DNA Denim

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Definition of Denim

Denim is the name of the fabric that is used to make jeans. Denim is a classic style that never dies. Denim is a strong, durable fabric constructed in a twill weave with indigo and white yarns. Indigo is described as the deep blue color of raw denim jeans and is a type of dye used for denim (Dandy, 2011). Indigo originally extracted from flowering woad plants and tropical plants of the Indigofera genus, indigo is a water-insoluble pigment in its oxidized, blue form (Society, 2011). The blue/indigo yarns are the lengthwise or "warp" threads, parallel to the selvage and the white yarns run across the fabric width, the weft threads (School, 2017). Denim is a fabric made of cotton twill that is 100% cotton and very comfortable. However, today it's blended with polyester, to control shrinkage and wrinkles, and Lycra to add stretch (School, 2017).

History of Denim

The word "Denim" is a reference to the french town of "Nîmes", where the textile was developed; this rugged cotton fabric "de Nîmes" was long known for its sturdiness (Hyde Park, n.d). The reason why this notable sturdiness is achieved is because weft undergoes double, triple or multiple warp threads, during the weaving process.

Jeans are now a very popular form of casual dress around the world and have been so for decades. They come in many styles and colors, however, "blue jeans" are particularly identified with American culture, especially the American Old West. The word "jeans" comes from the French phrase bleu de Genes', literally the blue of Genoa. Jeans fabric, or denim, originated in the French town of Nîmes, from which 'denim' (de Nîmes) gets its name. Denim trousers are for sailors. Denim trousers were made in Chieri, a town near Turin in Italy, during the Renaissance and were popularized in the 19th century. These trousers were sold through the harbor of Genoa,

which was the capital of the independent Republic of Genoa which was long an important naval and trading power (Hyde Park, n.d). The Genoese Navy required all-purpose trousers for its sailors that could be worn while swabbing the deck and the denim material met this need. These trousers were laundered by dragging them in nets behind the ship, and the sea water and sun would gradually bleach them to white. Jeans (at the time known as "dungarees"), along with light-blue stenciled "cambric" shirts, became part of the official working uniform of the United States Navy in the first part of the 20th Century.

Major Trends in DENIM

Trends that have been taking the denim world by storm would be your everyday high-waisted jeans. Everywhere from celebrities to online blogs are talking about jeans that hug your curves while still having enough room to feel comfortable. Vogue published an article earlier this year titled “Anti-Fit Is the New Skinny! The Best Slouchy Jeans for Every Body”. This article goes through a variety of pictures of today’s most known public figure sporting the whole high waist slouchy look. The whole 70s revival plays a big part in this being that there were a lot of jeans, which were fitted in the hip area and flared out at the bottom giving it some sort of a “slouchy” look (Singer, S., Bird, C., & Bickham, J., 2017).

Construction

Finding the right size denim can be difficult. All denim pieces fit differently depending on the body shape and the fabric it was constructed from. Determine the degree of detail to include in the specs for stitch, seams and edge finishes varies considerably from firm to firm and product to product (Garner, 2012). To be able to measure denim, garment measurements must be clearly communicated on specifications sheets that are used for pattern making and sampling,

whereas, constructing denim fabric involves various of steps (Garner, 2012). It involves carding, spinning then dying, yarn position, weaving and lastly finishing. The initial process of constructing denim fabric is carding and it's the process of removing foreign matter from the cotton fibers (Robinson, 2017). Denim is made from rugged tightly woven twill in which the weft passes under two or more warp threads (School, 2017). Cotton is a desirable natural fiber for several reasons. Cloth made from cotton is wear resistant, strong, flexible, and impermeable (Advameg, Inc, 2017). The process of cloth making involves treating the fabric with many chemicals to produce clothing with such desirable characteristics such as durability, colorfastness, and comfort. The fabric is also washed to give it a faded look and there are a variety of washes which greatly alter the look of the denim fabric. Jeans based on cuts and washes: Low-rise, ultra-low-rise, Boot-cut, Flare leg, Stone-washed, Dark, distressed jeans.

Construction Specifications

One of the features within denim fabrics, is the direction of the twill in the weave which is called either a left or right-hand twill. Its recognized by the upward direction of the diagonal twill on the face of the fabric. Right hand twill goes up from lower left toward upper right and left-hand twill goes from lower right up toward the left (Real Men Real Style, 2017). Left hand twills are more desirable due to the strength and durability of the finished goods. A left-hand twill naturally could lock the weave in place allowing the yarns to have more defined weave (Real Men Real Style, 2017). In figure 1, it demonstrates close up process of twill weave.

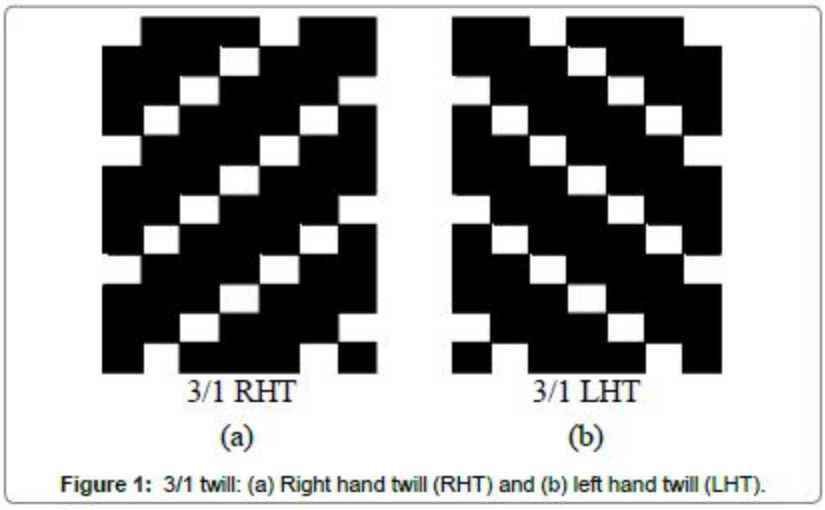


Figure 1. Twill Weave (Nayak, 2016).

Fabric Code	Lycra content (%)	Fabric weight (GSM)	Fabric thickness (mm)	Weave	Thread density (threads/cm)	Yarn linear density (Ne)
					Warp - Weft	Warp - Weft
L0	0.0	320	0.631	3/1 RHT	28 - 26	14 - 12
L1	1.0	320	0.654	3/1 RHT	28 - 26	14 - 12
L2	1.5	320	0.728	3/1 RHT	28 - 26	14 - 12
L3	2.0	320	0.728	3/1 RHT	28 - 26	14 - 12

Figure 2. Specifications of denim fabrics with different Lycra content (Nayak, 2016).

Figure 2 is the four denim fabrics were developed with varying amount of stretch depending on the Lycra content in the present study by keeping the GSM and weave same (Nayak, 2016). In addition, Denim appears in various type of apparel, for example, bottoms, outerwear, tops, dresses and shoes.

How to spec denim for bottoms:

- Measure the waistband
- Measure the length
- Measure the thigh
- Measure the knee
- Measure the bottom open
- Measure the front and back rise

How to spec denim for tops/outerwear:

- Measure straight across the shoulders
- Measure straight across the chest
- Measure from the collar seam to the very bottom of the garment

Measurements			Sizes	
Chest	Waist	Hips	US	US (letter named)
31.5 - 32	23.5 - 24	34 - 34.5	0	X-Small
32.5 - 33	24.5 - 25	35 - 35.5	2	X-Small
33.5 - 34	25.5 - 26	36 - 36.5	4	Small
34.5 - 35	26.5 – 27	37 - 37.5	6	Small
35.5 - 36	27.5 - 28	38 - 38.5	8	Medium
36.5 - 37	28.5 – 29	39 - 39.5	10	Medium
37.5 - 38.5	29.-30.5	40 - 41	12	Large
39 - 40	31-32	41.5 - 42.5	14	Large
40.5 - 41.5	32.5-33.5	43 - 44	16	X-large
42 - 43.5	34-35.5	44.5 - 46	18	1X

Figure 3. Women's size chart.

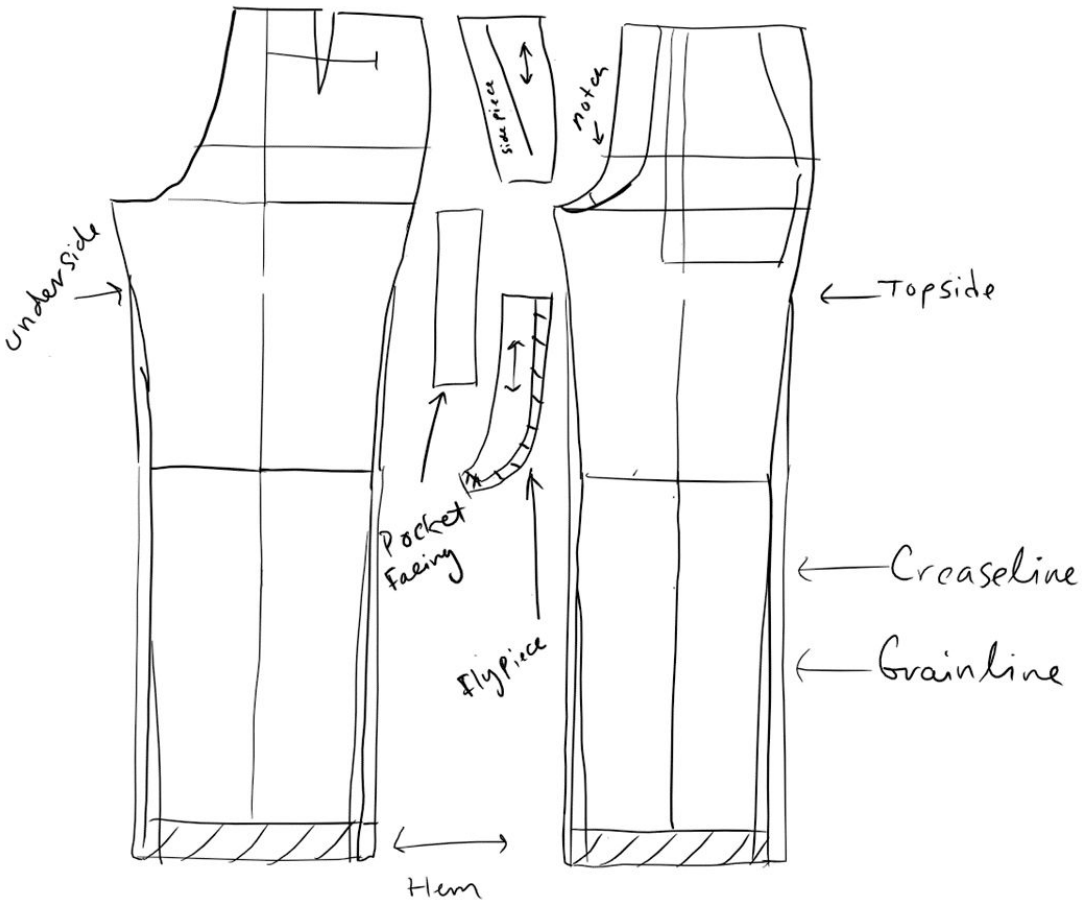


Figure 4. Flat Pattern (Guerrero, 2017).

DNA DENIM NEW YORK, NY 10001

PATTERN BLOCK IDENTIFICATION

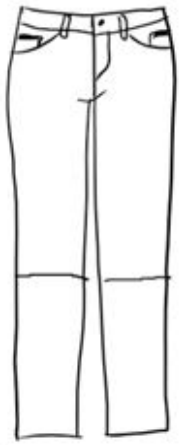
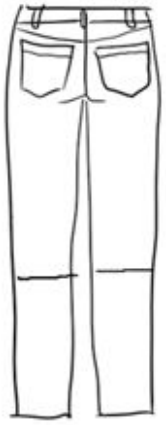
Style #: 4822 Division: Casual Size Category: Miss Sample Size: 4 Season: Spring Estimate: $60	Description: Denim Jeans Merchandiser: Tech Designer: G. Guerrero Brand: DNA Denim Fabric Category: Colors: Light Blue, Medium Blue	Create Date: 12/05/17 Modified: Due Date: 12/10/17 Ship Date: Vendor:
 FRONT	 BACK	 PATCH POCKET (2 SHELL, 2 LINING)
 ZIP FLY (2 SHELL, 1 INTERFACING)	 WAISTBAND (1 SHELL, 1 INTERFACING)	

Figure 5. Pattern block identification (Guerrero, 2017).

Figure 6. Denim skirt and Denim top

Figure 7. Denim jumpsuit, denim jacket, wide-leg denim jeans

The denim we offer is has 4 color choices which are:

- Light Blue
- Medium Blue
- Dark Blue
- Black Bull

Cost Component	Lesotho	Haiti	Nicaragua	China
Fabric	$3.07	$3.27	$3.20	$2.80
Trims	1.33	1.50	1.50	1.17
Wash/Finish	.67	.50	.58	.50
Labor	2.00	1.67	2.00	1.67
Overhead	.42	.42	.44	.37
Duty	0.00	0.00	0.00	1.09 (16% tartiff)
Freight	.29	.17	.17	.25
Total Landed Cost	$7.78	$7.52	$7.89	$7.84

Figure 8. Costs of Landed Costs between countries (Wilkinson, 2013).

Production Cost – Denim pants		
Materials		
-	Front pockets lining	1.00
-	Fabric transport from North Carolina (truck)	0.50
-	Selvedge fabric from white Oak plant	18.15
	Total	$19.65
Trim		
-	Signature script label	0.10
-	Labels	0.12
-	Buttons	0.17
-	Rivets	0.38
-	Hangtag	0.14
-	Zipper	0.25
-	Packaging	0.09
	Total	$1.25
Labor		
-	Marking and grading	0.29
-	Cutting	1.00
-	Sewing	6.50
	Total	$7.79
Other Costs		
-	4% waste and markup paid to contractor	$5.45
-	Raw Garment (excluding overhead)	$27.03
-	Some pairs add the expense of a wash	$3-$11
	Projected Retail Price:	$60

Production Cost – Denim Shirt		
Materials		
-	Front pockets lining	0.30
-	Fabric transport from North Carolina (truck)	0.29
-	Selvedge fabric from white Oak plant	13.45
	Total	$14.04
Trim		
-	Signature script label	0.07
-	Labels	0.10
-	Buttons	0.21
-	Rivets	0.43
-	Hangtag	0.09
-	Zipper	0.00
-	Packaging	0.10
	Total	$1.00
Labor		
-	Marking and grading	0.19
-	Cutting	1.10
-	Sewing	7.16
	Total	$8.45
Other Costs		
-	4% waste and markup paid to contractor	$4.10
-	Raw Garment (excluding overhead)	$12.05
-	Some pairs add the expense of a wash	$2-$8
	Projected Retail Price:	$30

Production Cost – Denim Skirt		
Materials		
-	Front pockets lining	0.45
-	Fabric transport from North Carolina (truck)	0.31
-	Selvedge fabric from white Oak plant	10.15
	Total	$10.91
Trim		
-	Signature script label	0.09
-	Labels	0.10
-	Buttons	0.08
-	Rivets	0.18
-	Hangtag	0.07
-	Zipper	0.25
-	Packaging	0.08
	Total	$0.85
Labor		
-	Marking and grading	0.15
-	Cutting	0.59
-	Sewing	3.50
	Total	$4.24
Other Costs		
-	4% waste and markup paid to contractor	$5.45
-	Raw Garment (excluding overhead)	$10.03
-	Some pairs add the expense of a wash	$1-$7.80
	Projected Retail Price:	$50

Production Cost – Denim Jacket		
Materials		
-	Front pockets lining	0.69
-	Fabric transport from North Carolina (truck)	0.45
-	Selvedge fabric from white Oak plant	17.15
	Total	$18.29
Trim		
-	Signature script label	0.15
-	Labels	0.16
-	Buttons	0.20
-	Rivets	0.31
-	Hangtag	0.10
-	Zipper	0.00
-	Packaging	0.13
	Total	$1.05
Labor		
-	Marking and grading	0.17
-	Cutting	0.75
-	Sewing	4.61
	Total	$5.53
Other Costs		
-	4% waste and markup paid to contractor	$7.15
-	Raw Garment (excluding overhead)	$15.13
-	Some pairs add the expense of a wash	$2-$10
	Projected Retail Price:	$80

Production Cost – Denim Jumpsuit		
Materials		
-	Front pockets lining	0.32
-	Fabric transport from North Carolina (truck)	0.21
-	Selvedge fabric from white Oak plant	19.15
	Total	$19.68
Trim		
-	Signature script label	0.18
-	Labels	0.14
-	Buttons	0.15
-	Rivets	0.19
-	Hangtag	0.11
-	Zipper	0.34
-	Packaging	0.16
	Total	$1.27
Labor		
-	Marking and grading	0.17
-	Cutting	0.96
-	Sewing	7.50
	Total	$8.63
Other Costs		
-	4% waste and markup paid to contractor	$6.25
-	Raw Garment (excluding overhead)	$13.02
-	Some pairs add the expense of a wash	$3-$13
	Projected Retail Price:	$150

Target Market

Our consumer base is targeted towards the working female in their 18-30s who is on top of trends and is not afraid to try a different silhouette when it comes to denim.

Market Research

A moderate market reflects a market in which the price classification that the majority of clothing fit into. Our denim line *DNA Denim* consists of different garment groups created from denim. With a variation of jeans to jumpsuits, our line is a one-stop denim heaven. Our sizes which would range from 0-18 are meant to accommodate every curve on a woman' body. Companies such as Levi's, Gap, Hollister, American Eagle, and Calvin Klein Jeans are all in the moderate range. Moderate priced merchandise which is a step above budget. This is the price classification that majority of clothing and footwear fall into. This is an affordable price range for the quality we give out for Denim.

Our denim's direct competition will be Levi's Jeans due to their prestige denim. Our items will also include more trendier pieces made of denim so our indirect competition may be a moderate priced market, such as American Eagle Outfitters, for their trend items due to our moderate prices.

Shopping the Market

Major trends detected through its competitor's stores were lace up side jeans as well as jeans that flare at the bottom. Each of these stores also had their core merchandise, which stays consistent no matter the trend, which were skinny jeans, boyfriend jeans, and straight cut jeans. Levis is our perfect competition. Their price points vary as much as ours due with a low cost starting at just $60. One of the differences that our brand would endure is that we would offer

trendier silhouettes. Our brand would also be consistent with its sizing no matter the fabric used or shape of garment. Our customer would always be confident when purchasing for the first time based on our size chart. Unlike the other competing brands we would keep the tint of denim core too maximum 4 shades. This gives the customer a sense of familiarity with new products because they know the denim tints. Our online store would have a video of a model in every size modeling the clothing. This would also help the consumer in envisioning what the perfect pair of jeans looks likes.

Marketing Strategy

In order for our denim collection to obtain exposure, we will utilize social media platforms, such as Instagram and Twitter to gain the public interest of our target market. We will have our own ECommerce website where the items can be purchased as well. We will advertise on billboards through the New York City marketplace to gain followers.

Strengths

- Customer focused
- Trend driven
- The quality of our products and hand dyed fabrics
- Low start up costs
- Market research

Weaknesses

- Lack of exposure
- New to NYC marketplace
- Advertising costs

Opportunities

- Strong customer based target market
- Potential growth
- Variety of services

Threats

- Competition in NYC marketplace
- Economic uncertainty

Figure 9. DNA Denim Billboard advertising.

Income Statement

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	$265,000	$351,000	$387,000	$435,000	526,000
Expenses					
Salary	$60,000	$70,000	$70,000	$75,000	$80,000
COGS	$60,000	$68,000	$77,000	$80,000	$85,000
Note	$29,000	$29,000	$29,000	$29,000	$29,000
Rent	$38,000	$38,000	$40,000	$40,000	$40,000
Utilities	$22,000	$24,000	$24,000	$24,000	$24,000
Insurance	$25,000	$25,000	$25,000	$25,000	$25,000
Marketing	$35,000	$40,000	$43,000	$43,000	$43,000
Supplies	$32,000	$38,000	$43,000	$46,000	$48,000
Total	$301,000	$332,000	$351,000	$362,000	$374,000
Net Profit $ (Revenue-Expenses)	-$41,000	$19,000	$36,000	$72,000	$152,000
Net Profit % (Netprofit/Revenue)	-15.47%	5.4%	9.3%	16.6%	28.9%

References

Advameg, Inc. (2017). *Blue Jeans*. How products are made. Retrieved from http://www.madehow.com/Volume-1/Blue-Jeans.html

Dandy. (2011). *Understanding Hand-Dyed Natural Indigo Raw Denim*. Heddels. Retrieved from https://www.heddels.com/2011/11/understanding-hand-dyed-natural-indigo-raw-denim/

Garner, M. B., & Keiser, S. (2012). *Beyond Design: The Synergy of Apparel Product Development, 3rd Edition.* Fairchild Pubns; 3rd edition.

Guerrero, G. (2017). Figure 3. *Flat Pattern Specification.*

Guerrero, G. (2017). Figure 5. *Pattern Block Identification.*

Guerrero, G. (2017). Figure 6. *Sketch of Denim skirt and Denim top.*

Guerrero, G. (2017). Figure 7. *Sketch of Denim jumpsuit, jacket, and wide leg jeans.*

Hyde Park Denim. (n.d).“Welcome To Hyde Park Denim Inc.” *Wholesale Denim Supplier | Denim Manufacturers USA | Raw Denim Fabric by Yard | Denim Fabric Manufacturer | Long Island*, Retrieved from www.hydeparkdenim.com/.

Li, Arby. (2015). “The Costs of Starting a Fashion Brand: Production.” *HYPEBEAST*. Retrieved from hypebeast.com/2015/3/the-costs-of-starting-a-fashion-brand-production.

Nayak, R. (2016). *Designing and Development of Denim Fabrics: Part 1 - Study the Effect of Fabric Parameters on the Fabric Characteristics for Women’s Wear*. Journal of Textile Science & Engineering. Retrieved from https://www.omicsonline.org/open-access/designing-and-development-of-denim-fabrics-part-1--study-the-effect-offabric-parameters-on-the-fabric-characteristics-for-womens-w-2165-8064-1000265.php?aid=78311

Real Men Real Style. (2017). *Blue Jeans – Construction Cost Comparison of Denim Jeans*. Real Men Real Style. Retrieved from https://www.realmenrealstyle.com/blue-denim-jeans-construction-cost-comparison/

Robinson, A. (2017). *How Is Denim Fabric Constructed?* Our Everyday Life. Retrieved from https://oureverydaylife.com/how-is-denim-fabric-constructed-12342025.html

School, T. (2017). *Denim Fabrics*. Textile School. Retrieved from http://www.textileschool.com/articles/355/denim-fabrics

Singer, S., Bird, C., & Bickham, J. (2017, August 30). Anti-Fit Is the New Skinny! The Best Slouchy Jeans for Every Body. Retrieved from https://www.vogue.com/projects/13535910/best-slouchy-jeans-for-every-body/

Society, A. C. (2011). *What's That Stuff? Blue Jeans*. Retrieved from Science and Technology: https://pubs.acs.org/cen/science/89/8943sci3.html

Wicker, A. (2017). "What Your Jeans Would Cost If No One Died to Make Them." *Ethical Clothing - Jeans Manufacturing Costs*. Retrieved from www.refinery29.com/2016/06/113127/ethical-clothing-costs.

Wilkinson, C. (2013). "It's Just a Pair of Jeans." *A Fool and His Money*. Retrieved from blog.cwpub.com/post/46678265886/its-just-a-pair-of-jeans.