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# THE IMPACT IS REAL

## Remanufactured Printer Cartridges & Environmental Sustainability

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# INTRODUCTION

With over 350 million single-use printer cartridges flooding landfills every year, the print industry takes a hard hit when it comes to environmental responsibility.[1]

Learn how Clover is revolutionizing sustainability practices and how you can join us in making a massive impact on the positive health of our planet.

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You may have never heard of Clover Imaging, but you've seen our superior quality printer cartridges marketed under a variety of brands and sold everywhere from office products suppliers to big box stores and online retailers. Clover's cartridges are used by large enterprises, SMBs and consumers alike. For over twenty years, we have focused on a single mission — to offer businesses and consumers an environmentally friendly alternative to single-use printer cartridges.

Simply explained, Clover remanufactured printer cartridges are empty cartridges collected for re-use and run through our patented remanufacturing process where we restore them to like-new condition.

Clover printer cartridges offer the same performance and page yields as single-use cartridges with half the environmental impact and seventy-nine percent less material consumed.[2]

90% ⌄
Less Material Consumed

## Half the Environmental Impact

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Choosing remanufactured printer cartridges may seem like a small thing, but when businesses and consumers make the switch from single-use cartridges, it can have a massive impact on protecting our natural resources and our precious planet.

It's not often that there is an environmentally friendly product that also costs less, but that is exactly the case with Clover's high-quality imaging supplies. When you switch from national brand printer cartridges to Clover remanufactured printer cartridges not only will you reduce your environmental impact but you will reduce your printing costs by up to 30%.

30%

Reduced printing costs

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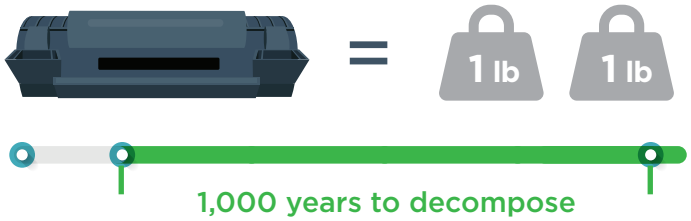
# HERE ARE THE SIMPLE TRUTHS

## Clover remanufactured imaging supplies reduce landfill waste and pollution.

It is estimated that in the United States alone, over 350 million laser and ink printer cartridges are landfilled or incinerated each year.[3] Each discarded laser cartridge adds approximately 2 pounds of metal and plastic waste to our landfills — waste that will take as long as 1,000 years to decompose.[4]




When you choose responsibly remanufactured cartridges, you eliminate these unnecessary environmental threats and subsequent health risks. Since 2009, Clover has collected over 436 million cartridges and diverted 455 million pounds of material from landfills.[5]

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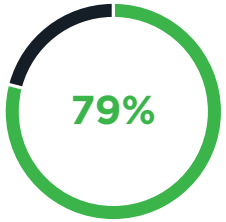
## Clover remanufactured ink and toner cartridges conserve non-renewable natural resources and have a significantly smaller carbon footprint than new cartridges.

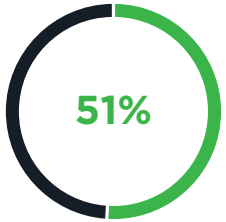
A study by Best Foot Forward, commissioned by the Centre for Remanufacturing and Reuse, reported these findings, "A mono toner cartridge can be remanufactured on average 3.5 times, meaning the carbon footprint from the production of the original cartridge is amortized over this extended lifetime. This needs to be added to the carbon footprint to gain an overall remanufacturing footprint. Based on these assumptions, the carbon footprint of a remanufactured cartridge is approximately 2.8 kg, which is 2 kg (46%) lower than that for a new cartridge."[6]

In addition, the large number of reused components in the remanufacturing process significantly reduces the carbon impact of the production of components. This feeds through to packaging, transport, and energy use.[7]

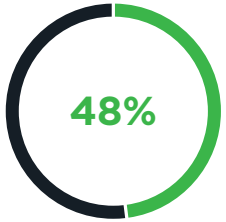
**Clover remanufactured toner cartridges vs. national brand equivalents[8]**



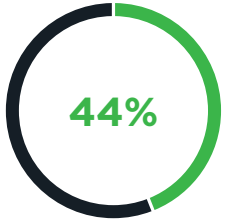

79% less materials consumed




51% smaller total environmental impact




48% smaller energy demand




44% less natural resources consumed

89.60%

96.89%

Recycled content of monochrome and color laser toner cartridges is 89.60% and is 96.89% for inkjet cartridges.[9]

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## Clover Remanufactures in North America

Have you ever closely read the label on the back of your toner cartridge's box to see where it was manufactured? Clover chooses to manufacture in North America. This enables us to conserve fossil fuels through a shorter supply chain, closely monitor product quality, and streamline our remanufacturing and recycling processes.

In making this choice, we support local economies and help keep jobs in North America. In keeping with our focus, Clover's recycling facilities have multiple environmental certifications including ISO 14001:2015 and Responsible Recycling (R2) certification.

ISO 14001:2015
ENVIRONMENTALLY CERTIFIED

R2 2013 Responsible™ Recycling

*R2:2013 certification was awarded to DataProducts Imaging Solutions, S.A. de C.V. facility in Mexico.

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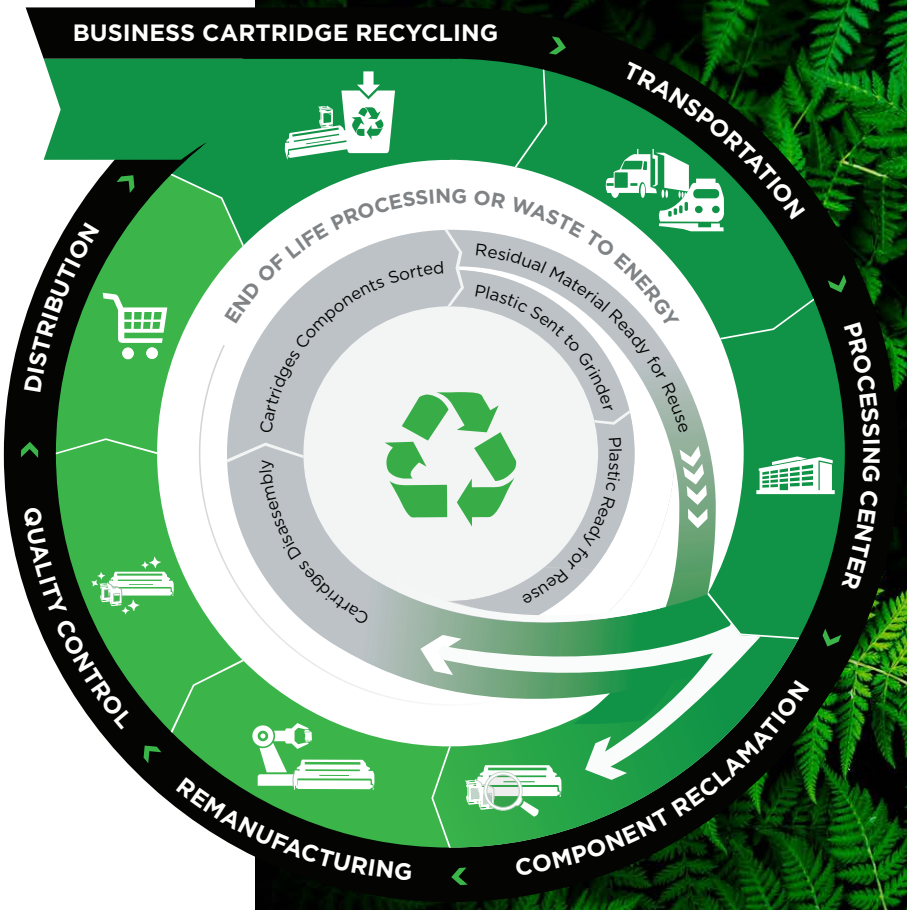
## Empty cartridges that cannot be remanufactured are responsibly recycled.

Clover evaluates every empty cartridge that is received – first for remanufacturing potential, and then for material recovery through recycling. Each re-manufacturable cartridge is put through our multi-step remanufacturing process and returned to the marketplace. If a cartridge is not re-manufacturable, all viable components are harvested for use in the remanufacturing of other cartridges or recycled to produce other products (see diagram). By harvesting these components from the waste stream, Clover conserves the nonrenewable resources required to make cartridges from scratch.




**Clover's intellectual property portfolio now consists of 95 issued patents and more pending (U.S. and foreign).**

Many of the technological advances described in these patents focus specifically on promoting the efficient use of resources by facilitating the reuse of existing components during remanufacturing operations.[10]

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Third-party tests by Buyers Laboratory (BLI), a leading global independent office equipment test lab and business consumer advocate, evaluated the page yield, image quality, and reliability performance of Clover toner cartridges and compared it to the performance of original HP cartridges.

**BLI's Independent Testing Results:**

- With 54 cartridges tested, Clover cartridges continuous yield numbers exceeded HP's stated yields across all cartridge types
- Print densities were highly comparable to the national brands
- ZERO out-of-box failures[11]

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## Clover partners with PrintReleaf™ to certifiably reduce the environmental impact of printing.

Through our partnership with PrintReleaf™, organizations are able to replace what they take from the world's forests by planting trees across a global network of reforestation projects. Clover resellers and their end users can quantify and offset their forest products consumption and communicate the impact of their sustainability initiatives. Since 2015, Clover dealers have offset the consumption of 4.5 billion sheets of paper with the planting of over 550,000 trees.[12]

**Over 550,000**

Trees reforested through PrintReleaf™ Exchange

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## Remanufactured cartridges are the most environmentally responsible choice in imaging supplies

When a cartridge is remanufactured, it is reused. Reuse is the highest form of environmental responsibility. It is superior to recycling in that it does not use non-renewable resources to break down plastic and metal. A cartridge and all its components should always first be evaluated for refurbishment. If refurbishment is not possible, then responsible recycling should be pursued.

This stance is echoed by multiple government agencies including the Environmental Protection Agency (EPA), which states in its Recovered Materials Advisory Notice (RMAN), "that procuring agencies establish procedures and policies that give priority to remanufacturing the agencies' expended toner cartridges." The EPA recommends that, under such policies and procedures, procuring agencies procure remanufacturing services for expended cartridges and, when such services are unavailable or not practicable, obtain remanufactured toner cartridges or new toner cartridges made with recovered materials from product vendors."[13]

We believe that continual improvement of environmental sustainability is achieved through a combination of rigorous process management, employee empowerment, and accountability. In accordance with this philosophy, Clover publishes an annual Sustainability Report.

**To review our 2018 Sustainability Report, please visit:**

www.cloverimaging.com/2018sustainabilityreport

**To learn more about our environmentally friendly cartridges, please visit:**

www.cloverimaging.com/makeanimpact

EPA United States Environmental Protection Agency

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## SOURCES


[1] "Toner Cartridges: Overview." Responsible Purchasing Network, http://www. responsiblepurchasing.org/purchasing_guides/toner_cartridges/index.php.

[2] Data from a 2010 Clover-funded Life Cycle Analysis (LCA) conducted by RIT. LCA data has not yet been publicly released.

[3] "Toner Cartridges: Overview." Responsible Purchasing Network, http://www. responsiblepurchasing.org/purchasing_guides/toner_cartridges/index.php.

[4] R. Terkar, H. Vasudevan, V. Kalamkar, "Remanufacturing for Sustainable Development: Key Challenges, Elements, and Benefits. " International Journal of Innovation, Management and Technology, Vol. 3, No. 1, February 2012.

[5] Based on 2009-2018 Clover Sustainability Report figures.

[6] "The Carbon Footprint of Remanufactured Versus New Mono-Toner Printer Cartridges." Best Foot Forward commissioned by the Centre for Remanufacturing and Reuse.

[7] "The Carbon Footprint of Remanufactured Versus New Mono-Toner Printer Cartridges." Best Foot Forward commissioned by the Centre for Remanufacturing and Reuse.

[8] Data from a 2010 Clover-funded Life Cycle Analysis (LCA) conducted by RIT. LCA data has not yet been publicly released.

[9] Based on empty cartridge weight

[10] 2018 Clover Sustainability Report

[11] 2016 Independent study performed by Buyers Laboratory (BLI), commissioned by Clover Imaging

[12] Tracked and reported by PrintReleaf™. September 2019.

[13] US Environmental Protection Agency, "Consolidated Recovered Materials Advisory Notice (RMAN) for the Comprehensive Procurement Guideline (CPG)." September 2007.