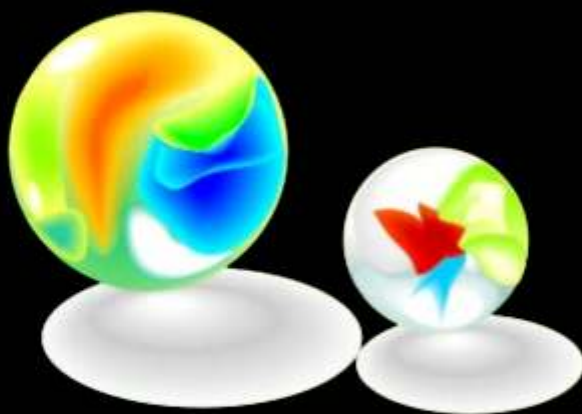
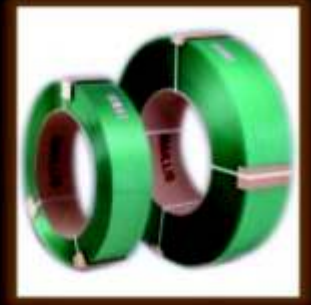
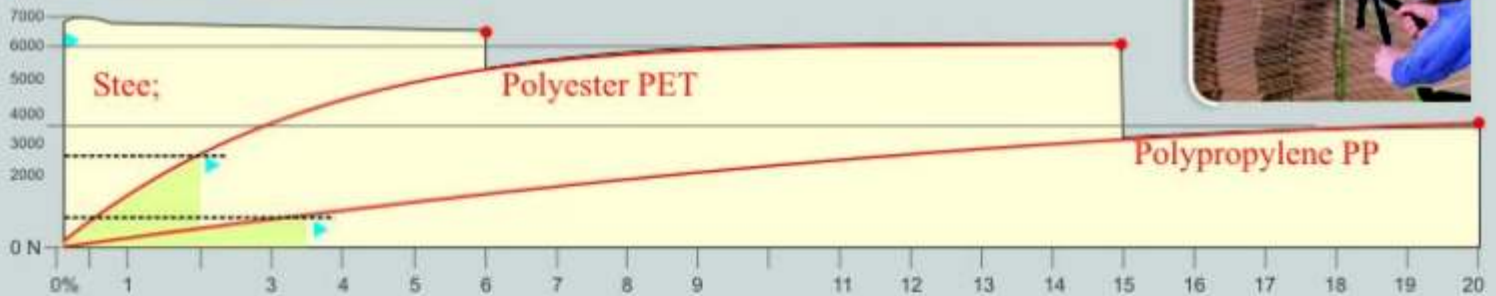


# Evergreen Straps



MFG. OF : P.P. PET STREP & POLYESTER STREPPING

## Tensile Strength



**Steel : 800-1100 N/mm PET 470-570 N/mm PP 330-400 N mm BS: PET 16 x 0.8 mm = 16x0.8x470 = 6016 N.**  
**BS describes force necessary to tear strap : Steel strap 19 mm : up to 15 KN, PET strap 19 mm : up to 10 KN, and for PP strap 19 MM : up to 6 KN.**

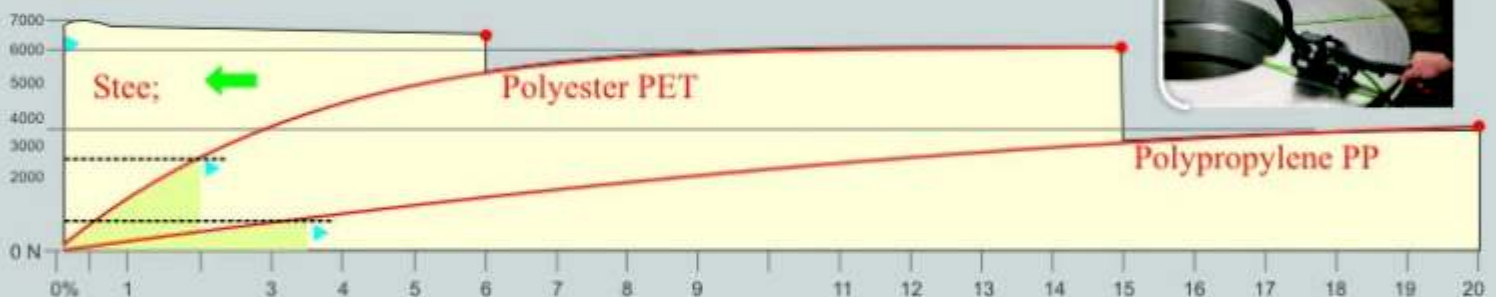
**Breakin Elongation :** It is the impact reserve of the strap that can absorb expansion of packing before breaking.

Steel : ~ 0.5-1.0% (low carbon steel) and 3-5% (high carbon steel), PET ~ 12-14% & PP ~ 5-20%

**Working range :** Optimal working range PET is ~ 40-45% of Breaking load, e.g. PET 16x0.8 mm, BL:6016 N, ideal working range is 2400-2700 N

**Residual tension :** Residual tension is tension which is remaining in package after completion of strapping. It is influenced by factors as : - initially applied tension, type of package, mode of clamping in tool, sealing & loss of tension. Tension retained over a period of time : Steel : > 95%, PET - 70-80%, PP<50% retention.

## Tensile Strength



**It is optimal working range of strap, as any shrinkage of package can be absorbed. : ~0.1%, PET:~ 2-7% & for PP:~ 3.5% resp. It is property of molecules in plastic straps that molecules want to return to their original position if they are under tension.**

### WHY PER STRAPPING IS A BETTER CHOICE OVER STEEL ?

**Today, PET strap is recognized as environment protective strap material to substitute steel strap & PP strap. The advantages of PET strap vs, steel are outlined.**

- PET strap is rust free, chemically inert (non-abrasive, non corrosive). PET Strap and Steel Strap Photos respectively enclosed : Superior weather resistance : Pet is preferred to steel strap for exported goods (no rust). It can be stored for longer time even in adverse temperature and moist conditions :
- PET strap has higher elongation recovery, whereas elongation recovery is not there in steel.
  - Excellent memory return to tight fit after elongation. Ideal for fibre/cotton bales as it can be sealed little loose initially.
- PET strap is very safe at the destination while opening.
  - No fear of injury in sealing, removing, storage & handling, as it dosen't have sharp edges.
- In cutting tensioned steel straps, it always leads to accidents (PET straps don't have these problems)
  - PET strap is easy to apply/safe to handle in use and unpacking at destination, and the product is protected.
- Density of steel is 7.85, which is almost 6 times that PET strap, i.e. higher mileage in PET strap. Saves freight, ease in handling, less m/c downtime (reduced frequency of coil changes).
- Goods impact resistance
  - Takes 2.5 times energy to break vs. steel, when dropped and has better resistance to shoch loads.
- Aesthetics
  - Appealing colours and gloss. It does not leave any mark on the pack.
- PET Strapping fully recyclable into different products and has easy disposal
  - Many Value-added products made from recycled PET, hence environmental friendly.
- Good economical application - Pl. refer encl. case study for replacement of steel strap.

## PET STRAP Size & Specification

Sr. No.	Width MM	Thickness MM	Weight / Mtr. GRAM	Runnage meter pet Kilogram	Min. Breaking Strength Kgf.	Length Meter / coil
1	10.50	0.50	7.03	142.00	200	3500
2	12.50	0.50	8.37	119.50	238	3000
3	12.50	0.70	11.72	85.50	333	2100
4	15.50	0.76	15.78	63.50	495	1600
5	15.50	0.90	18.69	53.50	586	1300
6	15.50	1.00	20.77	48.00	651	1200
7	19.00	1.00	25.46	39.50	798	1000
8	19.05	1.27	32.42	31.00	1016	750

**Ideal (Safe) Working Range : 40 - 45% of Breaking Load**



**Standard Colour : Green.**

**Surface Finish : Plain or Embossed available.**

**Paper Code : 206/406 mm inside dia. x 152 mm width**

**Roll Weight : Around 25 Kg. per Roll.**

**Printing : Available at extra charge.**

**Packing: One coil per corrugated box.**



Sr.	DETAILS OF STEEL STRAPPING Parameter	Steel strapping (32mm)	Steel strapping (16mm)
1	Strap Size (L x W)	32 x 0.74 mm	16 x 0.58 mm
2	Make	Midfield	Midfield
3	Steel strap yield per kg.	5.4 metres	13.8 metres
4	Steel strap cost (in Rs.) per kg.	55	55
5	Steel strap cost per metre	55/5.4 = Rs. 10.18	55/13.8 = Rs. 3.98
6	Steel consumption (kgs) / month	2200	1400
7	Steel strap consumption (metre)/month	2200*5.4 = 11880	1400*13.8 = 19320
8	Steel strapping cost / month	11880*10.18 = Rs. 120938	19320*3.98 = Rs. 76893
9	Steel strap cost / annum	Rs. 1451256	Rs. 922716
10	Clip cost per piece	Rs. 2.25	Rs. 0.30
11	Clip consumption / day	40*4 = 160	40*3 = 120
12	Clip cost per day	160*2.25 = 360	120*30 = 36
13	Clip cost per annum	Rs. 131400	Rs. 13140
14	Steel strapping cost/annum (9+13)	Rs. 1582656	Rs. 935856
	Total cost of steel strapping inclusive of 32 mm & 16 mm strap :		Rs. 2214960

Sr.	PROPOSED PET STRAPPING Parametre	PET strapping (19mm)	PET strapping (16mm)
1	Strap Size ( L X W	19 x 1.32 mm	16 x 0.69 mm
2	Make	Indigenous	Indigenous
3	PET strap cost (in Rs.) per metre	3.75	1.75
4	PET strap consumption (metre) / month	11880	19320
5	PET strapping cost / month	Rs. 44550	Rs. 33810
6	PET strap cost / annum	Rs. 534600	Rs. 405720
7	Clip cost per piece	0	0
8	PET strapping cost / annum (6+7)	Rs. 534600	Rs. 405720
	Total cost of PET strapping inclusive of 19 mm & 16 mm strap :		Rs. 940320
	Saving (Rs./y) in switching from Steel to PET strapping		Rs. 1274640

Basis : 40 pallets/d, 4 straps of 32 mm & 3 straps of 16 mm, Clip : Rs. 2.25/pc (32 mm) & Rs. 0.30/pc (16 mm).

### JOINING METHOD

**MECHANICAL SEALS :** PET has hard, slippery surface, hence serrated metal seal used which has series of teeth or points on inside surface of seal to prevent slippage. Hand operated crimping tools used for metal seals to be used with PET strapping.

**HEAT SEALING :** A heat seal joint is created by a thermo-electric heater blade (plate) that melts and fuses two ends of tensioned strap together under pressure.

**FRICTION SEALING :** A friction weld joint is formed by rapid vibration of two straps under tension creating enough frictional heat to fuse straps together.

Manual & fully automatic strapping machines are used with Battery / Electric / Pneumatic operated tools.

**The JOINTED STRENGTH can obtain 75% to 85% of Breaking Strength of Strap with a uniform weld joint.**

**Seal efficiency can be achieved under proper operating of equipment and strap selection.**



**Evergreen**  
Strape

**EVERGREEN POLY PLAST PVT. LTD.**

**MFG. OF : P.P. PET STREP & POLYESTER STREPPING**

Plot No. 320, GIDC, Phase - II, Sabalpur, JUNAGADH - 362 001. Tel. : 0285 - 2661009 M. : 98253 48600  
Web. : [www.evergreen\\_polymersindia.com](http://www.evergreen_polymersindia.com)