



CERC ENVIS



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Eco - Friendly Paper

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ENVIS Centre on:

Eco-labelling and Eco-friendly Products

Foreword

For almost all of us, the day starts with the newspaper ! An increasing number of requirements for our daily life depends on paper. To point out a few ; books, catalogues, money (currency notes), shopping bags, receipts, paper napkins, printed and copier paper, magazines, packaging materials, food packs and so on. In short, consumers require paper in an increasing number of needs in the country.

Manufacturing of paper involves many inputs, primary amongst them being timber or waster paper, chemicals for bleaching and of course a lot of water. Some of the most important aspects that affect the global issues these days include the following :

1. Cutting of trees/forest, for producing pulp.
2. Hazardous chemicals used in paper processing
3. Greenhouse gas emissions
4. High rate of water consumption

With increased tempo of paper requirements in China, India and other developing countries, it will become necessary to lay down standards on a global basis to address the global issues mentioned above.

It is indeed unfortunate that recycled paper is generally not available in the market. It is essential now to ensure that more and more recycled paper is used. Recycling of paper reduces both the raw material requirements and the processing costs and cuts down the environmental ill-effects. A strategy to sell more of recycled papers in the market is very much due and the earlier this gets realized, the better it is.

Some of the aspects addressed in this CERC-ENVIS issue brings out these matters for a better tomorrow.

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Ecomark Criteria for Paper Products as per Indian ECOMARK Scheme

(The Gazette of India, Extraordinary, Part II-Section 3(i), No. 455, Nov. 13, 1992)

1.	General Requirements:
1.1	All the paper manufacturers shall meet relevant Indian Standards of Bureau of Indian Standards (BIS) pertaining to quality and performance.
1.2	The product manufacturers must produce the consent clearance as per the provisions of Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981, respectively along with the authorisation, if required, under Environment (Protection) Act, 1986 and rules made thereunder to BIS while applying for ECOMARK.
1.3	The product packaging may display in brief the criteria based on which the product has been labelled Environment Friendly.
1.4	The material used for product packaging shall be made from recyclable, reusable or biodegradable material and the parameters evolved for the packaging shall also apply.

2. Product Specific Requirements

2.1 The paper and paper boards manufactured out of pulp containing not less than 60 percent by weight of pulp made from materials other than bamboo, hard woods, soft woods and Reed.

OR

2.2. Recycled paper and paper board must be made from 100 percent waste paper.

The following BIS standards have been amended incorporating the above Ecomark requirements

1.	IS 1396 : 1960	Blotting paper
2.	IS 1774 : 1986	Paper for permanent records (first revision)
3.	IS 1775 : 1981	Base paper for sensitised paper (first revision)
4.	IS 1848 : 1991	Writing and printing paper (third revision)
5.	IS 2483 : 1986	Ticket board (first revision)
6.	IS 2991 : 1988	Base paper for waxed paper
7.	IS 3064 : 1986	Hand made drawing paper (first revision)
8.	IS 3302 : 1986	Backing sheet for stencil (first revision)

9.	IS 3303 : 1986	Match paper (first revision)
10.	IS 3413 : 1977	Base paper for carbon paper (first revision)
11.	IS 3673 : 1986	Alkali resistant paper (first revision)
12.	IS 4658 : 1988 (first revision)	Coated paper and board (art and chromo)
13.	IS 4664 : 1986	Pulp board (first revision)
14.	IS 6956 : 1973	Cover paper
15.	IS 8431 : 1986	Tracing paper (first revision)
16.	IS 8460 : 1977	Wrapping tissue paper
17.	IS 9032 : 1978	Diazo sensitised paper
18.	IS 9033 : 1978	Reproduction tracing paper
19.	IS10405 : 1982	Black centered board
20.	IS11087:1986 cheque printing (first revision)	Paper for magnetic ink character recognition
21.	IS 11687 : 1986	Base paper for tracing paper
22.	IS 12765 : 1989	Map printing paper
23.	IS 12766 : 1989	Paper for computer use
24.	IS 12808 : 1989	Base paper for one time carbon paper
25.	IS 14480 : 1997	Plain copier paper-specification
26.	IS 14619 : 1998	Release Base Paper- Specification
27.	IS 14661 : 1999	Toilet paper - Specification

Ref: <http://www.envfor.nic.in/cpcb/ecomark/paper.html>

ITC Launches Eco-Friendly “Paperkraft Premium Business Paper”

ITC recently launched “Paperkraft Premium Business Paper”, an environment friendly paper crafted by ITC using a pioneering technology, which is first of its kind in India called “Ozone Treated Elemental Chlorine Free technology”. Paperkraft is a superior and environmentally friendly, multipurpose paper for office and home use.

According to the company, Paperkraft Premium Business Paper has been created by ITC to provide consumers an opportunity to partner in our efforts to mitigate the adverse impact of climate change and create a positive environment footprint. In terms of quality, Paperkraft offers a superior value proposition since it is the whitest and brightest 75 GSM business paper manufactured in India. A proprietary chemical

treatment has enabled it to become an eco-friendly paper with a higher archival life.

Conventionally, Elemental Chlorine was used in the bleaching process during paper manufacture. The byproducts of this process include large number of Organic-chlorine chemicals, which are toxic and adversely impact the environment. ECF Technology virtually eliminates the production of such toxins. This is achieved by substituting elemental chlorine with chlorine dioxide. “Ozone treatment” is an advancement over ECF, resulting in even lower chemical usage and reduced water pollution.

Source : Business Wire India

Ref. www.dare.co.in/news/products-services

Cerc-envis does not either support or oppose the claims made by the manufacturer

Products for a Better World

ENVIRONMENT-FRIENDLY BLEACHING PAPERS

For most of us, our conscious environmental acts begin with paper, by recycling newspaper, cardboard, and perhaps mixed paper. By putting those bits of paper back into the production stream instead of into the waste stream, we put in place one piece of the loop between consumption and production. Unfortunately, the loop doesn't always get completed. The paper we send to recyclers hasn't always gone back into products, and some has ended up in landfills--mainly because

the demand for recycled products hasn't been great enough to make it cost-effective to equip mills to handle recycled stock, and then get a competitively-priced paper product on the market. "Recycled" pulp from other sources than consumers, much of which is simply the waste product of lumber milling, has been used much more widely than post-consumer pulp in paper making, largely due to price and availability factors.

But as more consumers and corporations look for recycled content in their buying decisions, and specifically post-consumer content, those market dynamics are changing. With the greater demand, the variety of recycled content paper products has increased, and the prices have come down.

There are factors to consider in choosing an environmentally friendly paper, however, other than its recycled content. There's bleaching, the use of acids, and perhaps most importantly, the growing scarcity of wood pulp. In this column, we'll explore the bleaching issue.

Bleached Paper

Paper manufacturers use chlorine to bleach paper bright white. The chlorine, after being used in the paper making process and making its way back



into the environment, creates chemicals called "organochlorines." These are poisons, like dioxin, which causes cancers, birth defects, immune system damage and other health problems--even death in humans and other animals

So if bleaching is so bad, why do they do it?

Simply because *people like really white paper*. Sometimes it's not that an off-white paper is less functional, we just prefer the white. Yet, while market demands

drive production, if we want to see less bleaching done, we can be effective by simply buying unbleached products. Take coffee filters, for example: do you really need something to be white that's going to be brown as soon as you use it anyway? Brown, unbleached coffee filters are the way to go (if you have to use a paper filter at all).

Fortunately, for those cases where the paper really does need to be white, there are other chemicals, less toxic than chlorine, that can do the job just as well. And papers bleached without the use of chlorine are just as high-quality--sometimes higher quality--than regular paper. Some non-chlorine bleached papers are off-white or speckled, while others are as white as their chlorine bleached counterparts.

Paper products for which you can find non-chlorine bleached alternatives

- writing paper
- printing paper
- toilet paper
- paper towels
- paper napkins
- file folders
- note pads
- cash register tape

How to read the packages

These terms are used for chlorine-free products on their packages:

unbleached : These products have not been whitened with chlorine or any other chemical.

secondarily chlorine free or processed chlorine free : These are recycled papers that have not been bleached with chlorine. (Most recycled paper fibers were bleached with chlorine at some time so they are not totally free of chlorine now.)

totally chlorine free : These products have never been bleached with chlorine, but they may have been whitened through another process.

Elemental chlorine free : These papers have been bleached with chlorine dioxide. This process still results in some organochlorine pollution.

What you can do about bleached paper

Complete the loop--buy recycled papers!
Buy paper products that aren't bleached with chlorine. When you buy non-chlorine bleached paper, you're telling paper manufacturers that you demand safer alternatives. The more consumers demand chlorine-free papers, the more companies will make products without using--or polluting with--chlorine. Ask your retailer to offer chlorine free products. Urging your local government, your workplace or your school to buy chlorine free paper. Writing to product manufacturers and requesting that they stop using chlorine. Encouraging friends and family to buy chlorine free products. Calling or writing your elected leaders and asking them to support laws that encourage paper companies to use chlorine alternatives.

By Chris Nelder

Eco-friendliness Of Handmade Paper

Usually paper is made from wood. Waste of paper would mean cutting of more trees for production of paper. Cutting of more trees would lead to environment issues like deforestation, soil erosion, scarcity of rain and water, pollution, etc. Those concerned and conscious about ecology believe, the use of single-side paper; envelopes once used; for internal correspondence in office or to leave behind a message to a family member or a friend, would surely reduce the consumption of paper and thereby less trees would be chopped off. This way, "paper can be made without disturbing trees, forests and environment", says *capart.nic.in*. In conventional paper

making process, cellulose is obtained from trees (deforestation) after chemical and mechanical treatment with the result that only 30 to 40 per cent of the starting material is useful for paper making, whereas in the handmade paper making process 85 to 90 per cent of cellulose is obtained from tree usufructs followed by microbial or mechanical pulping by using non polluting additives and dyes from natural sources.

Handmade paper can be used for all purposes for which a normal paper is used but the most important area of paper application are as writing paper, cards, boards, etc. and includes newsprint, coated printing, tissue and sanitary, packaging & industries and boards, etc.

Fibres used in paper making

Seed hair fibre :	Stem fibre :	Leaf fibre :	Fruit fibre :	Wood fibre:	Waste papers :
Cotton Silk-cotton Hemp Jute Flex, etc.	Corn Sugarcane Bamboo Straw, etc.	Aloe fibre Pineapple leaf fibre Palm, etc.	Coconut	Spruce Cedar Maple, etc.	Shredded currency waste Office records Press cuttings, etc.

The principal factors that determine whether a plant shall or shall not be used in manufacture of paper are suitability of fibre, dependability of supply, cost of collection, transportation and preparation and tendency to deteriorate in storage.

How Handmade Paper is Made

- * First step for its manufacture is to collect cellulosic raw materials like waste banana stem, waste cotton, mat grass, palmarosa grass and other agricultural residues.
- * Mixed fibres raw material are sorted out to remove any non-fibrous and metallic portion. These are then cut into small pieces (1-3 cm) mostly using a handmade chaff cutter.
- * Beating these cut pieces by hand removes the dust and dirt in them. Washing and then cooking in caustic soda for 2-3 hours in mild steel vessel (also known as 'digester'). Washing again removes alkali and dissolved matter.
- * Strips so made are put into a treatment vessel and processed with microbes. The bio-treated strips are fed into a beater along with water and additives to form a pulp type mixture (this pulp may need treatment with non-polluting bleaching agent).
- * The chemicals (rosin and alum) and colour may be added to improve the pulp quality as per requirements.
- * Paper sheets are formed by spreading this pulp mixture on a net to allow the water present to settle down. They are further blotted on a woolen or gada cloth.
- * Lastly the sheet is cut to the required size and shape
- * These sheets can be converted into bags, box, files, etc.

Source : INSIGHT - The Consumer Magazine, Sept.-Octo. 07 Issue

Damage Caused by the Paper Industry - A report from Wisconsin (USA)

Contaminated Sediments, Fish & Ducks

The paper industry has been a major source of accumulated toxic chemicals in several rivers in Wisconsin, most notably of PCBs to the Fox River and Green Bay system in Northeast Wisconsin. Clean Water Action Council has been fighting 18 years to get the Fox River PCB sediment contamination cleaned up, but in the last seven miles of the river, the DNR and EPA recently chose a cleanup target which will leave the river and bay unhealthy for another 55-100+ years.

Continuing Toxic Pollution

The paper industry is a major source of toxic chemical pollution in Wisconsin. The federal and state Toxic Release Inventories shows releases of approximately 14 million pounds of known toxic substances in 1996. Modest reductions in chemical use over the years (per unit of production) seem to be countered by increased production.

Many toxic chemicals are used in paper making, especially toxic solvents and chlorine compounds used to bleach and delignify pulp. Additional toxins are used as biocides to prevent bacterial growth in the pulp and finished paper products. (In the past, toxic mercury compounds were used as biocides, contributing to Wisconsin's mercury contamination problems in fish.)



Conventional Air Pollution

Pulp and paper mills are large sources of standard air pollutants, such as carbon dioxide, nitrous oxides, sulfur dioxides, carbon monoxides and particulates. These contribute to ozone warnings, acid rain, global warming and respiratory problems. Many of the mills are large enough to have their own coal-fired power plants, raising additional concerns about mercury, arsenic and radioactive emissions.

Energy Consumption

Paper making is energy intensive, drawing large amount of electricity from public utilities, or forcing mills to build their own power plants. This is a significant contributor to the air pollution in our region, and to the hidden damages due to fuel extraction at the source (oil drilling, oil spills, coal mining, pipelines, transmission lines, etc.)

Water Consumption

Paper making uses a great deal of water, frequently from diminishing groundwater supplies. In the Green Bay area, the aquifer drawdown caused by excessive high capacity wells of the paper industry are a major cause of our municipal water woes, forcing local taxpayers to build expensive pipelines 30 miles to Lake Michigan. The Aquifer Storage and Recovery proposal is also partly due to water consumption by the paper industry.

Solid Waste

Paper making generally produces a large amount of solid waste. Unfortunately, landfilling costs in Northeast Wisconsin are relatively cheap (often less than \$20 per ton), so the industry has little incentive for making more efficient use of its materials. Because we have so many paper recycling industries in our area, an even larger quantity of waste is



generated. Paper fibers can be recycled only a limited number of times before they become too short or weak to make high quality paper. This means the broken, low- quality fibers are separated out to become waste sludge. All the inks, dyes, coatings, pigments, staples and "stickies" (tape, plastic films, etc.) are also washed off the recycled fibers to join the waste solids. The shiney finish on glossy magazine-type paper is produced using a fine kaolin clay coating, which also becomes solid waste during recycling. These paper mill sludges consume a large percentage of our local landfill space each year. Worse yet, some of the wastes are landspread on

Feeling Helpless?

Medical and life insurance claims rejected? Fixed deposits/bonds not being paid up on maturity? Shares not received, dematted nor transferred? Builders asking you for a ride? Brand new fridge stopped making ice? Excess telephone/electricity bills? Problems you don't know how to solve? Contact us for help



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cropland as a disposal technique, raising concerns about trace contaminants building up in soil or running off into area lakes and streams. Some companies burn their sludge in incinerators, contributing to our serious air pollution problems.

Deforestation

Worldwide, enormous tracts of virgin forest are being felled for paper pulp production, contributing to the world's tragic deforestation trends. Many Wisconsin mills import their pulp and undoubtedly some of this pulp came from old-growth endangered forests. Citizen networks have formed worldwide in an effort to save the last of these precious, irreplaceable places. (Trees may be renewable, but ancient forest plant and animal communities are often *not* renewable because of the complex ecological balance which was built over thousands, even millions, of years in some of these forests.)

Corruption of Democracy

Paper is king in Wisconsin, literally. For many decades, the industry has been pampered by local, state and federal governments -- with tax breaks, energy breaks, incentive grants, university research projects, employee training programs, cheap water,

cheap pulpwood, cheap landfills, and other generous subsidies. The paper industry is not an example of "free enterprise" or "capitalism," rather, it is fascism, the corporate control of government. The paper industry gives generously to political campaigns, and is rewarded. Most recently, the Wisconsin Paper Council's requests have been granted for a \$45 million tax break (in the middle of record-breaking deficits), further energy breaks, and the Governor's promise of "streamlined" environmental permitting (heaven help us...) For 30 years, the paper industry successfully blocked the Fox River PCB cleanup, and they've been extremely influential in weakening Wisconsin's air, water and solid waste regulations since the beginnings of those programs. Any time a new environmental standard is proposed, the paper industry lobbyists are there, often in large numbers, to protect the paper industry from its responsibilities. Politicians provide no leadership. It appears that the Republicans are more concerned with protecting the corporations, while the Democrats are more concerned with labor unions and protecting paper worker jobs. Neither seems to care about the bigger picture of public health protection, natural resource conservation or environmental sustainability.

Ref: http://www.cwac.net/paper_industry/index.html

Paper Recycling - A Learning Experience for Students

"An idea that helps create something good out of nothing"

Paper is required and used for anything and everything one can think of. With hundreds of final uses, paper satisfies many important human needs. In fact, it is an integral part of everyday life. The technological advance with computers and photocopiers has increased the consumption and wastage of paper. Indian consumption of paper is five kilograms per capita, with an expected growth rate of 6-7% per annum over the next five years.

By using paper carelessly, we contribute to the



depleting forest cover, drastic climate change and water pollution. For every ton of paper, the paper industry guzzles up 2.8 tons of dry timber and 24,000 gallons of water, besides electricity and other resources. Pulp and paper industry is a major contributor in terms of air and water pollution.

Recycling of paper not only saves trees and minimises pollution, but also reduces the waste problem by utilizing waste material like used paper, cotton rags and unwanted biomass.

Benefits of Recycling

Waste reduction : Paper accounts for a significant amount of municipal waste. Recycling paper means less waste and disposal problem

Energy conservation : 60-70% energy savings over virgin paper production

Resource conservation : Recycled paper uses 55% less water and helps preserve our forests

Pollution reduction : Recycled paper reduces water pollution by 35%, reduces air pollution by 74%, and eliminates many toxic pollutants

Livelihood creation : Recycling of waste paper creates more jobs

If each child saves one sheet of paper a day, then 40,000 trees are saved per year by students alone!

It is with this mission that a few schools in Delhi have installed the TARA Mini Paper Recycling Plant with support from Department of Environment, NCT Delhi. The students have done significant work in reducing the paper waste generated in their schools. Secondly, the students themselves are involved in the recycling process, which helps in understanding the various resources and efforts put in for making paper.

The TARA Mini Paper Recycling Plant is an appropriate system to turn waste paper, cotton rags and other such waste into paper for all purposes. The plant is based on an effective and yet simple technology, with which even a child can turn waste paper and cotton rags into valuable products.

The plant is a self contained system for recycling small quantities of waste material i.e. upto ten kg per day. The basic raw material for manufacturing hand made paper comprises cotton rags, denim waste, waste paper and draft waste. The various steps involved are sorting, chopping, dusting, pulping, sheet formation, pressing, drying, calendering and cutting.

Students are also trained on making paper products like folders, penholders, material for display board, lampshades, teaching/learning aids etc. Students have creatively made their own cards, files, folders, invitation cards and certificates for the school. Working on a paper recycling plant demonstrates the concept of recycling waste into 'wealth'.

The real success of the programme is visible in the seemingly simple acts like: students exchanging books in a new academic session, indirectly saving paper and thereby trees. Students of various Delhi schools have been enthusiastically involved in segregating paper waste, collecting and recycling the same. The Department of Environment, NCT Delhi has also helped some environmentally active schools like Green Fields School and many others to set up the plant.

Remember - to use paper is to have an impact on our environment. Our greater goal should be to promote reduction of consumption.

Recycle Paper at home!

- * Shred the waste paper and soak it overnight in water.
- * Blend it in a mixer-grinder with a paste of fenugreek (methi) seeds. For colour, add natural colouring agents like Turmeric powder (Haldi), etc.
- * Put water in a pan with a wire-mesh inside.
- * Pour a cup of the blended paper pulp over the mesh and spread it evenly.
- * Lift the mesh and drain the water.
- * Place the mesh on one side of an open newspaper and close the newspaper.
- * Carefully flip the newspaper so that the mesh is on top of the pulp.
- * Press a flat wooden board on the newspaper to squeeze out water.
- * Open the newspaper and take out the mesh.
- * Keep the newspaper open for drying. Dried leaves and petals can be spread on the sheet while it is wet.
- * Once dried, peel off the sheet from the newspaper.
- * Lightly iron the sheet under a piece of moist muslin cloth.

By Deepti Gumber deepti@sdalt.ernet.in

Re http://www.devalt.org/newsletter/jun04/of_5.htm

What is Environmentally Friendly Copy Paper?

The Native Forest Network suggests that there are four kinds of paper to be considered for use:

1. One hundred percent post-consumer waste paper - or as near as possible;
2. Paper sourced from alternative fibres - such as hemp, kenaf, bagasse, wheatstraw, rice straw, etc ;
3. Paper that has minimal pulp and papermaking emissions - and does not use chlorine bleaching and is manufactured in a closed loop system (ie, full effluent recycling);
4. Paper sourced from ecologically managed eucalypt or pine plantations.

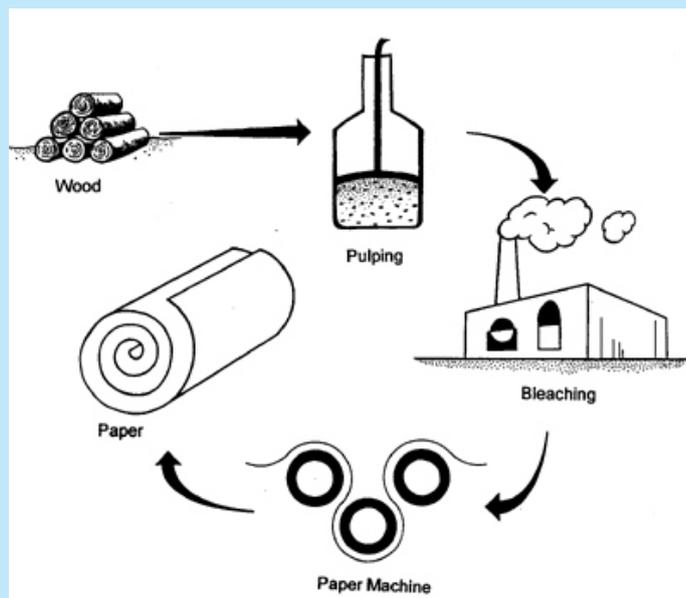
Effluent-Free Paper - Way To Go!

Although the pulp and paper industry has a way to go in terms of its potential to pollute, there is a ray of hope in that a pulp mill in Canada has "gone TEF"; ie, has invested in new technology which makes its waste stream **Totally Effluent Free**. This, combined with the fact that it is already **Totally Chlorine Free** (TCF), means that other manufacturers must now consider their own environmental priorities very carefully.

If other pulp mills choose to opt for a less 'green' process, such as **Elemental Chlorine Free**, which substitutes chlorine dioxide for chlorine and thus brings the output of dioxins to below detectable levels, the risk being out of touch with future public demand for environmentally friendlier paper.

Some North American paper manufacturers are apparently working quietly behind the scenes to prepare for TCF manufacture so that the U.S. Environmental Protection Authority doesn't get wind of the change and ultimately impose more stringent regulations.

In the interim (ie, until everybody goes chlorine and effluent free) another category of product is receiving market attention. This is **Processed Chlorine-Free** (PCF) recycled paper, which combines virgin TCF pulp and previously chlorine-bleached pulp to make a recycled paper.



It just may be that despite or because of the enormous costs of adopting new technology, paper makers may have to go greener than they would really like, sooner than they would really like, in order not to be left behind in the future.

http://www.rainforestinfo.org.au/good_wood/envf_pap.htm

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