

Recyclable Materials

Many household items can be recycled; specifically, items made from glass, metal, plastic and paper. However, not all varieties of each type of material are recyclable. People often ask, "When can I recycle all plastic, all paper, or all glass?" It may not be economically possible to recycle "all" types of particular materials or all our waste. New technology will produce new markets for waste materials in the future. Until then, please prepare recyclable materials according to your program's requirements, which are based on market specifications.

In order for a material to be recycled:

1. A market must exist that will accept the material and use it to make a new product. Simply banning a material from the waste stream or collecting a material at the curb does not mean that it will be recycled. The material must be in demand by manufacturers to produce a saleable product; and a sufficient, steady supply of good quality material must be provided to meet manufacturers' production needs.
2. A material must meet market specifications. It cannot be contaminated with dirt or grease. Only include the specific type of material requested by your program. For example, light bulbs, mirrors, window glass, ceramic dishes, and crystal cannot be included with clear, green and brown glass food and beverage containers. Each type of glass has different properties and cannot be recycled together.
3. Finally, consumers must purchase the products made from recycled materials. This is called "closing the loop".



This symbol indicates that the product is made from recycled materials. Look for it when you are shopping. The following information explains how to prepare materials for recycling, and describes the recycling process and the end products.

Glass

Food and beverage glass is 100 percent recyclable – one of the simplest and most completely recyclable materials made. Glass can be recycled repeatedly with no loss of quality to the newly made container. In the Twin Cities metropolitan area, most of the food and beverage glass is recycled at Anchor Glass Company in Shakopee.



Why Recycle Glass

- Recycling one ton of glass saves 1,330 pounds of sand, 433 pounds of soda ash, 433 pounds of limestone, and 151 pounds of feldspar – equal to over one ton of natural resources.
- Glass made from recycled glass reduces related air pollution by 20 percent and water pollution by 50 percent over making glass from virgin raw materials.
- Recycling glass saves 25 to 32 percent of the energy used to make glass.

How to Prepare Glass for Recycling

Remove metal and plastic caps, rings or foil from clear, green, or brown glass. Metal lids or caps may be recycled along with metal cans. Do not include ceramic cups and dishware, window glass, mirrors, light bulbs, crystal, drinking glasses or dishes and ovenware, including Pyrex glass. Opaque, white rum bottles, black wine bottles and green beer bottles with ceramic tops should also not be recycled.

- Containers with a slight blue cast should be recycled with green glass, not clear.
- Rinse and sort by color, if required by your community.
- Place at the curb on your community's pick-up day or take to a nearby collection center.



Recyclable glass must meet quality standards to ensure it can be marketed and made into new glass containers. Contaminants must be kept out of recyclable glass. Contaminants such as ceramics, other types of glass, metal rings, and caps cause problems in the recycling process. Ceramics, for example, have a higher melting temperature than glass. When mixed with recyclable glass in the melting furnace, the ceramic pieces become embedded in the new glass, resulting in defective and unacceptable new glass containers. Metal contaminants remaining in the molten glass also result in defective and unacceptable new containers. Contaminants in recyclable glass can ruin an entire batch of otherwise good glass. For these reasons, only clear, brown and green glass food and beverage containers are recyclable at this time.

How Glass is Recycled

Food and beverage glass is separated by color and then broken into small pieces called cullet. Cullet is then run through a cullet processing unit, a machine that removes ferrous (magnetic) metals, crushes the glass further, and removes labels. Once crushed, the glass cullet is mixed with sand and melted in a furnace to create new molten glass. The molten glass is then recast into new glass bottles and jars.

Metals

Metals are classified as either ferrous or non-ferrous – both are recyclable. Ferrous metals include iron, steel, and tin. Ferrous metals are iron-based products; iron is the element that gives steel its magnetic quality. Non-ferrous metals include aluminum, brass, copper, gold, lead, magnesium, mercury, nickel, platinum, silver, stainless steel, and zinc. Non-ferrous metals are not magnetic.



The most commonly recycled ferrous metal, both today and historically, is the steel food can. Steel food cans are 99% steel. Made of steel for strength, they are coated with tin to stabilize the flavors of the contents. Food is actually cooked in the steel can during the canning process. Aluminum cans containing food products only contain foods that have been pre-cooked. Aluminum cans cannot withstand the heat required to cook food within the can.

Steel is North America's number one recycled material. In the past 50 years, approximately 50 percent of the steel produced in this county has been recycled through the steel making process. Most steel products contain an average recycled content of at least 25 percent, with some products containing 100 percent recycled content. Steel scrap is an essential raw material in steelmaking. Basic oxygen furnaces use 20-30 percent scrap content per "heat"; electric arc furnaces use close to 100 percent recycled steel scrap. All steel food and beverage cans are *100 percent recyclable*, including bi-metal cans – those with steel bodies and aluminum ends. Steel mills have historically purchased post-consumer steel products such as appliances, automobiles and tools.

Of the non-ferrous metals, aluminum, principally the aluminum beverage can, is the most widely recycled. Ninety-five percent of all beverage cans are aluminum; five percent are bi-metal. Other recyclable aluminum products include lawn furniture tubing, storm doors, window frames, siding, gutters, downspouts, lawn mower housings, power tools, pots and pans, and automobile parts.



Scrap metal processors were the original recyclers; they accept both ferrous and non-ferrous metals. The metal materials accepted by scrap dealers are extremely varied so it is best to call ahead to verify the type of materials accepted, the preparation necessary, and the redemption value, if any. Market values change based on the supply and demand for a particular metal. They generally pay for most items; however, they may not pay for small quantities of some metals. The highest price is paid for metal that is free of any non-metal material such as plastic or wood.

Why Recycle Metal

- The aluminum saved from recycling one aluminum can would be sufficient to power a TV for three hours.
- Twenty years ago, one pound of aluminum made 19 cans. Today thanks to new technologies, called “lightweighting”, the industry averages 28 cans for every pound.
- It takes 75 percent less energy to recycle steel than to produce steel from iron ore.
- For every pound of steel recycled, 5,450 BTU of energy is conserved, enough to light a 60-watt light bulb for over 26 hours. The steel industry saves an average of 600 trillion BTU each year, enough to electrically power more than 18 million households.

How to Prepare Metal for Recycling

- **Aluminum cans:** Rinsing is recommended, but not required.
- **Aluminum foil:** Rinse or wipe off all food debris. May be mixed with aluminum cans.
- **Bi-metal/steel food and beverage cans:** Rinse out all food debris. Removing labels and flattening are optional; programs may require this to ensure that all food residue is removed.
- **Scrap metal:** No wood, rubber or plastic should be attached to the metal. Some metal may need to be cut to specified lengths. Scrap metal has a higher value when properly prepared.
- **Empty aerosol and paint cans:** When these items are placed in the garbage and sent to Anoka County’s resource recovery facility, they are magnetically removed from the waste. Then they are sent to markets such as AMG Resources Corporation to be recycled. It is very important for the aerosol and paint cans to be completely emptied through normal use. Paint cans may have a very thin skin of paint on the bottom and sides of the can, but no more than that.



How Metal is Recycled

Aluminum is shredded, cleaned, melted, mixed with a pure aluminum base, and recast into new cans. This basic melt-and-recast process eliminates the mining, shipping, refining and reduction processes necessary to create new aluminum from bauxite ore.

Scrap iron is processed by either shearing or baling the metal to mill specifications, then it is shipped by rail or barge to a foundry. There the metal is melted down and reformed into new products such as automobile parts, appliances, angle iron or reinforcing rod.

Since steel food cans contain both steel and tin, the recycling process must separate the tin and steel in order to recover and reuse the two metals. This separation process is called "detinning" – the cans are shredded, run through a series of washing solutions and filtered. The two by-products – high-grade scrap steel pellets and tin ingots – are used to make new tinplate containers.



Steel and bi-metal cans are remelted and made into new steel. Steelmakers consider the amount of tin and aluminum content in bi-metal can tops before remelting. Aluminum actually enhances the steel-making process. After considering the amount of returned steel cans, a steelmaker determines the amount of various types of scrap and virgin materials needed to make new steel.

Paper

Paper products most often recycled are newspaper, corrugated cardboard, office paper and phone books. More and more community recycling programs are now accepting other grades of paper, such as magazines and household office paper and mail. Examples of paper markets for the metro area include Rock-Tenn Company in St Paul where recyclable paper is made into boxes.

Because so many products are made from recyclable paper using a variety of processes, different types of paper need to be recycled separately and cannot be mixed together. Ask your community recycling coordinator about exact sorting and preparation requirements for your paper.

Why Recycle Paper

- Paper is the largest component of the waste stream, ranging from 40 to 50 percent of the waste stream, by weight and volume.
- Recycling one ton of paper saves at least 14 trees, three cubic feet of landfill space, and 7,000 gallons of water.
- It would take 340,000 garbage trucks every year to haul away all the unrecycled junk mail in the U.S. to landfills or resource recovery facilities.

The paper making process creates industrial wastes that pollute water, such as dioxins from bleaching paper with chlorine bleaches. While there are still environmental impacts from making recycled paper, they are less than what is required when harvesting trees and using harsh chemicals to convert virgin material to paper. Purchasing recycled, unbleached paper or recycled paper pre-bleached with oxygen or bleached with a non-chlorine bleach, such as hydrogen peroxide, helps eliminate some pollution.

How to Prepare Paper for Recycling

Boxboard: People often ask about recycling boxboard/chipboard – the paper used to make food and gift boxes. Boxboard/chipboard containers are often manufactured with recycled materials (newsprint, corrugated cardboard and high-grade office paper). Companies that manufacture boxboard use different inks, clays, and paper mixtures to create their own boxes. This makes it difficult to know the exact content of the container in order to guarantee the quality of the recycled material.



Corrugated Cardboard: Remove any contents and packing (including tape and large staples), break down boxes and bundle or box them together. Large quantities of boxes may be taken to the nearest drop-off recycling center.



Corrugated containers are made from brown kraft paper, a very strong paper. Corrugated is made by sandwiching a layer of fluted paper between two flat sheets of paper, and then gluing all three together. Corrugated pizza boxes (if greasy) and poly-coated corrugated boxes (coated to give it strength when wet or frozen) are generally not recyclable – grease and plastic coatings contaminate the recycling process. Greasy corrugated pizza boxes leave grease spots or even pizza odor on a new container. Plastic or poly-coated paper does not break down readily in the recycling process.

Magazines: Consider sharing subscriptions with friends and co-workers or donate used magazines to nursing homes, clinics, etc. to reduce waste. Place magazines in paper grocery bags for curbside collection or take to a drop-off center. Some curbside mixed paper programs allow magazines and small catalogs to be included with other mixed papers in a paper bag.

Newspaper: Collected through most curbside recycling programs, as well as at drop-off recycling centers. Generally, all collection programs will accept newspaper and inserts/ads in paper grocery bags or bundled with string. Programs that use curbside recycling containers will ask that newspaper be placed in or on top of the appropriate container.

Office paper: High-grade office paper is prized by recyclers because it's white and is made with long, strong fibers that hold up well in the recycling process. Both high grade and mixed grade office paper recycling is common for businesses and residential customers in response to increasing garbage disposal rates and to become more environmentally conscious. If your office does not recycle yet, talk to your employer or hauler or call Anoka County Integrated Waste Management staff at 763-323-5737 to find out how to start a workplace recycling program.



Household office paper and mail can sometimes be recycled with your newspaper. Check with your municipality to see if they recycle such mixed paper. If your curbside recycling program does not accept household office paper and mail, you may take it to one of several drop-off recycling centers in the county that accept mixed paper, magazines, and household office paper/mail. Check the *Recyclopedia* guide for locations and hours. To obtain a copy of the guide call 763-323-5730.

A variety of other recyclable materials generated in the workplace can be recycled. The *Resourceful Waste Management Guide*, an online resource for Minnesota metropolitan area businesses and industries, can assist businesses with waste reduction and recycling programs. Visit www.RethinkRecycling.com/business to access the guide.

Other paper: Your local program may collect other papers generated in your home, similar to paper that an office would generate. What your program collects depends on the end-market for the material. Most municipal curbside recycling programs and drop-off recycling centers accept other types of paper. Be sure to verify exactly what types of papers are collected in your program before recycling.

You can reduce the amount of junk mail you receive by writing to the companies sending the materials or using their toll-free telephone numbers to ask that your name be removed from their mailing list. Be sure to include all forms of your name. Also, write to the following address to request that your name not be added to additional lists (*you may need to write every six months*):



**Mailing Preference Service
Direct Marketing Association
PO Box 282
Carmel, NY 10512
E-mail address: www.dmaconsumers.org
There is a \$1 fee per entry.**

Phone books: Commonly collected by the publisher/distributor at the same time new books are distributed. Some municipalities collect them throughout the year, or sponsor special collections during distribution time. Check with your municipal recycling coordinator for curbside opportunities or drop-off locations.



How Paper is Recycled

Recyclable paper is collected, baled, and taken to a paper mill where it is mixed with hot water and turned into pulp. The pulp is screened for contaminants, cleaned, often de-inked and bleached, and made into new paper or other products. The quality of the final paper produced is directly related to the quality of the paper materials being processed.

For example, Rock-Tenn Company of St. Paul makes 100% recycled boxboard/chipboard, which is used primarily to create cereal and other food boxes. Boxes made from recycled paper contain old corrugated cardboard, newsprint, mixed paper, and high-grade office paper. The wall of the box is layered. The bottom layer contains old newsprint; the middle layer uses old newsprint, old corrugated cardboard, colored paper, and residential mixed paper as filler; and the top layer contains old high-grade office paper. The final surface is created by applying clay, and giving it a glossy appearance to improve printability. The Rock-Tenn Company also manufactures a 100% recycled corrugated medium (the wavy or “fluted” part within the middle of corrugated cardboard) from old corrugated cardboard.



Some mills convert old newspaper into newsprint. Other recycled newsprint products include game boards, egg cartons, book covers, gift boxes, jigsaw puzzles, paper matches, game/theater tickets, packing materials, animal bedding, and insulation. Old corrugated cardboard is predominantly made into new corrugated containers. High-grade office paper is often recycled into new office paper. Mixed paper is recycled into low quality papers such as paper towels, tissues, and toilet paper. For example, some of the mixed paper from the metro area is taken to the Georgic Pacific Corporation in Green Bay, Wisconsin, which produces the Quilted Northern brand of tissue products.

Recycled paper products are becoming more readily available. Look for the post-consumer content on the package. Post-consumer means it was made from materials that were collected from consumers, either from residential or commercial recycling programs.

Plastic

Plastic products are made from different combinations of petroleum-based chemicals. Plastics are lightweight and strong, making them desirable for their durability. Industrial scrap plastic has been recycled for years. The collection of some types of post-consumer plastic waste is now commonly part of curbside and drop-off recycling programs.

Why Recycle Plastic

- > Plastic is made from fossil fuel a non renewable resource.
- > Durable products can be created from recycled plastic.



Plastic manufacturers voluntarily mark containers with codes to identify the various resin families for recycling/sorting purposes. However, just because a container has a recycling logo/code, it does not mean that it can be recycled in your recycling program. Be sure you know exactly what your recycling program accepts before saving the containers for collection. You may want to check containers before you purchase products to make sure they are recyclable in your recycling program.



The most commonly recycled Polyethylene Terephthalate (PETE) containers are plastic pop, liquor, mouthwash, and cooking oil bottles. PETE is transparent (sometimes tinted). Between 20 and 30 percent of all plastic bottles are made from PETE.



The most commonly recycled High-Density Polyethylene (HDPE) containers include plastic milk, juice, and water containers. HDPE is usually opaque. Between 50 and 60 percent of all plastic bottles are made from HDPE.

PETE and HDPE small-necked plastic bottles are collected by curbside and drop-off recycling programs in Anoka County. Do not include other resin types unless instructed to do so by your recycling service provider. The City of Coon Rapids currently collects #3 - #6 plastic at their drop-off recycling center.



Polyvinyl Chloride (PVC) containers make up approximately 5 to 10 percent of plastic bottles manufactured. Shampoo, dish soap, and other health and beauty products may come in PVC bottles. Containers made of PVC are opaque and look similar to HDPE containers, but are contaminants in many recycling programs.



Low-density Polyethylene (LDPE) is the most common type of plastic packaging. More than 75 percent of LDPE is extruded to produce a light, flexible film. Examples of products typically made from LDPE are bread, produce, garbage bags, coating on milk cartons, and stretch wrap. Recycling of residential quantities of this material is limited to bag collection points at some retailers and drop-off recycling centers. There are few programs due to the variety of resins used to manufacture bags, potential food contamination concerns, and the difficulty of obtaining a large enough quantity of the same material to remanufacture into another product.



Polypropylene (PP) is used to make ketchup bottles, yogurt containers, margarine tubs, and medicine bottles. PP is considered a contaminant in residential programs.



Polystyrene (PS) is used to make some food containers, such as cups, egg cartons, and meat trays. Polystyrene is also used to make block and shape foam or packing peanuts to cushion and protect items.



The word “Other” indicates that the package or container is made from a resin other than 1 through 6 or it is made from more than one resin. It is typically used to make three and five gallon reusable waste bottles, some citrus juice and ketchup bottles. “Other” plastics are considered a contaminant in residential recycling programs. Plastic containers marked with a #7 are not recyclable at this time anywhere in Anoka County.

How to Prepare Plastic for Recycling

- Carefully sort plastics according to your community curbside or drop-off program requirements. Look on the container for the triangle with a number inside, usually this mark is on the bottom of the container.
- Once you determine the correct plastic containers to save, rinse and remove caps/rings.
- Stepping on the containers to flatten is not necessary but will reduce storage and transportation space.

It is important to include only the specific plastic containers collected by your program; others cannot be marketed at this time. A small-necked milk jug may have a ♻️ on the bottom noting HDPE, which can be collected and recycled, but a margarine tub with a ♻️ cannot, even though they are both HDPE. This is because different processes are used to make the different containers, which affects how the plastic resin is recycled. Small-necked bottles are made through a blow-molding process; wide-mouthed plastic tubs are made by injection molding. Small-necked plastic bottles are collected and marketed for recycling; wide-mouth plastic tubs, are not easily marketed at this time.



Biodegradable and **photodegradable** plastics are made from a combination of plastic and cornstarch or vegetable additive. Don't be fooled by deceptive advertising claims that biodegradable packaging or bags are a better choice. The cornstarch or vegetable additive degrades, leaving behind a problem-causing plastic dust. Another problem with these claims is that degradable plastic rarely gets the chance to degrade. In a landfill, there will never be enough sunlight or air to degrade the plastic. In addition, most of the garbage in Anoka County is taken to the Elk River Resource Recovery Facility – not landfilled. Garbage is processed at the facility and made into fuel to generate electricity. Plastics are valued for their high BTU content when burned.

When biodegradable or photodegradable plastics are mixed with recyclable plastics they are contaminants and can create problems in the recycling process.

How Plastic is Recycled



Plastic is collected, baled, chopped or shredded, cleaned, melted, pelletized and manufactured into new products. Recycled PETE can be made into fiber, carpet, strapping, auto parts, tennis balls, shower curtains, paintbrushes, and scouring pads. Recycled HDPE can be made into detergent and motor oil bottles, bathroom stalls, plastic lumber, landscape edging, recycling bins, and combs.



www.RethinkRecycling.com

For further information, visit Anoka County, Integrated Waste Management Dept at www.AnokaCounty.us/recycle or call 763-323-5730.