

Cuesta Weave

www.cuesta.co.nz

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We weave
your yarn

Located on our alpaca farm just south of Auckland, high on the hills between the Clevedon and Hunua valleys Cuesta Weave specialises in weaving alpaca into beautiful fabrics, wraps, scarves & throws.

Jenny & Martyn Ellwood-Wade have imported a small industrial weaving loom to add to Jenny's loom herd to enable production weaving. This loom produces high quality fabrics which are indistinguishable from their hand-woven equivalents. We specialise in weaving alpaca and apply what we learn from making our own products to your commission.

Our loom has a weaving width of 60 inches and has 24 shafts which makes a wide variety of designs possible.

We provide a friendly and helpful service and because we understand weaving, you don't have to. Just contact us to discuss your requirements.

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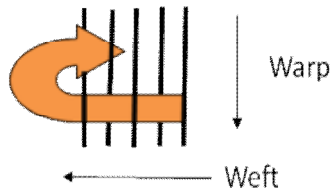
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The Weaving Process

A woven fabric comprises two sets of threads:

- Warp threads: these run from front to back and can be many 100's of metres long
- Weft threads run from side to side, in commercial fabrics these are usually 36, 48 or 60" wide.

In traditional weaving the weft thread is continuous and wraps around the edge of the warp threads to form a stable selvedge which will not unravel. Our loom gives this traditional finish.



A weaving loom has roller mechanisms front and back so that a long warp can be wound on and kept under tension during the weaving process. It also has a mechanism for lifting different warp threads (called ends) as the weft thread is inserted (called a pick). The mechanism is usually a series of shafts or frames which rise and fall at the appropriate time to create different patterns and structures in the fabric. Within the shafts are heddles through which each end is threaded.



The warp ends are then threaded through a reed to space them out evenly, we specify this as the number of ends per inch (epi). The warp is then tied to a beam at the front of the loom and weaving can start.



The weft yarn is wound onto a bobbin and a shuttle is used to carry the weft through the warp.



Our loom has 24 shafts and uses a computer dobby to raise and lower the shafts in the correct order.



Yarn Calculations

Yarn required for 5 wraps as above, including:

- loom waste of 1.5m per end which is required for tying up and for the warp which cannot be woven at the end of a run.
- Take-up of 10% on both warp and weft when weaving.
- 15 ppi equates to 6 picks per cm.
- Note that shrinkage allowances have been allowed for above in length of woven fabric and width of warp.

As per the calculations below 15,625m of yarn would be required @220 tex (2-3 ply) this would be 3.5kg of yarn. Some extra should be allowed for measuring inaccuracies.

No. Ends	Woven length	Including Take up	Loom waste	Length per end		Total Warp (ends x length)
600	11m	12.1m	1.5m	13.6		8160m
Picks per cm	Woven length	Total no. Picks	Width in loom		Including take up	Total weft (picks x width incl takeup)
6	11m	6600	40 inches	1.02 m	1.12m	7376m
					Total yarn	15,536m

Yarn required for 15 wraps as above, including:

As per the calculations below 44,808m of yarn would be required @220 tex (2-3 ply) this would be approximately 10kg of yarn. Some extra should be allowed for measuring inaccuracies.

No. Ends	Woven length	Including Take up	Loom waste	Length per end		Total Warp (ends x length)
600	33m	36.3m	1.5m	37.8m		22,680m
Picks per cm	Woven length	Total no. picks	Width in loom		Including take up	Total weft (picks x width incl takeup)
6	133 m	19800	40 inches	1.02 m	1.12m	22,128m
					Total yarn	44,808m

Estimating prices and Amount of Yarn Needed

The world of weaving generally still works in yards and inches, partly because the US is not metric and partly because most reeds are in dents (gaps) per inch. So I am measuring finished length and width in centimetres but still work to ends and picks per inch. A tape measure with both inches and centimetres is very handy!

Warning: these calculations may cause headaches! Sorry, but the calculations are not simple. We need to allow for:

- Shrinkage during the fulling/washing process
- Take up of yarn when weaving and the warp and weft yarns deflect around each other
- Draw-in during weaving as the weft yarn goes around the end of the warp and forms the selvedge.

Price Estimates

To weave 5 women's wraps, each 92 cms x 180 cms + fringe either end of 10 cm (total length 2m per wrap).

- Allow 10% for shrinkage during fulling.
- Yarn used: 2/3 ply set at 15 epi
- Draw-in when weaving = 1.5cm
- Total woven length = $2\text{m} \times 110\% \times 5 = 11\text{m}$
- Width in loom = $92\text{cm} \times 110\% + 1.5\text{cm} = 102.7\text{cm} = 40\text{ inches}$ (to nearest multiple of 2")
- Number of ends = $40 \times 15 = 600\text{ ends}$
- Price for weaving = $(600 \times .60) + (11 \times 30) = \690 (+GST)
- Price per wrap = $690/5 = \$138$ per wrap (+GST)
- Price per metre of fabric (after shrinkage) = $\$69$ (+GST)
- Wraps finished by yourself

To weave 15 wraps as per above:

- Total woven length = 33 m
- Price for weaving = $(600 \times .60) + (33 \times 30) = \1350 (+GST)
- Price per wrap = $1800/15 = \$90$ per wrap (+GST)
- Wraps finished by yourself
- Price per metre of fabric after shrinkage = $\$45$ (+GST)

Note that the cost per item comes down rapidly as the number of items increase and the cost of warping up the loom is spread over a larger metreage. The design can be changed between items.

Dressing the Loom



This is the weaving term used for winding the warp, threading through the heddles, reed and tying onto the front beam. To enable us to wind long warps, we use a sectional warping beam and wind the warp in 1 or 2 inch sections.

Before we can wind the warp

the yarn has to be on cones, one cone for each end in the one or two inch section of warp beam. The full warp beam is then transferred to the loom and each end must be threaded through the correct heddle on the correct shaft. This is a time consuming process and accuracy is paramount. The last steps are threading the reed and tying on which are relatively fast.



Weaving the Fabric

This is where the industrial part of the loom takes over. The computer program and compudobby raise the right shafts, use of different weft colours is also computer controlled via moving fly shuttle boxes. Compressed air drives the fly shuttles, beater, cloth advance roller. These can be a bit temperamental, but once set up properly for the fabric being woven and the weather, all that remains is

changing the bobbins when the weft runs out.

The loom operates at about 30 picks per minute. The density of the fabric or number of weft picks per inch (ppi) is determined by a cog mechanism which is set up at the start of the run. For fine yarns at 30 ppi, this allows weaving of about 1.5 metres per hour, for four ply at 10 ppi, about 4-5 metres per hour. The width of the fabric being woven does not affect the speed, but it does extend the time between bobbin changes.

Finishing the Fabric

Most fabrics require wet finishing, otherwise known as various forms of washing, but carefully as the final cloth is affected by how much fulling (nearly felting) the fabric undergoes. If you think of a flannel cloth, this has been fullled until the individual threads can no longer be distinguished. This is a very stable cloth but the weave details have been lost. If you want to retain the pattern, we usually use more tightly spun yarn and only full lightly.

Scarves and wraps need the ends to be secured safely to avoid unravelling and some sort of fringing. The ends can be either hem stitched by hand (slow and a very nice finish) or machine stitched (fast and often not noticeable). If the yarn has been tightly spun and set, the fringes can be left as is. Otherwise they tend to untwist and shed with wear and washing. A nice finish it to twist the fringe, but this is time consuming. I'm experimenting with washable glue to try to find a fast finishing technique.

Pricing Structure

August 2011 All Prices are + GST

Our pricing is split into three parts: warping, weaving and finishing. The time taken to warp up (dress) the loom depends on the width of fabric to be woven and the ends per inch (see The Weaving Process document). The length of warp does not really affect the warping time unless the length to be woven is above 40m. The time taken to weave depends on the picks per inch (density) and length of fabric to be woven.

Our prices are based on:

- width of fabric x ends per inch
- Length of fabric x picks per inch
- Finishing technique required.

These prices include:

- Design: advice and guidance and selection from a wide range of weave structures and designs. If you would like a personal design for your exclusive use, please talk to us.
- If you are weaving a number of scarves, wraps or even a long length of fabric, the design can be varied for each item or section. There are constraints so please discuss with us.
- Yarn specification: talk to us about your finished product we will assist you in deciding an appropriate yarn specification.
- Winding of warp cones for up to 40m of warp.
- Machine stitching at either end of total length of fabric and light fulling.

Warping

Per end: 40 cents

This includes coning of yarn for up to 40m of warp. For longer warps we suggest you request your yarn supplier/processor provide the yarn on the required number of cones or we can arrange to have this done and will recharge at cost.

Weaving

Picks per Inch	Yarn type	\$ per metre
10 ppi and lower	4 ply (loose weave) and above, 300 tex +	\$14
10 – 15 ppi	3 ply, mosaic (Mesa), 240-300 tex approx	\$20
16 – 20 ppi	2 ply 180-240 tex approx	\$30
Superfine, 21-35 ppi	1 ply, 2/28, < 180 tex	\$40
>35 ppi		POA

These prices assume that the warp and weft yarns perform OK. If they are prone to breakage or sticking, the weaving charges will be higher.

Finishing (of individual items)

Machine stitching either end of the woven piece and light fulling (washing) is included in the weaving price. If you are weaving scarves, wraps or throws, either machine stitching or hemstitching prior to washing is advisable if we have left the fringes unwoven during weaving (this is most economic of yarn, but fixes the lengths of each item prior to washing and shrinkage). All of these finishes can be done by you at home, we can show you how.

Finish	Type of Item	\$ Per item
Machine Stitch	Scarf	\$3
	Wrap	\$8
	Throw	\$10
Hem stitch	Scarf	\$10
	Wrap	\$30
	Throw	\$40
Knotted fringe	Scarf	\$4
	Wrap	\$12
	Throw	\$16
Twisted Fringe (ouch!)	Scarf	\$20
	Wrap	\$60
	Throw	\$80
Additional fulling		POA