

Paint, Adhesives and other Surface Treatments Scorecard

	Item	Pros and Cons
4	Paints and coatings with greater than 75% recycled content	+Some communities and suppliers offer recycled or off spec paint
	Bead blast etching of metal and wood	+Bead blasting can impart texture to metals and woods with no additional chemical use - Worker should use proper protective equipment
	Certified organic produced/low VOC milk paint	+Low toxicity, easy clean up
	Natural lacquer	+Natural based ingredients low toxicity
	Natural varnish	+Natural based ingredients low toxicity
	Powder coating	+Powder coating provides a durable paint like surface with little waste and uses no harmful solvents
	Pure raw linseed oil	+Low toxicity as raw oils don't contain harmful heavy metal dryers or organic solvents
	Pure tung oil	+Low toxicity as raw oils don't contain harmful heavy metal dryers or organic solvents
	Unfinished metals such as stainless, gold, silver, copper, brass, etc.	+No extra chemical or manufacturing required
	Wax, from bees and plants	+No petroleum in product life cycle
3	Zero VOC paints (<5 g/l), coatings, adhesives with low/no VOC colorants	+No potentially harmful organic solvents – so safer to apply and better for indoor air quality (The definition of “zero” is actually <5g/l.) -Paints and coatings that have the colorant added at the retail store may actually have a lot more VOC from the colorants rather than the paint. There are no-VOC paints and colorants available.
	Paints and coatings with a recycled content between 10 and 75%	+Some communities and suppliers offer recycled or off spec paints
	Paints, coatings, adhesives with low VOC (<50 g/l) and without formaldehyde, halogenated solvents, cadmium, mercury, lead, chromium VI or any of their oxides	+Paints with low VOCs and without the listed harmful auxiliary compounds have a lower toxicity and are safer to work with – -Colorants added at the retail store may increase the VOCs; look for low/no VOC colorants as well as paints. Hard to source as manufactures often don't list entire product components
	PVA adhesive (common white and yellow glue)	+Low toxicity, easy to clean up. (This is the old-fashioned school glue.)
	Water-based paints and coatings with low biocide levels (<0.025%)	+Water-based paints typically mean less VOCs in the paint and no solvents used for cleanup (water cleanup) -Biocides are used to both help preserve paint in the can and on the surface (especially in marine applications) these can be harmful to users
2	Wax petroleum based	
	Paints and coatings with a recycled content of less than 10%	+Some communities and suppliers offer recycled or off spec paints
	Anodizing (without chromic acid)	+This method to color the surface of aluminum imparts a durable smooth surface that requires little maintenance -Anodizing is a chemical process that commonly uses toxic compounds to oxidize the bare surface of aluminum
	Cold zinc plating	+Zinc plating provides a durable rust resistant finish for iron and steel items. Cold plating is basically a zinc laden paint that avoids the emissions associated with hot galvanizing (dipping in molten zinc)
	Low VOC paints, coatings, adhesives (50-250 g/l)	+These paints and coating have fewer VOC so should be safer for both applicers and indoor air quality. There are even lower or “No” VOC coatings

Paint, Adhesives and other Surface Treatments Scorecard *(continued)*

Item	Pros and Cons
Shellac	+Shellac is a natural resin excreted from the lac bug that is dissolved in alcohol -The alcohol is a VOC, which is why shellac isn't a 2
Silicone adhesives	
Acid etching	+Durable low maintenance finish -Use of very high corrosive chemicals
Alkyd-based paint (these are modern "oil base" paints)	-Often contain VOCs and require solvents for clean-up
Anodizing (with chromic acid)	+Durable low maintenance finish -This method of anodizing requires the use of quite toxic compounds, especially chromic acid which can contain chrome +VI a known carcinogen
Boiled linseed oil	+ "Boiled" linseed oil has some naturally based ingredients (linseed) -But it typically has heavy metals to hasten the drying process are potential health hazards and these coatings usually have VOCs as well
Barge contact cement (and other solvent based cements)	-Contain solvents such as toluene and heptanes which can harm applicators and negatively impact indoor air quality
Danish oil	+Some natural based ingredients -Typically has some VOCs and heavy metal drying agents that are potential health hazards
High VOC (>250 g/l) paints, coatings, stains, varnishes, waxes, adhesives, etc.	-High VOC can have acute and chronic health impacts to those working with these materials. Also negatively impacts indoor air quality
Low VOC polyurethane paints, coatings, adhesives (50- 250 g/l)	-Polyurethanes can cause skin sensitization and even "low" amounts of VOC can negatively impact health and indoor air quality
Synthetic lacquer (e.g., nitrocellulose and acrylic-modified lacquer)	-Less natural ingredients. More synthetic polymers with negative lifecycle impacts
Epoxy (with Bisphenol-A) paints, coatings, adhesives	-Most epoxies contain the chemical Bisphenol-A which is a known skin sensitizer and suspected reproductive toxin
High VOC polyurethane paints, coatings, adhesives (>250 g/l)	-Skin sensitization and other potential health hazards. Chronic exposure to some solvents can cause central nervous system disorders
Metal plating including hot zinc plating (galvanizing)	-Regular metal plating involves the use of cyanide baths and solvents; galvanizing uses molten zinc with solvent and acid baths for cleaning
Resorcinol adhesives	-May cause a variety of acute health effects (used for high performance waterproofness.)
Urea formaldehyde adhesives	-Adhesive commonly used in many plywood and particle board constructions. Releases free formaldehyde that is a known carcinogen and will impact indoor air quality

1

0

Textile Scorecard

	Item	Pros and Cons
4	Textiles with recycled content greater than 75% (except those incorporating any material with a -2 score)	<p>+Includes textiles constructed from some recycled natural fibers (e.g., cotton, wool), synthetics (meaning made from fossil fuels) such as polyester), and blends (cotton-poly). Natural fiber garments are shredded into fiber that is respun; textile mill waste is also collected and shredded/spun into yarn. Polyester film and soda bottles may be recycled mechanically (chopped up and remelted into pellet for spinning) or chemically (brought back to the intermediate chemicals for making polyester. Polyester garments may be recycled chemically. All these recycled versions greatly reduce most of the impacts associated with creating virgin materials</p> <p>-The quality of the material is typically lower than the virgin version with the exception of chemically recycled polyester which is equivalent in quality to virgin</p>
	Bio-based polymers from certified organic sources	<p>+Biobased polymers are derived from agricultural (corn, soy, castor, cotton waste) and forest products (wood) that use plant-based chemistry to create fibers. Biopolymers made from certified organic crops have a moderately low environmental impact and compare very favorably with synthetics that they may replace (e.g., polyester)</p> <p>-No certified organic biopolymers are commercially available</p>
	Certified organic textiles (cotton, hemp, linen, wool, etc.)	<p>+In general, organically produced fibers processed in accordance with GOTS (Global Organic Textile Standard) have a lower environmental impact compared to conventional farming practices (synthetic pesticides and fertilizers) and textile processing</p> <p>-Cotton is a very water intensive crop; wool processing generates a high rate of contaminated wastewater that requires treatment</p>
	Blends of certified organic fibers	<p>+Blends of organic fibers have the same attributes as a single organic fiber</p> <p>-Blends can be harder to recycle and might require more chemistry in the dye and finishing processes</p>
3	Textiles with a recycled content between 10 and 75%	<p>+Lower recycled content reduces the environmental benefits of recycled fibers, although overall it is still favorable to recycled</p>
	Biopolymers from non-genetically modified organism sources	<p>+Biobased polymers from conventional sources can have a moderate environmental impact, due primarily to the use of synthetic pesticides and fertilizers in conventional crop production. The primary benefit is in reduced energy use</p>
	Green cotton (also “better cotton”)	<p>+Green cotton refers to cotton that is grown conventionally following integrated pest management (IPM) practices that are similar to organic growing practices. Some types of green cotton are handpicked to reduce chemical use in harvesting</p> <p>-Unless dry farmed, cotton is a water-intensive crop</p>
	Hemp, linen, ramie, jute conventionally grown	<p>+These “bast” fibers typically require less synthetic pesticides and fertilizers as compared to conventionally grown cotton. Hemp requires the least pesticide use</p> <p>-Breaking down the chemical structure of the plant stalk so that the fiber can be easily separated (retting) can be chemically intensive; ramie in particular requires degumming, typically with caustic soda (sodium hydroxide/lye)</p>

Textile Scorecard *(continued)*

	Item	
3	Certified organic fibers/polyester blend	+This blend benefits from the organic cotton content and cotton poly blends can be more readily recycled than other fiber blends. A poly blend might require less maintenance than a 100% cotton textile -This blend could require more chemicals to dye and finish as sometimes two separated chemistry are required to dye the cotton and polyester fibers
	Colored cotton (e.g., Foxfibre™), conventional	+Colored fibers don't require the dye chemistry and processing -Limited color choices, conventional grown colored cotton still uses potentially harmful synthetic pesticides
2	Textiles with a recycled content less than 10%	+A little recycled is better than none
	Polypropylene	+Polypropylene is a synthetic polymer that has relatively low environmental impacts (less toxics and lower energy requirements) compared to other synthetic fibers
	Tencel (lyocell)	-Difficult to dye; typically solution dyed, which limits color choices
1	Acetate	+Cellulose acetate is a wood-based fiber manufactured using acetic and sulfuric acids and other chemicals; relatively durable -Typically requires dry cleaning; requires special dyes
	Acrylic	+Durable synthetic fiber -Hazardous chemistry required for manufacture; relatively high environmental impacts (energy and greenhouse gas emissions)
	Cotton, conventional	+Some conventionally grown cotton is dry farmed (no irrigation); use of genetically modified cotton seeds can reduce some types of pesticide use and allow decrease use of tillage thereby reducing soil erosion -Water intensive crop, in many regions, cotton is intensively farmed with synthetic pesticides and fertilizers. In many regions, conventional cotton growers use genetically modified herbicide-resistant seed (e.g., "Roundup Ready") and larger quantities of herbicide
	Nylon	+Very durable synthetic fiber; high efficiency of dyeing -Energy intensive process to manufacture; water and energy intensive to dye fiber; some hazardous chemicals used in manufacture
	Polyester	+Durable synthetic fiber; can create polyester laminates for waterproof textiles/garments that can be chemically recycled back to virgin quality; moderate energy and water intensity to manufacture - Some hazardous chemicals used in manufacture; moderately efficient dyeing
	Rayon, Modal brand	+A cellulosic manufactured fiber with the same basic chemistry as generic rayon (-2) but conducted in arguably better facilities and the cellulose inputs (trees) are from a certified sustainable source -Rayon requires some very toxic compounds for manufacture; generic rayon typically uses wood as the source of cellulose, which may be from plantations that have replace native habitat; dry cleaning is typically recommended

Textile Scorecard *(continued)*

Item	Pros and Cons
Bamboo Rayon	+Potential for sustainable managed bamboo inputs – but not always the case. Some bamboo is high yield and some is not. Some bamboo clear cutting is negatively impacting the environment -Rayon requires some very toxic compounds for manufacture; generic rayon typically uses wood as the source of cellulose, which may be from plantations that have replace native habitat; dry cleaning is typically recommended
Fluorofibers (e.g., PTFE)	+Effective water resistance -May have contaminants that can have adverse health effects from skin contact
PVC	+Durable synthetic fiber -The primary intermediate chemical for making PVC is a carcinogen; poorly run manufacturing facilities may release dioxins (a high hazard chemical family); when burned PVC release toxic fumes and dioxins. Additives to PVC include phthalates (plasticizers for flexibility and specific hand attributes), heavy metals (e.g., lead and others) for durability and other hazardous chemicals that make PVC problematic in use and disposal
Rayon, generic	-Rayon requires some very toxic compounds for manufacture; generic rayon typically uses wood as the source of cellulose, which may be from plantations that have replace native habitat; dry cleaning is typically recommended
Spandex (e.g., Lycra)	-Spandex (Lycra is a trade name) is a polyurethane fiber typically made from a polyol and a diisocyanate. Isocyanates are very toxic compounds. Most polyurethane is made from fossil fuels, although polyols made be made from soy or other plant sources It is relatively energy and water intensive to manufacture; diisocyanates are relatively high hazard chemicals; the solvent required to make the fiber is also a highly hazardous substance

0

Plastics and Foams Scorecard

	Item	Pros and Cons
4	Plastics with recycled content greater than 75%	+ Using materials with a high recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials
	Reused plastics and foams	+ Reusing materials is even better than using materials with recycled content as there are almost no impacts related to the reprocessing of the materials. This reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials
3	Plastics and foams with recycled content between with 10 and 75%	+ Using materials with a moderate recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials
	Polypropylene (PP)	+ Polypropylene (#5 plastic) requires relative little energy and water as compared to other plastics and its manufacture uses less harmful chemical intermediates - Polypropylene is not currently commonly recycled in municipal waste systems
	Polyethylene (LDPE, HDPE, LLDPE and UHMWPE)	+ Polyethylene requires relative little energy and water as compared to other plastics and its manufacture uses less harmful chemical intermediates. Both HDPE (#2 plastic) and LDPE (#4 plastic) are commonly recycled in municipal waste systems
	Polyester (PET), antimony free	+ PET (#1 plastic) is commonly recycled in both industrial and municipal waste streams. Recycled PET can be used in many applications – from structural materials to textiles. Antimony free PET does not contain antimony trioxide (as commonly available PET does) which is considered a possible human carcinogen
2	Plastics and foams with a PCR content between 1 and 10%	+ Even using materials with low recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials
	Polyester (PET)	+ PET is commonly recycled in both industrial and municipal waste streams. Recycled PET can be used in many applications – from structural materials to textiles - Somewhat more energy and harmful chemistry than polypropylene and polyethylene plastics. Antimony trioxide is used as a catalyst in the polymer production and is considered a possible human carcinogen
	Bioplastics and foams (e.g., PLA, PDO)	+ Plastics made from plant-sourced materials have the possibility to be renewable sourced - Most plant-based polymers are produced from conventionally grown crops that rely on toxic synthetic pesticides and resource intensive synthetic fertilizers. Depending on the source material and technology, bioplastics can use more or less energy than equivalent petro-based polymers (In the future there is the potential for organically sourced biological materials to be used in the manufacture of biopolymers – in that case the resultant materials could move up to a 3 or 4 position)
	Ethylene vinyl acetate (EVA)	+ Moderate chemistry used in its production - No common recycling program for this polymer

Plastics and Foams Scorecard *(continued)*

	Item	Pros and Cons
2	Latex	+Well managed natural latex stands can be a decent source of a renewable rubber. If the stands are managed in an organic system the score for this polymer would move up to a 3 -Many plantations are managed in a manner that has limited habitat value. Not all latex products are 100% “natural” items. Many materials that use natural latex have additive chemicals or processes that can be harmful
	Surlyn	+Surlyn is a resin that can be injection molded, extruded, and thermoformed; it can contain as much as 40% plant based ingredients -The plant-based ingredients can be from poorly managed resources. Some of the compounds used in its manufacture, such as methacrylic acid, have acute and chronic health effects associated with their use. Not recyclable
	Silicone	+Modern high performance silicones are made with less toxic chemistry than previous silicones -Not recyclable
1	Acrylic (“Plexiglass”)	+Durable polymer -Manufacturing chemistry includes some very toxic compounds including acrylonitrile which is a possible human carcinogen
	Delrin	+Durable polymer -Relatively more toxic and harmful production chemistry as compared to other polymers
	Melamine	-Melamine is harmful if swallowed, inhaled or absorbed through the skin. Chronic exposure may cause cancer or reproductive damage. It is an eye, skin and respiratory irritant. Relatively more toxic and harmful production chemistry as compared to other polymers
	Neoprene	-Relatively more toxic and harmful production chemistry as compared to other polymers. The compound chloroprene is used in neoprene’s manufacture and is considered a possible human carcinogen
	Nylon	- Most nylons also require more energy and water to manufacture than many other polymers. The manufacturing chemistry involves some toxic compounds
	Phenol-formaldehyde resins	-These resins can release small amounts of free formaldehyde. Formaldehyde is a known human carcinogen
	Polystyrene (PS) (e.g., Styrofoam® -- white, blue, green, etc., laminated to paper such as Gator Board®)	+Polystyrene foam can often be reused, such as shipping “peanuts” -Polystyrene foams and resins can contain free styrene – a possible human carcinogen and a cause of other adverse health effects. Polystyrene is not commonly recyclable
	Polytetrafluoroethylene (PTFE) (e.g., Teflon®)	--Polymers of fluorinated organic materials May have contaminants that can have adverse health effects from skin contact
	Polyester resins (MEK hardener)	-These resins commonly use methyl ethyl ketone which is a suspected reproductive toxin

Plastics and Foams Scorecard *(continued)*

Item	Pros and Cons
Polyurethane (PU) and polyurethane foams	+There are plant based alternatives for some of the chemical compounds used in polyurethane manufacture -The manufacture of polyurethanes uses a group of very toxic compounds called isocyanates. Polyurethanes are not commonly recycled.
Acrylonitrile butadiene styrene (ABS)	-The production of this plastic requires the use of many toxic compounds
Epoxy (with bisphenol-A) resins and laminates (e.g, fiberglass)	-Epoxy is manufactured with bisphenol-A, a suspected human reproductive toxin and known skin sensitizer
Polycarbonate (PC) Lexan®	-Polycarbonate is manufactured with bisphenol-A, a suspected human reproductive toxin and known skin sensitizer
Polyvinyl chloride (PVC) “Sintra®”	-PVC manufacture and disposal is one of the major contributors of the production of unwanted and toxic compounds dioxins and furans. The primary intermediate chemical (vinyl chloride monomer) used to make PVC is a carcinogen. Both of which are highly toxic and bioaccumulte in the environment. Additives to PVC plastic can also be quite toxic. Some plasticizers used to make PVC softer are known reproductive toxins. Some PVC has toxic heavy metals, such as lead or cadmium, added as stabilizers
Styrene butadiene rubber (SBR)	-SBR manufacture requires the use of many toxic compounds in its manufacture. Styrene is a known human carcinogen and small amounts of free styrene can sometimes be found in SBR. The manufacture of butadiene requires the use of toxic compounds such as acetonitrile or dimethylformamide
Urea-formaldehyde resins	-These resins can release higher amounts of free formaldehyde. Formaldehyde is a know human carcinogen

0

Wood Products

	Item	Pros and Cons
4	Wood products with recycled (PCR) content greater than 75%	+ Using wood products with a high recycled content reduces waste and greatly reduces the environmental and human health impacts related to the use of virgin forest products
4	Forest Stewardship Council (FSC) certified woods	+The Forest Stewardship Council (FSC) is recognized worldwide as an independent organization that establishes certification and labeling standards ensuring the sustainability of the management of forest products. Other parties certify forest management and/or wood products to the FSC standards. In addition to virgin wood certification, FSC standards are also available for recycled wood products
4	Cork	+Cork can be sustainably harvested in a low impact manner
4	Reclaimed wood or wood products	+ Reusing materials is even better than using materials with recycled content as there are almost no impacts related to the reprocessing of the materials. This reduces waste and greatly reduces the environmental and human health impacts related to harvesting and processing wood products
4	Homasote	+Homasote is a brand name generically cellulose-based fiber wallboard. Homasote is made up of recycled paper which is compressed and held together with a small amount of non-toxic PVA glue
3	Wood products with recycled (PCR) content between 10 and 75%	+ Using wood products with a moderate recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials
3	Sustainable Forest Initiative (SFI) certified	+The Sustainable Forest Initiative (SFI) is an independent certification and standard setting organization focusing on U.S. and Canadian forests and ensuring that wood products are from well managed forests; originally established by the American forestry industry -On some issues SFI standards are less stringent than FSC
3	Canadian Standards Association (CSA) certified	+The Canadian Standards Association (CSA) CSA is similar to SFI and focused exclusively on Canada wood harvested from well managed forests -On some issues CSA standards are less stringent than FSC
3	American Tree Farm System (ATFS)	+The American Tree Farm System (ATFS) focuses on certifying the forestry practices of non-industrial private landowners in the U.S. -On some issues CSA standards are less stringent than FSC
3	Domestic hardwoods (e.g., ash, beech, cherry, maple, oak, poplar)	+Most domestic hardwoods are from small woodlot owners managing for long-term productivity -While wood volume may be managed for maintenance of supply over the long-term, forest management practices may not meet expectations of certification systems for habitat value
3	Lyptus	+Trade name for eucalyptus lumber products grown on plantations in Brazil to Brazil's national sustainable forestry standard (Cerflor). Eucalyptus is a fast growing species that produces very high levels of

		biomass per acre. Lands include some native species -Plantations replaced agricultural and grazing lands that owners had cleared from native tropical forests. Although native forest species are being introduced, habitat value is lower than original forest
3	Raffia	+Leaves from a species of large palm tree that are stripped, dried, and turned into fiber strands -Often grown in plantations that replace native habitat
3	Rubberwood	+Use of wood from trees removed from latex production because they were too old, these trees used to be slashed and burned but now new markets are being created for this latex by-product
2	Bamboo	+Bamboo is a fast growing grass suitable for a variety of climates. It can be used in the round or sliced and laminated into plank lumber. It is a rapidly renewable resource. If FSC certified this move this to a score of 4. If SFI or CSA certified move up to a 3 point. -The popularity of bamboo has led to the replacement of tropical and subtropical forest habitats with bamboo plantations. Bamboo laminates typically use waterproof adhesives, some of which may be formaldehyde-based
2	Wicker	+Wicker is made from rattan, a family of palm species useful for making fibers for baskets, chairs, etc. -Wild rattan has been overharvested leading to reliance on palm plantations that have replaced native tropical and subtropical forests
2	Wood products with recycled content less than 10%	+ Using wood products with a little recycled content is better than none
2	Fiber boards made from agricultural waste	+Effective alternative to burning of some agricultural wastes -Minimizes return of nutrients to soil
2	Domestic softwoods (e.g., pine, fir, spruce, cypress, cedar)	+Generally common availability -Increasing shift to plantations replace native forest habitat with use of fertilizers and pesticides. Cypress and cedar are increasingly overharvested
2	Engineered woods including plywood, chipboard, fiberboard, MDO (medium density overlay plywood), OSB (oriented strand board), MDF (medium density fiber board), hardboard (e.g., Masonite)	+Can be a resource efficient use of lumber and lumber by-products -Unless otherwise stated, these types of ply and fiber boards usually use adhesives that can release free formaldehyde – a known human carcinogen. Nonformaldehyde adhesives would move up 1 point
2	Boron-Based Preservatives: Bora-Care®, Tim-Bor®, Shellguard® and Guardian®	+Use of boron-based wood treatment chemistry is the least toxic of all wood treatments. If FSC, SFI or CSA certified base wood move up 1 point -
1	ACQ Preserve Treated Wood: Preserve® and Preserve Plus®, NatureWood®, ProGuard™	+Ammonia copper quaternary (ACQ) treated wood is the oldest better option to CCA treated lumber. If FSC, SFI or CSA certified move up 1-point -Because of the toxicity of copper to aquatic organisms and because ACQ may leach, it is not recommended for applications near aquatic ecosystems.

1	Veneers from threatened species (www.rainforestrelief.org/What_to_Avoid_and_Alternatives/Rainforest_Wood/What_to_Avoid_What_to_Choose/By_Tree_Species.html)	+Using a small amount of wood to produce a veneer is better than using a solid piece of wood from species' that are threatened or endangered -Logging of these woods is destroying rare and fragile habitat
1	Endangered Woods	-Logging of these woods is destroying rare and fragile habitat (www.rainforestrelief.org/What_to_Avoid_and_Alternatives/Rainforest_Wood/What_to_Avoid_What_to_Choose/By_Tree_Species.html)
1	Virgin clear-cut old growth	-Logging of these woods is destroying rare and fragile habitat that can not be replaced
1	Lauan products (non-FSC certified)	+If FSC certified this moves up 2 points. If SFI or CSA certified move up 1 point - Lauan is a group of tropical hardwood that are being logged at an unsustainable rate with habitat destructive practices
0	Wolmanized® pressure treated Lumber (CCA)	+If FSC, SFI or CSA certified wood this moves up 1 point -Wood treated with chromated copper arsenate (CCA) poses certain environmental and health risks, including the leaching of chemicals such as arsenic and chromium into the environment and workers' risk of exposure to hazardous chemicals. Disposal of treated wood also proves to be an issue, particularly disposal by incineration.
0	Melamine laminate woods	-Melamine is harmful if swallowed, inhaled or absorbed through the skin. Chronic exposure may cause cancer or reproductive damage. It is an eye, skin and respiratory irritant. Relatively more toxic and harmful production chemistry as compared to other polymers

Metals

	Item	Pros and Cons
4	Metals with a recycled content greater than 75%	+ Using materials with a high recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials -Exceptions to this would be the use of toxic metals such as lead and mercury
4	Reused metals	+ Reusing materials without processing is even better than using materials with recycled content as there are almost no impacts related to the reprocessing of the materials. This reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials
3	Metals with a recycled content between 10 and 75%;	+ Using materials with a moderate recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials -Exceptions to this would be the use of toxic metals such as lead and mercury
3	Brass	+Most commonly available brass has recycled content. Brass does not require surface treatments such as paints or coatings -As with all metals, mining practices and extraction of the metal from its ore can be very destructive of habitat and energy and chemically intensive
3	Copper	+Most commonly available copper recycled content (average is 45%). Copper does not require surface treatments such as paints or coatings -As with all metals, mining practices and extraction of the metal from its ore can be very destructive of habitat and energy and chemically intensive; copper released to the environment can have adverse effects on aquatic life
3	Iron	+Most commonly available iron has recycled content. -Iron typically requires some sort of surface coating, i.e. paint, to protect it from oxidation damage (rust). As with all metals, mining practices and extraction of the metal from its ore can be very destructive of habitat and energy and chemically intensive
3	Pewter (lead-free)	+Pewter is an alloy of tin and copper that can have recycled content; it does not require a surface finish to resist destructive oxidation -As with all metals, mining practices and extraction of the metal from its ore can be very destructive of habitat and energy and chemically intensive
3	Stainless steel	+Stainless steel is a mixture of steel with other metals, primarily chrome and nickel, to form an alloy that resists rusting; it is typically used with any surface treatment. Most commonly available stainless steel has some recycled content. -As with all metals, mining practices and extraction of the metals for the alloy from ore can be very destructive of habitat and energy and chemically intensive
3	Steel	+Steel is a mixture of iron with other metals in what's called an alloy. Most commonly available steel has recycled content (average is 20-25%). -Steel typically requires some sort of surface coating, i.e. paint, to protect it from oxidation damage. As with all metals, mining practices and extraction of the metals for making steel from ore can be very destructive of habitat and energy and chemically intensive
3	Tin	+Tin does not require surface treatments such as paints or coatings -As with all metals, mining practices and extraction of the metal from its ore can be very destructive of habitat and energy and chemically intensive. Some forms of tin are very toxic (tributyl tin).
3	Zinc	+Zinc does not require surface treatments such as paints or coatings; zinc is often used in an alloy or as a plating metal over a substrate (zinc plating is called galvanizing). Most commonly available zinc has recycled content (average is 30%)

		-As with all metals, mining practices and extraction of the metal from its ore can be very destructive of habitat and energy and chemically intensive. Zinc dust can cause metal fume fever; dust can be generated by grinding galvanized materials
2	Aluminum	+Most commonly available aluminum has recycled content (40+%). Aluminum does not require surface treatments to resist rust or oxidation damage -Aluminum requires an enormous amount of energy to extract the metal from the ore. Recycled aluminum uses 5% of the energy used to make virgin metal. As with all metals, mining practices and extraction of the metal from its ore can be very destructive of habitat and energy and chemically intensive
1	Gold	+Gold does not require surface treatments to resist rust or oxidation damage - Most precious metal mining and processing disturbs great amounts of habitat and some chemical ore processing uses compounds such as cyanide that can be released into the environment if not properly managed
1	Silver	-Silver requires a surface treatment or regular cleaning to maintain its luster. Most precious metal mining and processing disturbs great amounts of habitat and some chemical ore processing uses compounds such as cyanide that can be released into the environment if not properly managed
1	Alloys with low lead levels (less than less than 5%), e.g., some bronzes, old pewter	- Lead is a toxic metal that can impair the mental functions and affect the central nervous system.
0	Lead and alloys with higher lead levels (5% or more)	-Lead is a toxic metal that can impair the mental functions and affect the central nervous system.

Glass, Ceramics, Earthen Materials

	Material	Pros and Cons
4	Glass, ceramics, and mineral products with recycled content greater than 75%	+ Using materials with a high recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials -None
4	Unfired clay products	+ These materials have very low resource requirements and environmental impacts - Mining on very large scales for these clays can have a negative impact on local habitat
3	Glass, ceramics, and mineral products with recycled content between 10 and 75%	+ Using materials with a moderate recycled content reduces waste and greatly reduces the environmental and human health impacts related to manufacturing virgin materials
3	Beverage bottle glass (clear, brown, green)	+ These types of glass typically have a high recycle content which means that the mining impacts and energy requirements for producing virgin glass is reduced -Glass manufacture requires a significant amount of energy to melt raw materials for making glass; use of recycled glass in making new glass reduces the energy used in the manufacturing process
3	Gems (tourmaline, quartz, etc.)	+ These types of gemstones commonly do not require the removal and displacement of huge amounts of earth to produce and require almost no resources to process once found -Poor mining operations can still have negative impacts to habitat
3	Marble	+Marble does not require further processing after its initial quarry and cutting requirements. -Quarry operations can have negative impacts on habitat
2	Fiberglass, non-formaldehyde resin coated	+Fiberglass can have high-recycled glass content, reducing the energy and processing requirements to produce new glass. Binders are typically used with fiberglass to maintain the functional integrity of the product (e.g., batt insulation, fiberglass mat); Non-formaldehyde resins eliminate the chance of the product off-gassing formaldehyde – a known human carcinogen -Fiberglass can irritate skin, eyes, nose, and throat and aggravate asthma and bronchitis
2	Glass, ceramics, and mineral products (other than bottles and jars), recycled up to 10%	+ Using materials with a low recycled content still reduces waste and reduces the environmental and human health impacts related to manufacturing virgin materials
2	Granite	+Durable material that can withstand extensive use with minimal wear -Dust from manufacturing processes, such as cutting, sanding, and polishing can result in exposure to crystalline silica, a carcinogen; some granite may also emit radon, a radioactive substance. Granite quarries may have an adverse effect on habitat
2	Slate	+Durable material that can withstand extensive use (e.g., in flooring, roofing, etc.) with minimal wear -Dust from manufacturing processes, such as cutting, sanding, and polishing

