

1 - CONSTRUCTION

- Woven tapes with glass yarn E (silionne) in wrap and weft for electrical insulation, having an alcali content inferior to 1,5 %.

- For some applications the R or S glass yarn is used. This yarn contains very few Boron (B₂O₃), around 0-0.1%. The strength of this yarn is superior to 30% and this temperature is superior to 25% compared to E glass.

1.1 CHARACTERISTICS OF THE USED GLASS YARNS

1.1.1 The Yarn is defined by:

- Diameter of the basic fibre, 9 microns on average, with a Tolerance of + - 10 %.
- Tex : tolerance + - 10 %.
- Type of yarn : cabled or non cabled. See chapter 1.4.



1.1.2 Ensimage or Dressing used by the yarn's manufacturer

- The dressing is used for preventing the yarn from emitting steams that could attack the insulation material and varnishes used in insulation of machines.
- The ensimage can be composed of :
 - Dextrine oil : (1,4 to 1,6 %) oil laid down on the yarn in order to facilitate the weaving of the tapes.
 - Amino Silane finish (AS) : (0,5 to 0,8 %) finish on the yarn to improve the impregnation of resins.

1.1.3 Thermal treatment on woven tape

- Please see chart below :

REFERENCE	GDT C5	GDT 5	GDT 12	GDT 31
- Treatment reference	CAMEL	BEIGE	BEIGE	WHITE
- Total treatment time	5 hours	5 hours	12 hours	31 hours
- Cycle temperature	300 °C	220 °C	360 °C	400 °C
- Loss of tape resistance	35 %	35 %	45 %	55 %
- Fire loss in % during 1 hour at 600 ° C	0,5 à 0,7	0,5 à 0,7	0,2 à 0,3	0,1 à 0,2

1.1.4 Chimiical treatment on woven tape

- It is possible to impregnate the tapes with various resins (Isonel, Epoxy, Polyurethane, A1100, ARI, etc.).
- These treatments allow for example to improve the impregnation in resins, to avoid the itches induced by the fiberglass, the fraying during the cutting, etc.
- The resin content vary from 5 to 30% according to the used process.

1.2 FABRICATION ON THE TAPES

1.2.1 Type of Weaving :

- LINEN WEAVING : Perpendicular construction wrap and weft.
- SERGE WEAVING : Herringbone weaving. The tape is heavier, has a higher breaking resistance. Weaving only for thicknesses from 0,15 mm.



1.2.2 Designation of the tape:

- **Width :**
Admitted tolerance ± 1 mm, measure is made with a steel rule graduated in mm.
- **Thickness :**
Measure with a dial micrometre. Touch diameter 14 mm, pressure 320 millibars.

- Breaking resistance :

The tests are made with an electrical motor dynamometre.

The recommended system is "roller system" with distance between jaws = 10 cm. It keeps away from any unifilar breaking of the yarns composing the tape. Classic jaws often cause the breaking even with the use of protection (rubber, blotting paper).

- Dressing or Finish :

CETAVER tapes unbleached and with selvages. They are woven with the yarn 1.1.2.

They are used in the most current applications : phenolic varnishe, oily glycerophthalic.

CETAVER tapes reference AS (Amino Silane) .

They are woven directly with the yarn which has the finish therefore the selvages are not ripped in case of further treatment and there is no loss of resistance.

CETAVER tapes heat treated. Please see list of treatments - chart page 1.

- Weight per metre :

The weight in gramme per 1 cm width is indicative . Please see the chart of characteristics.

Tolerance of $\pm 10\%$ depending on the tolerance of the yarn size Tex. See 1.1.1.

1.3 MARKING YARN

The marking yarn allows to :

Save some tape in the length as the covering is regular, when placed in the middle of the width. Possibility of placing the marking yarn in a different way on special demand. Ease the marking of the different qualities in the works hop and in the store.

FOR STANDARD QUALITIES	
CABLED TAPE	- 1 RED YARN
NON CABLED TAPE	- 1 BLUE YARN
TAPE WITH FINISH	- 1 BLACK YARN



1.4 TYPE OF GLASS YARN

CABLED YARN "C"

- They are 2 assembled yarns twisted together generally to 150 twists per metre.
- Thanks to its constitution, the yarn is perfectly round (2 twisted ends).
- As the constituting fibres are maintained by twisting, the resists to rubbing. It avoids down.
- The yarn is more absorbent (of resins), as it is lighter : Each twist represents a hole where the resin can fit in.
- The yarn has a very slight elongation which makes the tape elastic to a stight extent this is an interesting property when taping in the bends.
- The yarn has a better resistance to mechanical shocks, as it is more elastic perpendicularly to its length axis (well round yarn).
- As glass is well known for its fragility, it is an advantage not to neglect.
- Acabled yarn tape will not curl up, which is often interesting when taping or winding .

NON CABLED YARN " NC"

- It is a slightly twisted on itself yarn to 20 twist per metre (sometimes 40 twists). That is to say 4 to 8 times less twisted than a cabled yarn. The yarn does not resist well to rubbing as the constituting fibres are parallel and if one of them breaks, it will stuff as it is not blocked by the twisting. It entails downs and small fibres that stay in suspension in the air.
- The yarn is less absorbing as it is flat and tight (there is no hole to receive the resin).
- There is no elongation as the constituting fibres are parallel.
- Less resistance to mechanical shocks as the yarn is flat without elasticity.
- The tape woven with non cabled yarn curls up when it is cut in lengths.



REMARK

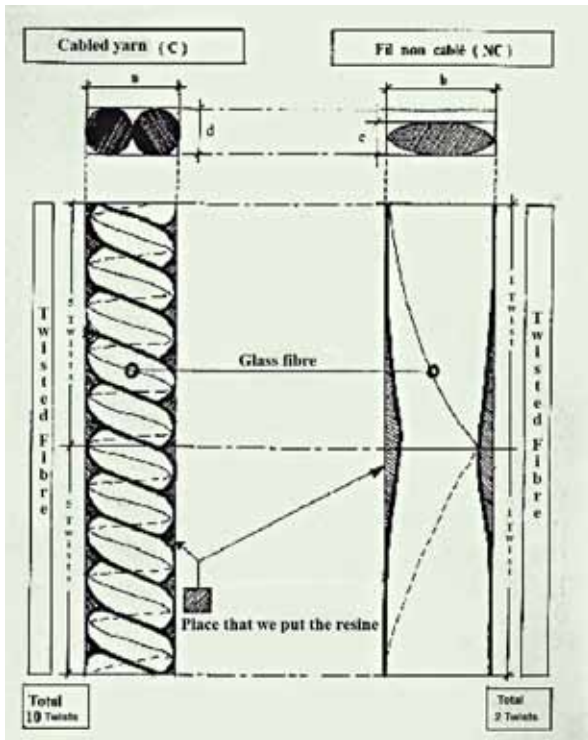
- It is easy to see that for a yarn with same number, the put up is totally different.
- A fibre is twisted 5 times on itself for a cabled yarn.
- A fibre is twisted once on itself for a non cabled yarn.
- The room available to receive the resin is completely different between the 2 yarns
- The non cabled yarn is flat and larger than cabled yarn.
- Therefore a tape woven with non cabled yarn will be more opaque opposing a more important barrier to resins penetration and less retaining them.
- The cabled yarn gives a better net effect, therefore makes a better frame.

NOTA

- On special request, we can weave cabled yarn tapes.

THE UNBLEACHED NON CABLED YARN TAPES ARE :

- Suitable enough for some uses.
- Lower prices compared to cabled yarn tapes as different quality.
- To be used when industrial medicine approves them.
- Used when technical requirements are compatible with their use.



2- CHARACTERISTICS

PLEASE SEE CHARTS "REFERENCES"

- The tapes are classified per THICKNESSES in mm.
- The WIDTHS go from 5 in 5 mm. On special requests and for important quantities, we can weave other widths.
- The possible widths per reference are numerous and it is difficult to put them all in the chart.
- In the charts we are giving the standard widths, but we can weave up to 300 mm according the thickness.
- When AS is mentioned in the REFERENCE, it means that the tape is woven with a yarn having an Amino Silane finish (AS).
- The mentioned WEIGHT PER METRE is the weight in grammes on a 10 mm width or 1 cm, or on the smallest width mentioned if smaller or larger than 10 mm.
- The yarn TEXTURE mentioned is :
 WRAP : number of yarns on a width of 10 mm.
 WEFT : number of yarns on a length of 10 mm.
- MARKING YARN : see page 2 "1.3" - In some cases and on special orders with important quantities, we can weave without marking yarn.



**CETAVER[®] EDGED TAPE****- LINEN WEAVING - cabled yarn Réf. S/C E glass Needle looms Red yarn**

THICKNESS mm	REFERENCE	WIDTH mm	WEIGHT g/m per cm / width	YARN CONTEXT		YARN DIMENSION	
				warp per cm	weft per cm	warp tex	weft tex
0,05	S 005/C	10 to 25	0,65	36	15	5.5 x 2	5.5
0,08	S 008/C	10 to 30	1,05	28	14	11 x 2	11
0,13	S 013/C	10 to 50	1,60	18	10	22 x 2	34
0,20	S 020/C	10 to 150	2,25	20	11	34 x 2	34
0,25	S 025/C	10 to 150	2,65	18	10	34 x 2	34

- LINEN WEAVING - non cabled yarn Réf. S/NC E Glass Needle looms Bleue yarn

0,08	S 008/NC	10 to 30	1,10	24	12	22	22
0,10	S 010/NC	10 to 50	1,30	20	12	34	22
0,13	S 013/NC	10 to 50	1,50	22	10	34	34
0,20	S 020/NC	10 to 150	2,25	20	11	68	34
0,25	S 025/NC	10 to 150	2,65	18	09	68	68

- SERGE WEAVING - cabled yarn Réf. SERGE/C E Glass Needle looms Red yarn

0,15	S 015SE/C	10 to 50	1,95	26	15	22 x 2	22
0,20	S 020SE/C	10 to 150	2,40	21	13	34 x 2	34
0,25	S 025SE/C	10 to 150	3,25	26	17	34 x 2	34
0,30	S 030SE/C	10 to 150	3,30	24	11	34 x 2	68
0,40	S 040SE/C	10 to 150	4,50	20	12	68 x 2	68

- SERGE WEAVING - non cabled yarn Réf. SERGE/NC E Glass Needle looms Bleue yarn

0,10	S 010SE/NC	10 to 50	1,20	33	15	22	11
0,13	S 013SE/NC	10 to 50	1,55	33	15	34	22
0,30	S 030SE/NC	10 to 150	3,30	24	11	68	68

**WOWEN TAPE WITH AMINO - SILANE FINISH ON YARN - AS****- LINEN WEAVING - cabled yarn Réf. S/C-AS E Glass Needle looms black yarn**

THICKNESS mm	REFERENCE	WIDTH mm from - to	WEIGHT g/m per cm / larg	YARN CONTEXT		YARN DIMENSION	
				warp per cm	weft per cm	warp tex	weft tex
0,25	S 139/C - AS	10 to 50	2,80	11	6,5	68 x 2	34 X 2
0,32	S 181/C - AS	70 to 170	3,75	18	8	68 x 2	68
0,40	S 206/C - AS	70 to 180	4,75	15	9	68 x 2	136

- SERGE WEAVING - cabled yarn Réf. SERGE/C-AS E Glass Needle looms black yarn

0,25	S 025SE/C - AS	10 to 40	3,25	26	17	34 x 2	34
0,30	S 030SE/C - AS	20 to 25	3,30	24	11	34 x 2	68
0,40	S 040SE/C - AS	20 to 150	4,50	20	12	68 x 2	68
0,95	S 150/C - AS	11 to 20	10,5	62	5	68 x 2	68

- LINEN WEAVING - non cabled yarn Réf. S/NC-AS E Glass Needle looms black yarn

0,10	S 010/NC - AS	10 to 40	1,30	20	12	34	22
0,13	S 013/NC - AS	10 to 60	1,50	22	10	34	34
0,20	S 020/NC - AS	10 to 150	2,25	20	11	68	34
0,25	S 025/NC - AS	10 to 150	2,65	18	9	68	34
0,25	S 179/NC - AS	10 to 150	2,70	10	8	136	68
0,40	S 206/NC - AS	10 to 200	4,80	16	9	136	136

3 - PRESENTATION

- Each roll is measured under tension in order to have tight rolls.
- The standard inside ring is made of reinforced carboard.
- 2 types of ring : inside diametre 40 mm and 55 mm (standard in electrotechnical industry) as it makes the handling of the roll easier, for manual taping.
- The end of the roll is stopped by a small adhesive label.
- After control the rolls are gathered in a cylindre and wrapped in a transparent thermoshrinkable plastic film.

**2 TYPES OF MEASURING****AUTOMATIC**

The length per roll depends on the thickness of the tape.

Thickness 0,05 to 0,30 mm = 50 M

Thickness 0,40 mm and over = 25 M

Possibility of measuring in 100 M - rolls

MANUAL

This type of measuring is used when the customer needs special conditioning

NOTA: The number of rolls per cylinder can vary. It depends on the real width of the tape.

AUTOMATIC						
THICKNESS OF TAPES mm	OUTSIDE DIAMETRE OF ROLL mm	PACKS PER BOX	WIDTH OF TAPES mm	LENGTH PER ROLL m	LENGTH PER PACK m	ROLLS PER PACK see nota
0,05	080 - 085	9	08	50	1700	34
0,08	090 - 095	9	10	50	1400	28
0,10	095 - 100	9	12	50	1150	23
0,13	100 - 105	9	15	50	0950	19
0,15	105 - 107	6	20	50	0700	14
0,20	115 - 120	6	25	50	0550	11
0,25	125 - 130	6	30	50	0450	09
0,30	153 - 158	6	40	50	0350	07
0,40	125 - 135	6	08 - 10 - 12 15 - 20 - 25 30 - 40	25 - 25 - 25 25 - 25 - 25 25 - 25	850 - 700 - 575 475 - 350 - 275 225 - 175	34 - 28 - 23 19 - 14 - 11 9 - 7
MANUAL						
THICKNESS mm	INSIDE RINGS DIAMETER - mm	OUTSIDE RINGS DIAMETER - mm	LENGTH PER ROLL m			
ALL THE THICKNESSES from 0,05 to 0,40 mm	ALL TYPES OF RINGS Ø 40 - 55 - 70 - 76 - 150 mm	MAXI 500 mm	MAXI 1200 M			

- SHELF LIFE

- Unlimited but Keep them away from humidity.
- Preferably, leave them in their original plastic film packing, cylinder up.