

**The Magical**

**World of Paper**

# The “Right” Paper

Selecting the right paper realizes the “**look and feel**” of the final product.

## Things to consider

01. **DURABILITY** How long does a design need to last?
02. **PRINTING PROCESSES** What kind of printing process will you use?
03. **OPACITY** How much of a concern is text show-through?
04. **FINISH** What effect do you want to achieve?
05. **CONTRAST** Go whiter to increase more contrast.
06. **ENVIRONMENTAL CONCERNS** Recycled papers? FSC? Green-e?
07. **DEADLINE** Paper availability?
08. **BUDGET** Paper can account up to 35% of printing budget.

for designers working on printed projects, understanding the world of professional paper stock for print is essential!

for our purposes, we should understand the two basic categories of printing paper: coated and uncoated

**coated paper** is extremely smooth, due to a process called calendering: A **calender** is a series of hard pressure rollers used to finish or smooth a sheet of material such as **paper**, textiles, or plastics.

<https://blog.thepapermillstore.com/coated-vs-uncoated-paper/>



Calender at end of [paper machine](#) 

<https://blog.thepapermillstore.com/coated-vs-uncoated-paper/>

**paper finish:** the texture (or finish) of the paper stock

**paper brightness:** the reflective value of the paper

**paper opacity:** the amount of “see through” of paper

# Opagues + Offset Papers

Generally sold in large volumes.

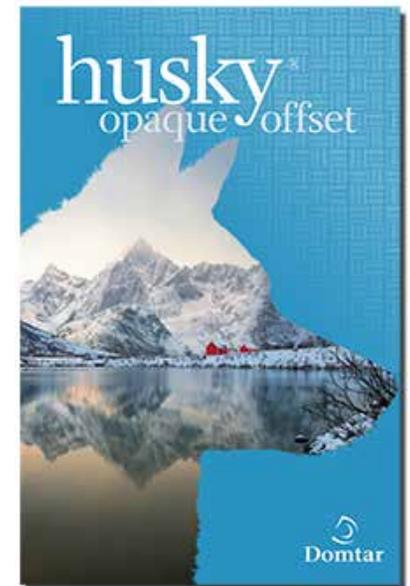
“Workhorse” papers. Usually used on long runs.

**Uncoated offsets:** Common, utilitarian papers. Similar to copier paper, yet comes in various weights (typically 50#–70#).

**Brands:** Husky, Springhill, Scott + Williamsurg

**Opaque offsets:** Chemical whiteners and brighteners are added to create opaque papers. More expensive.

**Brands:** Cougar, Finch, Wausau, Hammermill, Nekoosa, Torchglow + Accent



**Uncoated stocks** are typically porous, and this makes them soak up more substantial quantities of ink.

Moreover, uncoated paper stocks do dry faster to the touch of ink, as the ink is mostly absorbed into the porous paper.

**Uncoated paper** has many applications, from brochures to books, menus to greeting cards, branding and identity.

The advantage for designers is the variety of uncoated paper available to designers, especially in color and “finish” (the texture of a paper stock).

# Coated Papers

Papers have a coating added on their surface.

Coatings adds a sheen. More expensive than uncoated.

Restricts ink from absorbing and minimizes dot grain.

Creates crisper printing.

## Finishes:

**gloss:** Highest sheen. Less bulk and opacity. Less expensive.  
(best for photographs)

**satin:** Lower gloss.

**dull:** Smooth surface. Low gloss.

**matte:** Non-glossy. Little sheen. More opaque. Great bulk.  
Higher cost. (best for text)



Westend61/Getty Images

coated paper stock is available (mostly) in white, since coated paper is normally used for faithful reproduction of photographs.

(think catalogues, magazines, etc...)

- **Gloss-coated paper:** Shiny and supports high contrast and a wider color gamut than other types of paper. It is often used for marketing materials and magazines with a lot of color images. Gloss paper lends a "pop" to color images printed on it that doesn't occur on uncoated papers. It can, however, exhibit glare, which makes any text harder to read.
- **Dull-coated paper:** A better choice when images and text are both important in a print job. The reduction of glare on the dull-coated paper makes the text easy to read, while the coated surface delivers a smooth, high-quality base for image reproduction.
- **Matte-coated paper:** Similar to dull coated, it is a little lighter to the touch and less shiny than matte paper. From a quality standpoint, it is the least premium of the coated stocks, and it is usually the least expensive as a result.
- **Cast-coated paper:** Super-shiny paper. The surface is superior for the reproduction of images and is ideal for die-cutting. However, the heavy coating tends to crack, so it isn't recommended for any printed piece that must fold. The paper is harder to work with and is considerably more expensive than other coated papers.

## When Coated Paper Is Preferred

Coated paper adds a glossy, professional touch to magazines and similar publications. Coated paper resists dirt and moisture and requires less ink to print because it is not absorbent. Because the ink tends to sit on top of the paper rather than soak into it, the images are sharp. Coated papers are usually heavier than uncoated papers, which adds heft to a print job.

Because coated paper is smoother and has better ink holdout—is less absorbent—than uncoated paper, it is more suitable for certain types of finishing techniques such as flood or spot varnish or other finish coatings.

# Text (T) vs. Cover (C)

Premium uncoated printing papers:

**Text:** Lighter weight. Comes in a wide variety of colors and textures. Sometimes made with a matching or coordinating cover.

**Uses:** Text, internal pages.

**Cover:** Also called card stock. Heavy + strong.

Good folding characteristics.

**Uses:** folders, booklet covers, brochures + pamphlets.

**Finishes** include smooth, natural (vellum, wove or eggshell), or textured (felt, linen).

# Writing (W) + Bond Paper

Heavier weight. Durable. May contain a percentage of cotton fiber which provides an elegant feel.

Designed for letterhead, legal documents, corporate identity programs and office printers.

Can be made with or without a watermark.



# Weight

Refers to the thickness.

American paper manufacturers determine “**basis weight**” by weighing **500 sheets** of any grade paper.

Typically measured in pounds (such as 20#) and points (10PT).

higher # = thicker paper

**GSM or g/m<sup>2</sup>**: grams per square meter (metric)

**Caliper**: the measure of a paper’s thickness, measured in thousandths of an inch.

Comparative Basis Weights

Writing/Bond	Text	Cover	GSM
	50		74
20			75
	60		89
24	60.8		90
26.6	67.5		100
	70		104
28	70.9		105
	77.7		115
	80		118
32	81.1		120
36	91.2	50	135
	100	54.7	148
40	101.3	55.5	150
	110	60	162
		64.7	175
	118.75	65	176
	121.6	66.5	180
		79.5	215
	146.2	80	216
		88	238
		90	243
		92.4	250
	182.7	100	270
		110	297
		120	324
		129.4	350
		130	352
		160	432
		180	486

**paper weight** can be confusing for beginners because the **basis weight** is determined by the weight of 500 sheets of a specific paper type in the (basis) size that it is shipped from the paper mill. **And...every paper type comes in a different basis size!** You cannot compare 80 pound text to 80 pound cover for example, because they are different sizes. The size of the paper shipped to your printer from the paper mill is usually based upon the press sizes (and capabilities) of the large four and six color presses professional printers use.

most of our work this term will require **text weight** paper, sometimes called “offset” (70 or 80 pound), and **cover stock** (65, 80, or 100 pound).

<https://www.neenahpaper.com/resources/paper-101/basis-weights>

<https://www.quill.com/content/index/paper-buying-guide/paper-weight/>

uncoated paper comes in many types (or grades) including:

**writing • cover • text • index • bond • vellum** (translucent)

designers most often work with **cover and text** uncoated stocks, **writing stocks** are used for corporate communications and usually have a watermark.

**index stocks** are a more inexpensive type of cover stock (think index cards) and **bond paper** is a thinner sheet used in copy machines,

<https://www.neenahpaper.com/resources/paper-101/types-of-paper>

# Laser vs. Inkjet Printing

**Inkjets printers:** Have a high water content and tend to soak into uncoated papers. Print is formed by creating small droplets of ink. Can cause smear.

**Laser printers:** Printed by an electrical charge that attracts toner particles. To fix the ink, the paper is passed through a fuser that melts that toner.

# Paper Qualities

## Formation

Formation refers to the uniformity and distribution of fibers within a sheet of paper. In well formed sheets, ink is absorbed evenly for smooth solids and clear reproduction. A poorly formed sheet will exhibit more dot gain and a mottled appearance when printed.

**HOW TO CHECK:** Hold the paper up to a light source. A well-formed sheet appears uniform, while a poorly formed paper has clumps of fibers, giving it a cloudy look. Compare a sheet of standard copy paper with a sheet of Mohawk Superfine to see the difference.

## Opacity

Opacity measures the amount of light passing through a sheet of paper in values from 1 (the most transparent) to 100% (the most opaque). A paper with a relatively high opacity of 96% will have less (or no) show-through from printing on the reverse side or the sheet below. Selecting a sheet with good opacity is especially important if the design includes solid blocks of color, bold type, and heavy coverage. Basis weight, brightness, type of fibers, fillers, coatings, and formation all influence opacity.

**HOW TO CHECK:** Lay an unprinted sheet of paper on top of a printed page to see how much printing shows through and/or examine a printed sample on the exact paper you are considering.

## Brightness

Brightness is measured as the percentage of light reflected from the surface of the paper. It is not necessarily related to color or whiteness. A blue-white and yellow-white paper can have the same brightness value but look very different. A paper with a brightness of 98 is an extremely bright sheet with almost all light being reflected back to the viewer. Four-color process images “pop” on bright white papers, as they illuminate transparent printing inks. For pieces with a great deal of copy, a natural shade of white is preferable to minimize eyestrain.

**HOW TO CHECK:** Brightness is often listed in swatchbook charts. Bright white sheets range from 92 to 100.

## Finish/Smoothness

Paper comes in a wide range of finishes, with notable differences even among those classified as “smooth.” Finish or smoothness affects ink receptivity and ink holdout.

**HOW TO CHECK:** Ask about the paper’s Sheffield value. A higher value on this smoothness scale typically indicates a rougher sheet—for example, coated paper may have a smoothness of 10-30, a super-smooth premium uncoated will have a smoothness of 45-60, and a vellum text and cover from 200-250.

## Side-to-Side Consistency

Finished paper has two sides: the “wire” side, which comes in contact with the wires on the papermaking machine, and the “felt” side, which does not. Better papers have good side-to-side consistency and will print colors evenly on both the wire and felt sides.

**HOW TO CHECK:** You can usually see and feel inconsistencies such as on a Laid finish paper. To better predict how each side will print, ask your printer to provide an ink drawdown on both sides of the sheet.

## Printability

The print quality of a paper will be determined by formation, smoothness, brightness, opacity and if applicable, surface coating.

**HOW TO CHECK:** Request samples that demonstrate how a paper prints before specifying it. Your paper merchant sales rep or printer can provide real-world projects printed on the paper, in addition to mill promotions.

## Environmental Qualities

For many customers, the use of recycled paper or paper manufactured with renewable energy is important. The variety and quality of recycled papers have grown dramatically, meaning designers no longer have to compromise when choosing an environmental paper.

**MOHAWK FINE PAPERS** has been a leader in reducing the environmental impact of paper making and paper usage. It was the first paper company to use emission-free renewable windpower. It has continuously raised the standards for recycled paper and realigned its production processes to earn accreditation from various environmental organizations.

## Paper Permanence

Acid-free papers are manufactured in an alkaline environment, which prevents the internal chemical deterioration of the paper over time. Archival papers will contain an additional 2% calcium carbonate reserve which acts as a buffer, making the paper resistant to the effects of an external acidic environment. They also contain a very small amount, if any, of lignin and meet tear criteria. The life span for alkaline paper measures in hundreds of years, compared to just decades for acid paper.

**HOW TO CHECK:** Ask about the paper company’s ANSI certification for acid-free and/or archival paper. Acid-free information is often incorporated in swatchbook copy and charts.

# Paper Sizes

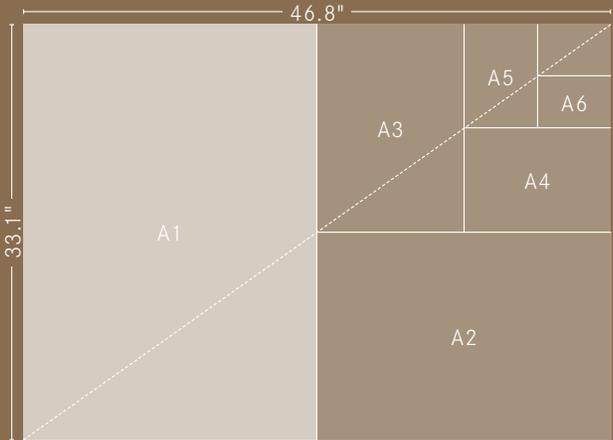
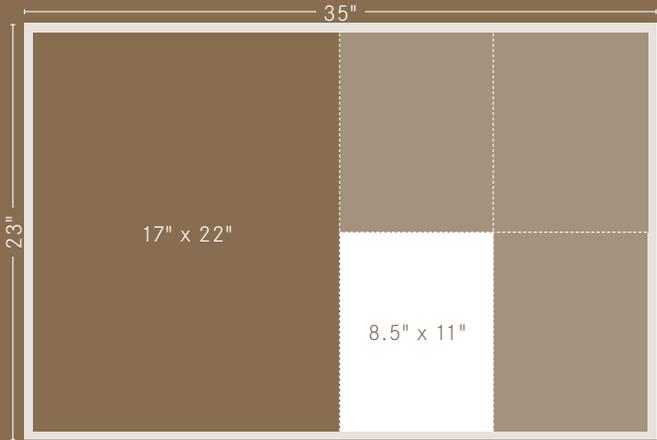
# Sizes

## U.S. Standard

DESIGNATION	MM	INCHES
	889 x 1575	35 x 45
	584 x 889	23 x 35
	432 x 559	17 x 22
Ledger	279 x 432	11 x 17
Legal		8.5 x 14
Letter	216 x 279	8.5 x 11
Monarch		7.25 x 10.5
Executive	140 x 216	5.5 x 8.5
Statement	108 x 140	4.25 x 5.5
	89 x 108	3.5 x 4.25

## ISO and JIS A: Series

DESIGNATION	MM	INCHES
A0	841 x 1189	33.1 x 46.8
A1	594 x 841	23.4 x 33.1
A2	420 x 594	16.5 x 23.4
A3	297 x 420	11.7 x 16.5
A4	210 x 297	8.3 x 11.7
A5	148 x 210	5.8 x 8.3
A6	105 x 148	4.1 x 5.8
A7	74 x 105	2.9 x 4.1

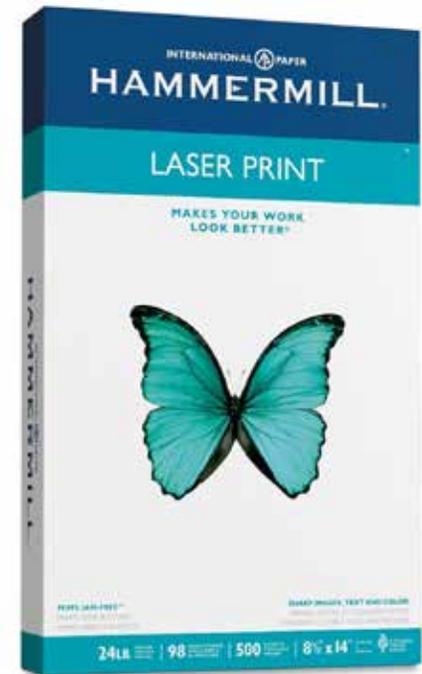


# Laser vs. Inkjet

# Laser Printing + Paper

**Printing:** Printed by an electrical charge that attracts powder toner particles. To fix the ink, the paper is passed through a fuser that melts that toner.

**Papers:** Very smooth, low-moisture paper. Prevents paper from curling from high heat in laser printer.



# Inkjet Printing + Paper

**Inkjets printers:** Have a high water content and tend to soak into uncoated papers. Print is formed by creating small droplets of ink. Can cause smear.

**Papers:** Special inkjet papers have coatings or special formulations to promote rapid drying and prevent ink from blurring. “ColorLok” papers are designed to enhance inkjet print quality.



# Your Process

01. Consider paper early.
02. Consider personality.
03. Review swatchbooks.  
Choose stock, finish, color.
04. Choose weight.
05. Choose size.
06. Print samples.

## THE DESIGNER'S PROCESS

Because paper affects the perceived quality of the finished piece, always use the best paper you can for the budget you have. In many jobs, the choice of a better paper adds considerably more to the quality of the outcome than it does to the cost.

### Step One

Start with a swatchbook. Then choose a stock, finish, and color.

### Step Two

Choose a basis weight. Check the swatchbook chart to be sure the combination of finish, color and weight you want is available.

### Step Three

Ask your merchant rep for printed samples, plain paper samples and/or a paper dummy of the chosen paper.

### Step Four

Your printer will decide on sheet size and grain direction as part of the estimating process.

### Step Five

Your printer may then call several merchants to receive competitive pricing. Make sure the printer knows which merchant rep has supported you with samples and dummies.

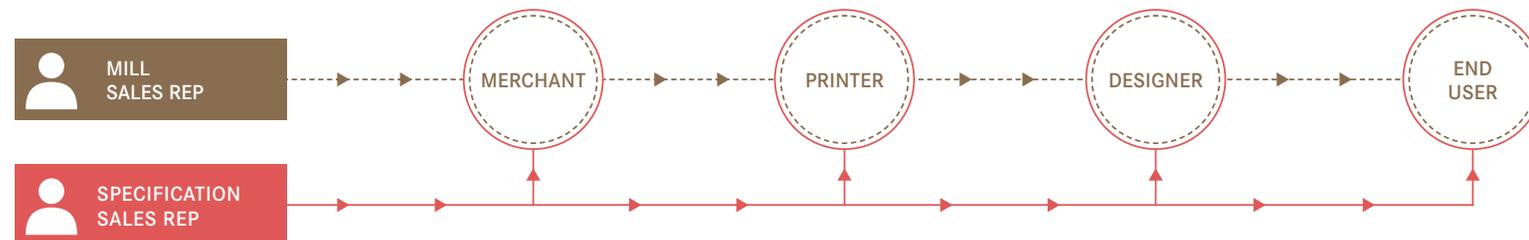
### Step Six

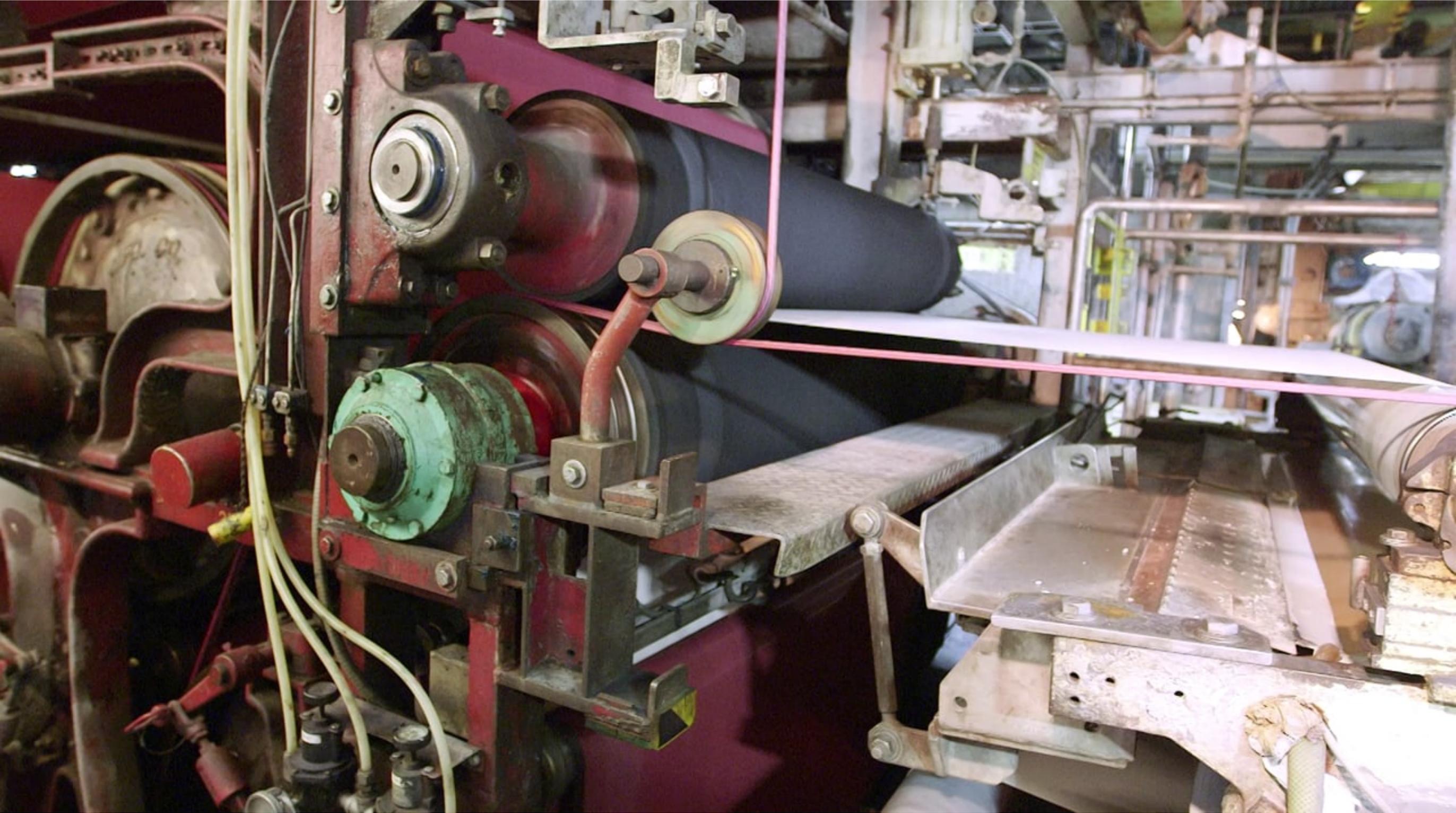
The printer generally includes paper costs in the final estimate. Paper costs generally represent 35% of the total printing bill.

### Step Seven

The selected merchant orders the paper from the manufacturer and then sells it to the printer.

## THE PAPER CHAIN





so...you might ask how a designer could ever show a client what the project would look like on the designer's chosen paper stock?

luckily, our most popular paper mills offer smaller sizes of their paper stock, so designers can create comprehensives for clients.

a **comprehensive** is a printed piece a designer creates that comes closest in appearance to the final printed result.

designers' favorite paper mills

**french paper:** a favorite for designers, students, and printmakers

<https://www.frenchpaper.com>

**neenah paper:** great variety and lots of resources and advice for designers!

[https://www.neenahpaper.com/?gclid=Cj0KCQiAv8PyBRDMARIsAFo4wK2SF1Aj1sEm7kcEs2aMxDA5oZqaexg6Oicy9SG0\\_yC5mVax1arNelwaAijeEALw\\_wcB](https://www.neenahpaper.com/?gclid=Cj0KCQiAv8PyBRDMARIsAFo4wK2SF1Aj1sEm7kcEs2aMxDA5oZqaexg6Oicy9SG0_yC5mVax1arNelwaAijeEALw_wcB)

[https://www.neenahpaper.com/?gclid=Cj0KCQiAv8PyBRDMARIsAFo4wK2SF1Aj1sEm7kcEs2aMxDA5oZqaexg6Oicy9SG0\\_yC5mVax1arNelwaAijeEALw\\_wcB](https://www.neenahpaper.com/?gclid=Cj0KCQiAv8PyBRDMARIsAFo4wK2SF1Aj1sEm7kcEs2aMxDA5oZqaexg6Oicy9SG0_yC5mVax1arNelwaAijeEALw_wcB)

<https://www.neenahpaper.com/brands/environment-papers>

[https://www.neenahpaper.com/resources/swatchpro?gclid=CjwKCAjwyvaJBhBpEiwA8d38vGnWHm7-Z4sIFLNKzAceq\\_3z73PVtbIBIFMz5HeFxxho5O2IHcKqBBoCSi0QAvD\\_BwE](https://www.neenahpaper.com/resources/swatchpro?gclid=CjwKCAjwyvaJBhBpEiwA8d38vGnWHm7-Z4sIFLNKzAceq_3z73PVtbIBIFMz5HeFxxho5O2IHcKqBBoCSi0QAvD_BwE)

<https://www.neenahpaper.com/resources/against-the-grain>

**mohawk paper:** great variety and lots of resources and advice for designers!  
and generally less expensive than neenah!

<https://www.mohawkconnects.com/products/paper>

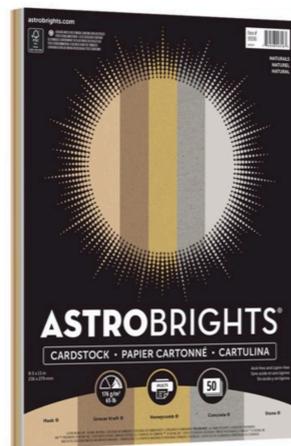
<https://www.mohawkconnects.com/inspiration/maker-quarterly>

additional retail sources for papers:

<https://glodan.com/index.cfm>

[https://www.thepapermillstore.com/?gclid=Cj0KCQiAh9njBRCYARIsALJhQkFjZcdp5y9S\\_bFFm0hV5Zh\\_MeOoUdgYKvJUJixOVkzAC7UStS0hm0QaAhfREALw\\_wcB](https://www.thepapermillstore.com/?gclid=Cj0KCQiAh9njBRCYARIsALJhQkFjZcdp5y9S_bFFm0hV5Zh_MeOoUdgYKvJUJixOVkzAC7UStS0hm0QaAhfREALw_wcB)

and.....even wal-mart carries card stock in 8.5x11



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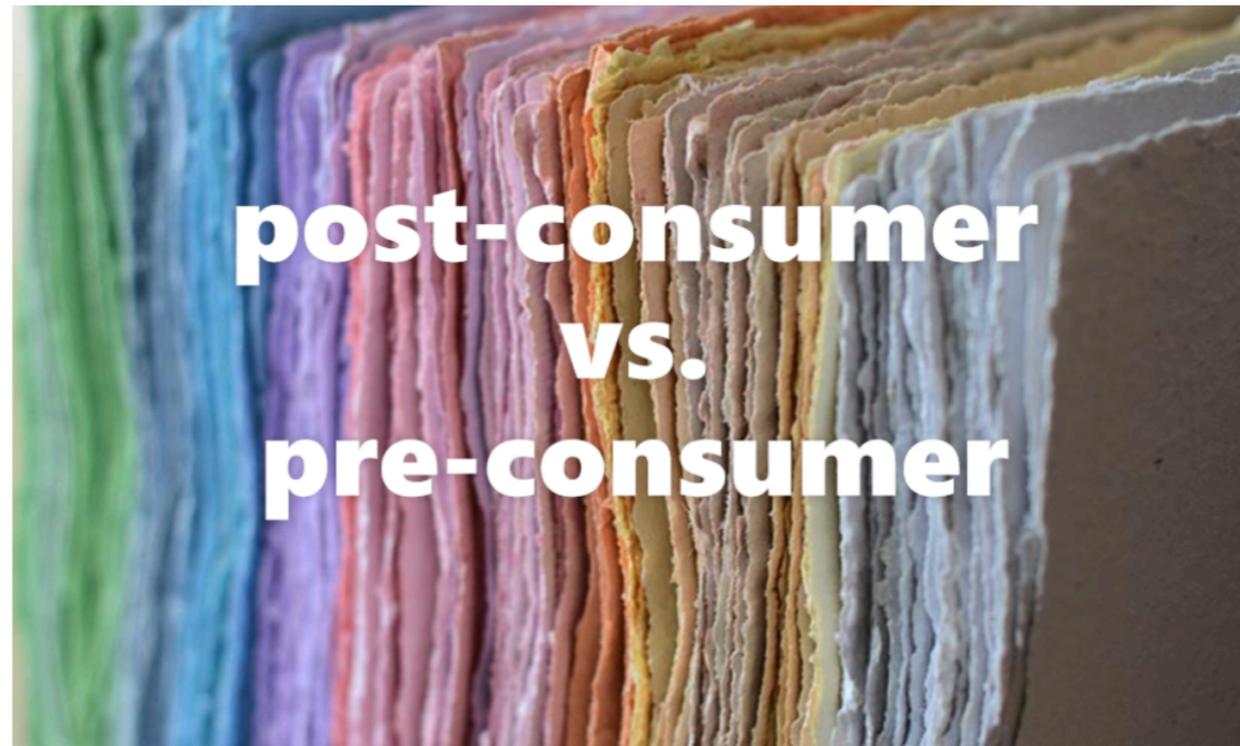
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the thing about recycled paper