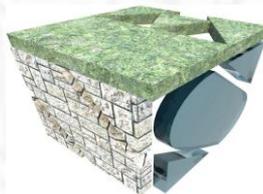


MODULE 5

CERTIFICATION AND ACCREDITATION

Training for Sustainable Building

Vocational Training Modules for the Natural Energy Efficiency and Sustainability (NEES) Project



ARCTIC TECHNOLOGY CENTRE





Umeå University



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh



ARCTIC TECHNOLOGY CENTRE



THE NEES PARTNERS



SOUTH KERRY DEVELOPMENT
PARTNERSHIP LTD.



Northern
Periphery
Programme

2007-2013

Innovatively investing
in Europe's Northern
Periphery for a sustainable
and prosperous future



European Union
European Regional Development Fund





Where can I get more information on NEES?

If you wish to find out more about the NEES Project, please check our comprehensive Web Site, contact your NEES regional representative or the NEES Project Manager at the address below.

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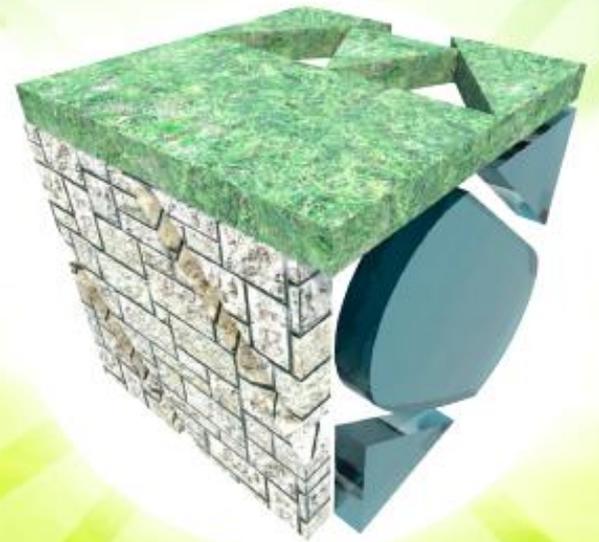


**Northern
Periphery
Programme**
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Innovatively investing
in Europe's Northern
Periphery for a sustainable
and prosperous future



European Union
European Regional Development Fund



Natural - Energy Efficient - Sustainable

NEES PROJECT

**NATURAL
ENERGY EFFICIENT
SUSTAINABLE**

VOCATIONAL TRAINING MODULES

Module 5 Certification and accreditation

- 5.0 Introduction
- 5.1 CE marking
- 5.2 Construction Products Directive (CPD)
- 5.3 Agrément Certification
- 5.4 Carbon Offsetting
- 5.5 Natureplus Certification
- 5.6 REACH
- 5.7 COSHH
- 5.8 Environmental Product Declarations (EPDs)
- 5.9 Life Cycle Assessment LCA
- 5.10 ASBP
- 5.11 LEED
- 5.12 Living Building Challenge
- 5.13 Cellulose case study

CONTENTS



Natural - Energy Efficient - Sustainable

5.0 INTRODUCTION

CERTIFICATION AND ACCREDITATION

- A wide range of approvals, certification and accreditation is available for construction materials
- In order to satisfy yourself about the ecological credentials of a certain material or product you may have to search through many different documents
- This presentation provides an introduction to the range of approvals available and includes a case study where cellulose insulation is looked at in more detail

5.1 CE MARKING AND ETAs

- CE marking is a key indicator of a product's compliance with EU legislation and enables the free movement of products within the European market.
- By affixing the CE marking on a product, a manufacturer is declaring, on his sole responsibility, conformity with all of the legal requirements to achieve CE marking and therefore ensuring validity for that product to be sold throughout the EEA, the 27 member states of the EU and European Free Trade Association countries .
- However, not all products must bear the CE marking.
- Only those product categories subject to specific directives that provide for the CE marking are required to be CE marked.

CE MARKING AND ETAs

- CE marking does not indicate that a product was made in the EEA, but merely states that the product is assessed before being placed on the market and thus satisfies the legislative requirements, eg a harmonised level of safety, to be sold there.
- It means that the manufacturer has verified that the product complies with all relevant essential requirements, eg health and safety requirements, of the applicable directive(s) or, if stipulated in the directive(s), had it examined by a notified conformity assessment body.

CE MARKING AND ETAs

It is the manufacturer's responsibility to:

- carry out the conformity assessment
- set up the technical file
- issue the EC Declaration of Conformity (DoC)
- affix CE marking on a product

CE MARK IS A CLAIM THAT A PARTICULAR CONSTRUCTION PRODUCT CAN BE LEGALLY PLACED ON THE MARKET OF MEMBERS STATES OF THE EUROPEAN ECONOMIC AREA (EEA) AND IS BASED ON THE PRINCIPAL THAT THE PRODUCT SPECIFICATION, AND THEREFORE, THE PRODUCT IS “FIT FOR PURPOSE”.



CE mark on a bag of cement or a piece of wood simply tells you it's a bag of cement or a piece of wood

5.2 Construction Products Directive (CPD)

EU Regulations Construction Products Directive/Regulation

Construction Products Regulation (CPR), which has superseded the Construction Products Directive (CPD), as the main legal instrument affecting the European construction industry, there exists a legal obligation for manufacturers to provide proof of their products “fitness for purpose”.

A Guidance Note on the Construction Products Regulation produced by the Construction Products Association, British Board of Agrément, British Standards Institution and FBE Management Limited in consultation with the Trading Standards Institute can be found [here](#).

http://www.constructionproducts.org.uk/?eID=dam_frontend_push&docID=1443&filename=CPR_Version_2.pdf

EU Regulations Construction Products

Directive/Regulation

The CE Mark provides proof of this “*fitness for purpose*” and the manufacturer affixing the CE mark shows that the construction product will enable the finished construction works such as a home or school to comply with the Construction Products Regulation requirements (called Basic Works Requirements) of:

- Mechanical resistance and stability
- Safety in case of fire
- Hygiene, health and environment
- Safety & accessibility in use
- Protection against noise
- Energy economy and heat retention
- Sustainable use of natural resources

CE Mark is not a quality mark

Member states of the EEA are legally obliged to take all necessary measures to ensure that the construction products placed on the market and put into service will allow the finished structure to comply with these seven Basic Works Requirements *“when the product is properly installed, maintained and used for its intended purpose”*.

CE marking provides this proof.

CE Mark is not a quality mark

The aim of the CPR is to remove technical barriers to trade between European Member States for all construction products intended for “*permanent incorporation in buildings and civil engineering works*”.

By technical barriers is meant the multitude of national standards existing within individual European countries each of which references different test methods.

Under the CPR new European test methods and the means of measuring these, have been developed and accepted by all countries in the EEA.

CE Mark is not a quality mark

In summary, CE marking is a passport that enables a construction product, irrespective of its origin, to be legally placed on the market of EEA member states. It means that a construction product meets certain minimum standards for health, safety and economy of energy.

It is NOT a quality mark.

The difference between a quality mark and the CE mark is that the certification system upon which quality marks operate is determined by the legal owner of that quality mark e.g. BSI, whereas the CE mark represents a common approach to conformity that is recognised in all countries making up the EEA.

5.3 AGREEMENT CERTIFICATION

- **Agrément Certificates**
- **An Agrément Certificate is only awarded to a construction product or system after it has successfully passed a comprehensive assessment involving laboratory testing on-site evaluations and inspections of production. The manufacturer will also be audited ensuring that a suitable quality management system is in place.**

AGREEMENT CERTIFICATION

- **Regular monitoring of the product manufacture by the BBA takes place twice a year with a full and comprehensive reassessment every three years. Agrément Certificates are recognised by building control, government departments, architects, local authorities, specifiers and industry insurers like the NHBC.**
- **The award of an Agrément Certificate is a must for a new construction product or system to gain quick acceptance in the marketplace**



Home

About Us

Product Appro

Different certificates are available in different countries

http://www.sp.se/en/units/certification/sp_sitac/Sidor/default.aspx



British Board of Agrément

The BBA is the UK's major authority offering approval and certification services to manufacturers and installers supplying the construction industry.

BBA Approval is recognised by building control, government departments, architects, local authorities, specifiers, and industry insurers like the NHBC.

To provide an appropriate solution to the thermal bridging requirements of Part L 2010, the BBA has joined forces with [Robust Details Limited](#) to form [Constructive Details Ltd.](#)



NSAI

Assured Confidence

• OUR SERVICES

• YOUR INDUSTRY

• ABOUT NSAI

You are here » [Home](#) : [OUR SERVICES](#) : [Certification](#) : Agrément Certification



Agrément Certification

Agrément certification is designed specifically for new building materials, products and processes that do not yet have a long history of use and for which published national standards do not yet exist. NSAI Agrément assesses, specifies testing, and where appropriate, issues Agrément certificates for such products.

Learn more about [NSAI Agrément](#).

Agreement certificates do not provide any warranty that a product is safe and does not provide any environmental approval

Agreement certificates do not provide any warranty and the Agreement boards do not accept any responsibility for any matters!!

19.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

19.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal.

19.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.



[HTTP://WWW.NSAI.IE/ABOUT-NSAI/DEPARTMENTS/AGREEMENT.ASPX](http://www.nsaie.ie/about-nsai/departments/agreement.aspx)

- **What is Agrément certification?**
- Agrément certification confirms that new building products, materials, techniques and equipment are safe and fit for purpose.
- The process of Agrément certification applies to those products and processes that are not already regulated by existing building standards, either because they are innovative or because they deviate from established norms.



[HTTP://WWW.NSAI.IE/ABOUT-NSAI/DEPARTMENTS/AGREEMENT.ASPX](http://www.nsaie.ie/about-nsai/departments/agreement.aspx)

- **What is the procedure for certifying a new product?**
- Agrément certification involves the following steps:
 - - We process your application.
 - We develop a Technical Assessment Specification (TAS), which sets out the technical criteria for assessment and testing.
 - We assess the product to ensure that it conforms to the TAS. This might include laboratory testing, on-site evaluation and inspection of the production process.
 - Subject to the results of the assessment, we then draft an NSAI Agrément Certificate.
 - We publish the Certificate on the NSAI website.

SPECIFYING ISSUES

- It is normal practice to specify generic rather than named products. This is normally required in public sector contracts.
- The specification clauses need to include environmental performance characteristics otherwise contractors will substitute products that do not meet environmental standards
- **Requiring Agreement certification or CE marking will not ensure any environmental compliance**

5.4 CARBON OFFSETTING.

A lot of building material companies base their green claims on carbon offsetting.

This means they are paying someone else to do “green” things rather than reducing their own emissions.

Friends of the Earth disapprove of this practice

A DANGEROUS DISTRACTION

WHY OFFSETTING IS FAILING THE CLIMATE AND PEOPLE: THE EVIDENCE



Friends of
the Earth

Friends of the Earth does not recommend carbon offsetting for a number of technical, ethical and practical reasons.

Friends of the Earth, along with a number of other organisations, is very concerned that carbon offsetting is delaying the urgent action needed to cut emissions and develop alternative low-carbon solutions.

Offsets could even encourage businesses and people to continue with or increase unnecessary polluting activities.

5.6 Natureplus certification

NATUREPLUS CERTIFICATION –
A EUROPEAN ENVIRONMENTAL
CERTIFICATION SYSTEM FOR
BUILDING PRODUCTS



www.natureplus.org

provides environmental certification independently tested



Components

Floor Coverings

Roof Slates and Tiles

Insulation from Renewable Raw Materials

Mineral-Based Insulation

Paints and Varnishes

Timber and Wood Materials

Adhesives and Sealants

Masonry Elements

Mortar and Plaster Renders and adhesives

Dry-Wall Construction Boards

ETICS - Composite Insulation Systems

Certified Products - Mineral-Based Insulation

Please select one of the following categories:

[Natural-Stone Based Insulation](#)

[Expanded Clay Insulation](#)

[Expanded Glass Insulation](#)

[Mineral-Based Foam Boards](#)

[Foam Glass Insulation](#)



TecTem® Insulation Board Indoor

Manufacturers / Sales: KNAUF AQUAPANEL GmbH

Certificate number: 0408-1101-102-1

Issuance Guidelines: RL0408 Perlite-Dämmplatten für

Innenanwendung 

[» Details](#)



TecTem® Insulation Board Indoor Climaprotect

Manufacturers / Sales: KNAUF AQUAPANEL GmbH

Certificate number: 0408-1101-102-1

Issuance Guidelines: RL0408 Perlite-Dämmplatten für

Innenanwendung 

GOVERNMENT PROCUREMENT GUIDANCE

- [http://www.environ.ie/en/Environment/SustainableDevelopment/GreenPublicProcurement/#Green%20Public%20Procurement%20\(GPP\)](http://www.environ.ie/en/Environment/SustainableDevelopment/GreenPublicProcurement/#Green%20Public%20Procurement%20(GPP))
- The Irish green procurement policies do not appear to define what is meant by green

Green Tenders

An Action Plan on Green Public Procurement



Comhshaoil, Pobal agus Rialtas Aitiúil
Environment, Community and Local Government



An Roinn Cateachais Phoiblí
agus Aithchóirthe
Department of Public
Expenditure and Reform

5.6 REACH

REGISTRATION, EVALUATION, AUTHORISATION AND
RESTRICTION OF CHEMICALS.

SEE MORE AT:

[HTTP://WWW.HSA.IE/ENG/YOUR_INDUSTRY/CHEMICALS/REACH/#STHASH.ID8MVLWW.DPUF](http://www.hsa.ie/eng/your_industry/chemicals/reach/#sthash.ID8MVLWW.DPUF)

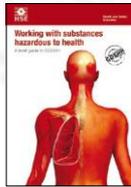
HEALTH AND SAFETY & REACH



Health and Safety
Executive

Working with substances hazardous to health

A brief guide to COSHH



This is a web-friendly version of leaflet INDG136(rev5), revised 10/12

Introduction

This leaflet describes how to control hazardous substances at work, so they do not cause ill health. It will help you understand what you need to do to comply with the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended) which apply to the way you work with these substances.

This leaflet provides measures that you, as an employer, may need to do to protect your employees from hazardous substances at work. It will also be useful to employees and their safety representatives.

Why do I need to read this leaflet?

Every year, thousands of workers are made ill by hazardous substances, contracting lung disease such as asthma, cancer and skin disease such as dermatitis. These diseases cost many millions of pounds each year to:

- industry, to replace the trained worker;
- society, in disability allowances and medicines; and
- individuals, who may lose their jobs.

You, as the employer, are responsible for taking effective measures to control exposure and protect health. These measures can also improve production or cut waste.

Looking after your business

Your aim in running your business is to make a profit. You know what you do, and how you are doing it. You know what 'processes' and 'tasks' are involved. You know the short cuts. Ensuring your workers remain healthy may also lead to healthy profits.

Which substances are harmful?

- Dusty or fume-laden air can cause lung diseases, eg in welders, quarry workers or woodworkers.
- Metalworking fluids can grow bacteria and fungi which cause dermatitis and asthma.
- Flowers, bulbs, fruit and vegetables can cause dermatitis.
- Wet working, eg catering and cleaning, can cause dermatitis.
- Prolonged contact with wet cement in construction can lead to chemical burns and/or dermatitis.
- Benzene in crude oil can cause leukaemia.

Many other products or substances used at work can be harmful, such as paint, ink, glue, lubricant, detergent and beauty products.

1 of 10 pages

The EU Reach Directive and Most Health and Safety legislation has little impact on construction materials and products

The EU CE marking is about removing barriers to trade, not improving safety or reducing hazards

What is REACH?

REACH is a European Union regulation concerning the Registration, Evaluation, Authorisation and restriction of Chemicals. It came into force on 1st June 2007 and replaced a number of European Directives and Regulations with a single system.

Aims

REACH has several aims:

- To provide a high level of protection of human health and the environment from the use of chemicals.
- To make the people who place chemicals on the market (manufacturers and importers responsible for understanding and managing the risks associated with their use.)
- To allow the free movement of substances on the EU market.
- To enhance innovation in and the competitiveness of the EU chemicals industry.
- To promote the use of alternative methods for the assessment of the hazardous properties of substances e.g. quantitative structure-activity relationships (QSAR) and read across.

Scope and exemptions

REACH applies to substances manufactured or imported into the EU in quantities of 1 tonne or more per year. Generally, it applies to all individual chemical substances on their own, in preparations or in articles (if the substance is intended to be released during normal and reasonably foreseeable conditions of use from an article).

Some substances are specifically excluded:

- Radioactive substances
- Substances under customs supervision
- The transport of substances
- Non-isolated intermediates
- Waste
- Some naturally occurring low-hazard substances

EFFECTS OF EUROPEAN REGULATIONS FOR HEALTH AND ENVIRONMENTAL PROTECTION ON BUILDINGS AND BUILDING PRODUCTS

EXECUTIVE SUMMARY

In this interesting paper it is clear that nothing has been done to link the EU REACH Directive, which is meant to control chemical emissions, to the Construction Product Declaration and regulations.

http://www.reach-info.de/dokumente/bbr_e.pdf

EU Speak.....explaining why REACH is not linked with CPD

On the one hand it seems reasonable to make available and to use the substance-related knowledge about human- and ecotox values, which will be generated under REACH in great numbers in a manageable time frame, in a structured manner for the derivation of reference values for the evaluation of construction products. If the consideration of available REACH DNEL- and PNEC-values would be integrated systematically in the routines for derivation national reference values a strong impulse for a more harmonised level of required ER 3 performance would be given to the European construction products market.

On the other hand there is a pool of knowledge about the actual emission behaviour of substances to be found in the area of construction product testing as well as an expert consensus about appropriate release scenarios. Both would be very helpful for the verification of the model-based emission and exposure assessments under REACH. It would furthermore be adequate for the further elaboration testing of the relevant prediction models.

Validated prediction models, for the release of substances from an article matrix, developed on this basis could make a medium-term contribution to the reduction of testing efforts beneath the level of the CPD (WT/WFT-decisions)

Central obstacles in the development of the said synergies are at present especially the differences in timelines and the comparably low intensity of the technical discussion between the actors of both regulatory areas.

Petrochemical products are able to ignore the REACH Directive as the chemicals used are exempt

Product Safety Information

THERMA™

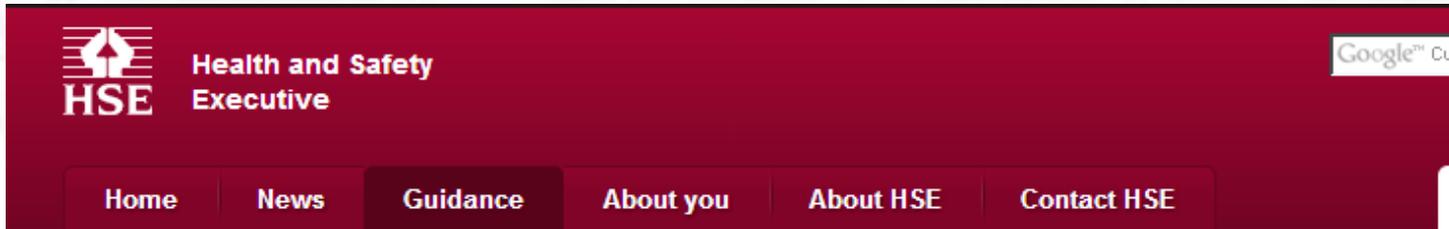
These products are exempt from the requirements of Article 57 and 59(1) of REACH Regulation (EC) No 1907/2006. The information below follows the SDS format as described in Annex 2 of the Regulation.

1 Identification of Products and Company

Products

Kingspan Thermapitch® TP10
Kingspan Thermaroof® TR21
Kingspan Thermaroof® TR24
Kingspan Thermaroof® TR26 LPC / FM
Kingspan Thermaroof® TR27 LPC / FM
Kingspan Thermaroof® TR31
Kingspan Thermataper® TT46 LPC / FM
Kingspan Thermataper® TT47 LPC / FM
Kingspan Thermawall® TW50
Kingspan Thermawall® TW53
Kingspan Thermawall® TW55
Kingspan Thermafloor® TF70
Kingspan Thermabate®
Kingspan Therma™ Duct Insulation

5.7 COSHH CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH



HSE » Guidance » Topics » COSHH » Basics

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Free updates 

Bookmark 

COSHH

- COSHH basics

What is a 'substance hazardous to health'?

I'm self-employed. Does this apply to me?

What you need to do

COSHH assessment

Substitution

Exposure limits

Chemical safety data sheets

Control measures

COSHH basics

What is COSHH?

COSHH is the law that requires employers to control substances that are hazardous to health. You can prevent or reduce workers exposure to hazardous substances by:

- finding out what the health hazards are;
- deciding how to prevent harm to health (risk assessment);
- providing control measures to reduce harm to health;
- making sure they are used ;
- keeping all control measures in good working order;
- providing information, instruction and training for employees and others;
- providing monitoring and health surveillance in appropriate cases;
- planning for emergencies

Material Safety Data Sheet

10. Stability and reactivity

Stable and un-reactive during normal use (see section 7).

11. Toxicological information

No information available at this time.

12. Ecological information

The product is inert and stable in water and soil.

13. Disposal considerations

Waste insulation is non-hazardous and should be disposed of regularly in a designated location without grinding or powdering in accordance with the requirements of the Environmental Agency, Local Authorities and the Environmental Protection Act 1991. Any phenolic product dust created in the installation process is regarded as nuisance dust only because of its inert nature. It is important that the accumulation of waste insulation is avoided to prevent wind dispersal.

ARE COSHH HEALTH AND SAFETY DATA SHEETS WORTH THE PAPER THEY ARE WRITTEN ON?

THIS IS AN EXAMPLE OF SAFETY DATA SHEET.

IT IS COMMON TO SAY NO "INFORMATION AVAILABLE AT THIS TIME" UNDER TOXICOLOGICAL INFORMATION

WHITEWASH

- “Toxicological Information: No information available at this time.” The manufacturers of **toxic** petrochemical based products get round the regulations using this statement. The Health and Safety Executive does not challenge this whitewash
- Also they state that the products are inert ..this means that they can stay in landfill for centuries as toxic waste and do not bio degrade!!



Toxic Chemicals in Building Materials

An Overview for Health Care Organizations¹

Chemicals of concern emitted by building materials in facilities affect:

- The health and productivity of staff;
- The healing environments for patients and visitors; and
- Our communities and planet.

Lifecycle emissions from the extraction, production, use, and disposal of the materials, up and down stream, affect health care system members/patients, visitors, staff, and the larger community's health in their homes, offices, and at play.

Government bodies continue to study many of the chemicals added to or used to make building products. Many have declared some of these chemicals to be among the most hazardous known to human kind. Some of the commonly used building materials in health care may:

- Contain formaldehyde, a known human carcinogen;
- Be made from PVC, implicated in dioxin formation during production, manufacture, and disposal; and
- Include toxic chemicals found increasingly in our breast milk, urine, and blood.

While the U.S. Environmental Protection Agency (EPA) has registered more than 80,000 chemicals for use, and identified 16,000 of them as chemicals of concern, they have only subjected 250 to mandatory hazard testing and only restricted five chemicals or chemical

classes.² With a regulatory system offering little oversight into what goes into the products used in health care, institutions must look to the market to eliminate the "worst in class" chemicals and to evaluate and encourage safer, healthier, and less toxic products.

The health care industry is uniquely positioned to move away from toxic products. With significant market power and the Hippocratic oath of "first do no harm," hospitals and other health systems are leading efforts from within the sector to source safer building materials; to avoid products containing chemicals linked to cancer, respiratory problems, hormone interference, and reproductive or developmental harm; and to undertake innovative strategies to move the market to research, develop, and produce healthier products.

Plastics

All of the petrochemical-based materials in use today share a common legacy of emitting toxic chemicals in the process of refining the oil or gas from which these plastics are made. Chlorinated plastics, including polyvinyl chloride, however, have come under more intense scrutiny due to the extreme toxicity of chemicals involved in their production and disposal.

Most useful information
about toxic chemicals
comes from US sources

<http://www.healthybuilding.net/healthcare/ToxicChemicalsInBuildingMaterials.pdf>

5.8 EPDs – ENVIRONMENTAL PRODUCT DECLARATIONS

ENVIRONMENTAL PRODUCT DECLARATIONS

WHAT IS AN EPD®?

An EPD® is a certified Environmental Product Declaration, which reports environmental data of products in accordance with ISO standard 14025.

The system is international, compatible with all types of goods and services, third party verified and a flexible source of information. Product category rules (PCR) provide a transparent system for comparing environmental data of similar products.

The International EPD® System is managed by the Swedish Environmental Management Council in cooperation with member organisations in a number of countries, such as Italy, Spain and the USA.

EPD® is a registered trademark for environmental product declarations registered in the International EPD® System.



Mission Zero:
our promise to eliminate
any negative impact our company
may have on the environment
by the year 2020.

Environmental Product Declaration

according to ISO 14025



Interface FLOR

Tufted modular carpet with Recycled Solution-dyed Polyamide 6.6

Black and White, Blast From The Past, Chenille Warp, Duet, Entropy II, Fastforward, Furrows II, High Rise, Lima, Linear Tonal, Shadowland, Syncopation, Tapestry, Tonal, Transformation, Vermont, Reprise Collection: Renew, Restore, Pietra Collection: Brescia, Bertola, San Roco, Shiori Collection: Sashiko, Tatami II, Common Ground Collection: Unity, Unify, Razzle Dazzle Collection: Strike a Light, Bright Spark, Flare

Contains pre-consumer recycled materials
(pile yarn, precoat, backing compound and non-woven fleece)



LCA - calculation and support:
Gemeinschaft umweltfreundlicher Teppichboden e.V.



Institut Bauen
und Umwelt e.V.

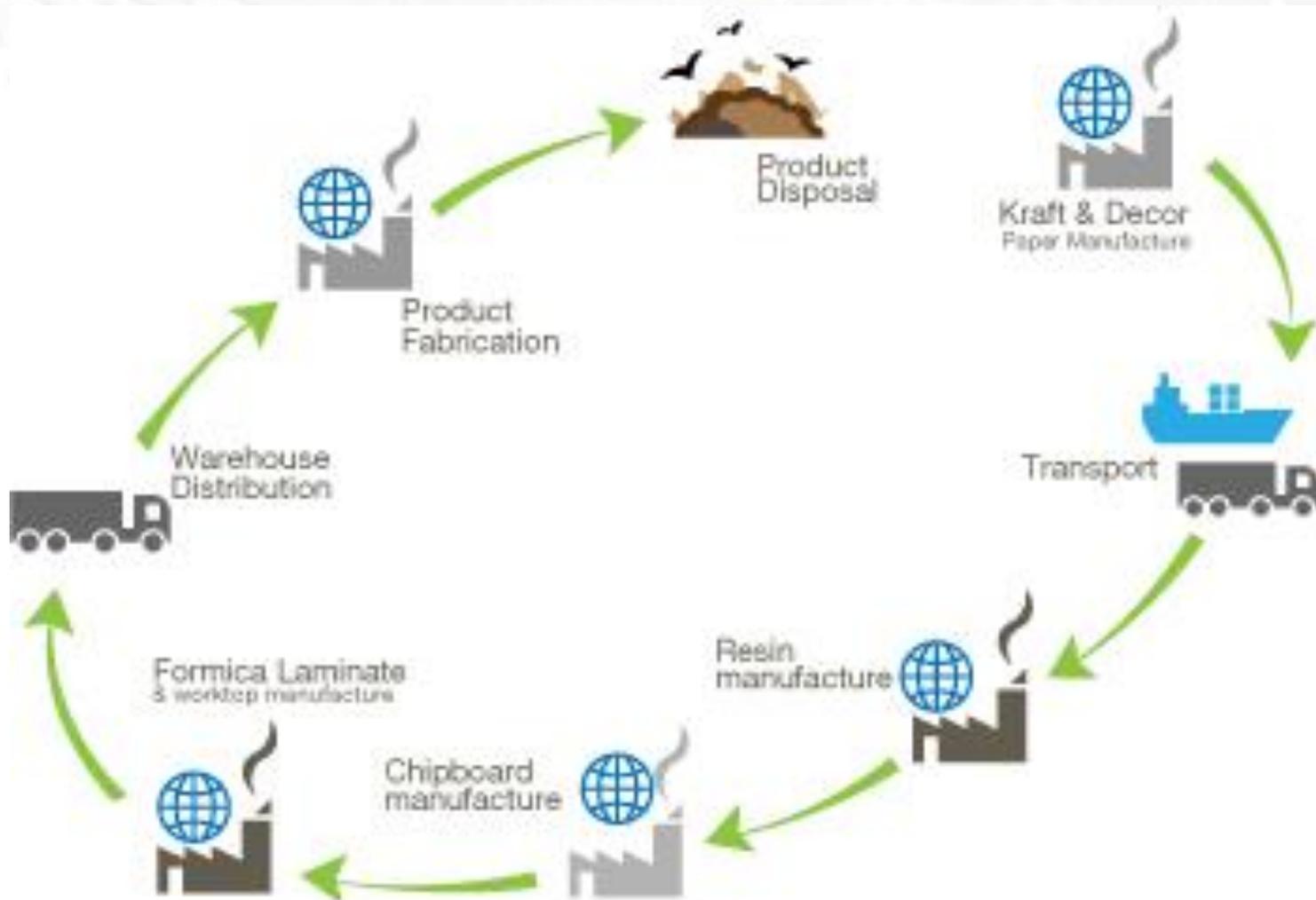
Declaration number
EPD-IFF-2011711-E

Institut Bauen und Umwelt e.V.
www.bau-umwelt.com

Typical EPD
These can be downloaded
from company web sites

LIFE CYCLE ANALYSIS

EPDs are based on life cycle analysis





Many products have cradle to cradle certification but this should be treated with caution as assumptions are made about materials being recycled when this rarely takes place in reality

WELCOME TO THE EUROPEAN PLATFORM ON LIFE CYCLE ASSESSMENT



The Integrated Product Policy (COM (2003)302) identified Life Cycle Assessment (LCA) as the “best framework for assessing the potential environmental impacts of products”. It highlighted the necessity for a Platform on LCA and to increase the availability of quality-assured life-cycle data. The JRC responded to these needs by establishing the European Platform on Life Cycle Assessment (EPLCA), through which it has facilitated the development of the European reference

Life Cycle Database (ELCD), the International reference Life Cycle Data System (ILCD) Handbook, and the Life Cycle Data Network (LCDN).

<http://eplca.jrc.ec.europa.eu/ResourceDirectory/>

CARBON/CO₂/ECOLOGICAL FOOTPRINT



February 25, 2014

Climate Change Explained

Climate Quiz

Carbon Calculator

Video

What you can do

Timeline

you are here : [foe home](#) » [just one earth home](#) » carbon calculator

Calculate your carbon footprint

Answer the questions below to work out your total annual carbon emissions in tonnes.

Heat Hot water Electricity Transport Air Travel Food

Heating your home

Your car footprint

There are a wide range of organisations offering footprint calculations



Calculator



Footprint



Your Plan

ACT ON

CO₂

It's time to act

Calculator

Before you start

Ready to act?

Three simple steps:

- 1 Answer questions about your home, appliances and travel
- 2 Get your footprint results and compare yourself with other people
- 3 See how you can reduce your footprint and save some money

start

A wide range of web sites will offer to work out your carbon footprint.

This is of little value other than to make you feel guilty!

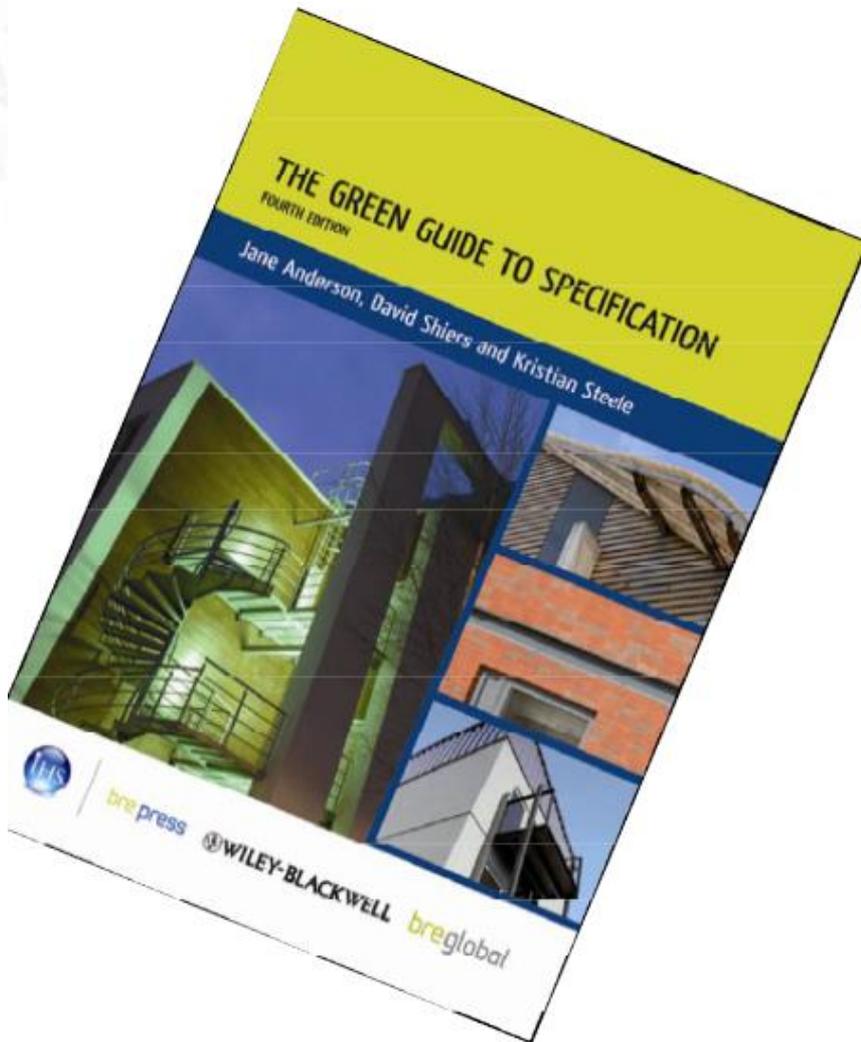
There are hundreds of green building assessment tools, many of which are greenwash

The Green Building Assessment Jungle



Various organisations such as the Building Research Establishment (BRE) offer Life cycle and building product assessment.

These are black box analyses and the assumptions used to calculate them are said by some to be not open and transparent



Life Cycle Assessments (LCA) service

Environmental impacts of construction products and processes

We provide a variety of profiling and modelling services to help companies understand how their product, materials and systems will perform and how they might improve the environmental performance of their products. These Life Cycle Assessment (LCA) methodologies support BREEAM and Code for Sustainable Homes (CSH) assessments.

This pre certification process is a flexible service that provides advice and guidance to manufacturers to understand how changing their process, products or materials may affect their environmental performance.

In June 2008, BRE published the Green Guide to Specifications following a wide consultation with UK industries. The Green Guide specifications are based on the BRE Global Environmental Profiles Scheme for Type III Environmental Product Declarations (EPD) for construction products. The methodology identifies significant environmental aspects associated with the Life Cycle Assessments (LCA) of construction products. Results from a certified Environmental Profile Scheme can be published and used by BREEAM or Code for Sustainable Homes assessors .

LCA services can be combined and tailored to the needs of each client. Services include:

- [LCA modelling/environmental profile modelling](#)
- [LCA scenarios/ scenarios modelling](#)
- [Generic LCA for construction products or building systems](#)
- [Quantitative analysis of environmental credentials](#)
- [Environmental profiles certification](#)

Contact



E: [BRE Customer Service](#)
T: +44 (0)333 321 8811
[Full contact details](#)

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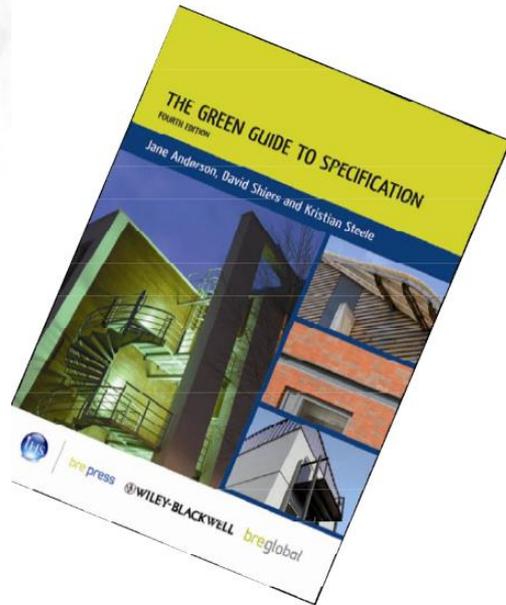
External links



- [BREEAM - BRE Environmental Assessment Method](#)
- [The Green Guide Online](#)

5.10 ASBP

Alliance for Sustainable Building products



The Alliance for Sustainable Building products, for instance has criticised the BRE Green Guide, because it appears to favour petrochemical based materials over natural products

The BRE Green Guide to Specification

Prepared by: **The Alliance for Sustainable Building Products**
Submitted to UKGBC
30th December 2011

This document is a summary of the key shortcomings of the BRE Green Guide to Specification (Green Guide) and its use as a planning instrument as well as a means of gaining credits under the Code for Sustainable Homes. The summary has been prepared by the Alliance for Sustainable Building Products (ASBP) as a means of informing the output from the Green Building Guidance Task Group set up by the UKGBC. The main purpose of providing this critique is to suggest how the UKGBC could help to accelerate sustainability advances within the construction products sector

See www.asbp.org.uk

5.11 LEED (Leadership in Energy and environmental Design)

The American LEED system is more open and accountable and has also attached more importance to materials in recent times



LEED



Certification

Credentials

CREDIT LIBRARY



Overview

Rating Systems

Credits

LEED is transforming the way we think about how buildings and communities are designed, constructed, maintained and operated across the globe.

LEED CRITERIA FOR MATERIALS



LEED

Why LEED

Rating systems

Certification

Project Tools

Credentials



happy thursday! [free t](#)

the signal news & notes

building product library

chemical and material library

The Signal: News and Notes from the Pharos Team

[<< Back to the Signal](#)

LEED 2012 Dramatically Shifts Material Selection Criteria - Comment by 9/14



Tom Lent September 9th, 2011



With the LEED 2012 draft now open for public comment (through next Wednesday Sept 14) the USGBC is proposing a whole suite of new credits that together propose to radically change how manufacturers assess, disclose and formulate the products with which we build.

As described in our Healthy Building Network newsletter [today](#), one of the most positively transformative could be the "Avoidance of Chemicals of Concern in Building Materials" which rewards disclosure of ingredients and avoidance of chemicals on a red list, proposed to be the California Prop 65 list in the draft. HBN strongly endorses the intent of the credit and welcomes the USGBC effort which we expect to reinforce the advances we have been making with the Pharos Project to encourage full disclosure.

<http://www.pharosproject.net/blog/detail/id/107/leed-2012-dramatically-shifts-material-selection-criteria>

5.12 LIVING BUILDING CHALLENGE

<https://ilbi.org/lbc>

Living Building Challenge developed in the USA to be a more holistic standard which goes beyond LEED



EMAIL LOGIN
FORGOT PASSWORD?

- LIVING BUILDING CHALLENGE
- COUNTRIES
- EDUCATION + RESOURCES
- ABOUT
- TAKE ACTION
- SEARCH
- COMMUNITY
- REGISTER A PROJECT

The Standard is...



a philosophy, advocacy platform and certification tool. For more information about the world's most rigorous design and construction standard, visit our new website, living-future.org/lbc.

Understanding what goes into materials

It is important to ask questions of manufacturers about what they put into materials. Even some “natural” and “ecological” products contain chemicals



Cellulose insulation –a case study



Cellulose insulation made from recycled paper is widely used in ecological buildings

But what does it contain?

5.13 CELLULOSE INSULATION –A CASE STUDY

Cellulose is often treated with flame retardants, boric acid and magnesium sulphate

Article:- Product is given a special shape, which determines its function to a greater degree than does its chemical composition.

Chemical Nature	Wood based cellulose fibre which is treated with inorganic flame retardants – magnesium sulphate & boric acid (<5.5%)
Dangerous Components above specific concentration limits as defined by REACH	Nil
Contributing Impurities	Nil
3. Identification of the Dangers	
Harmful effects on health	Non-toxic and non-irritant
Fire or Explosion	Organic fibre which will smoulder or flame if in contact with heat sources
4. First Aid	
inhalation	Although there is no specific risk, it is recommended that a disposable face mask must be worn when using the product in a confined space
Skin Contact	The product is non-irritant. Gloves and other forms of protective clothing are not required
Eye Contact	No specific safety equipment is required. If eye contact occurs, irrigate with water

- Magnesium Sulphate is Epsom Salts, sometimes used as an indigestion remedy
- Boric acid acts as a stomach poison and may also have some toxic effects on the nervous system of insects. In addition to being stomach poisons, most borate salts are also abrasive to insect exoskeletons. *The effectiveness of boric acid dusts against insects is reduced when dust gets wet.*
- Boric acid, sodium tetraborate decahydrate, and disodium octaborate tetrahydrate are used to inhibit the growth of fungi by preventing the production of reproductive spores.
- Boric acid and sodium tetraborate (all hydration states) can be used as herbicides, causing the desiccation of plants. Sodium metaborate works as an herbicide by interrupting the plant's photosynthetic pathway.

BORIC ACID LOW TOXICITY BUT IRRITATING TO THE EYES

- The U.S. EPA considers boric acid to be low in acute toxicity based on studies in rats with an oral LD₅₀ of 3450 mg/kg for male rats and 4080 mg/kg for female rats.
- Studies on the inhalation toxicity of boric acid and borate salts are extremely limited. Only one study was found involving rats inhaling a single 0.16 mg/L dose of boric acid. The LC₅₀ is thought to be greater than 0.16 mg/L as no deaths were reported in the study. The U.S. EPA considers boric acid to be moderately toxic via inhalation until further studies are performed. The U.S. EPA has required additional inhalation tests of boric acid to be conducted.
- Dermal exposure to borax has resulted in redness or inflammation of the skin.
- Boric acid and disodium octaborate produce mild eye irritation but sodium tetraborate (borax) is highly irritating to the eyes.

BORIC ACID LOW TOXICITY BUT IRRITATING TO THE EYES

- No studies were found on the endocrine disruption potential of boric acid, borate salts or boron in humans.
- Boric acid and borate salts are classified by the U.S. EPA as "not likely to be carcinogenic to humans" under the 2005 carcinogen assessment guidelines.
- Out of 1577 water samples collected from surface freshwater in the U.S., 97% contained boron ranging from 0.001 to 5 mg/L, with an average concentration of about 0.1 mg/L. Seawater boron concentrations tend to be much higher, averaging 4.5 mg/L. **5,42,43** Boron concentrations in drinking water have been reported as high as 3.28 mg/L.
- Boron is an essential nutrient for plant growth, but too much boron is toxic to plants.
- National Pesticide Information Center, npic@ace.orst.edu



Part of Rio Tinto

Borates in flame retarding cellulose materials

Cellulose, the basis of wood, cotton, and most other plant-derived raw materials, is in widespread industrial use. It is inherently flammable in many of its forms – paper being a typical example. The use of borates in cellulose materials imparts flame retardancy, enabling them to meet stringent safety standards and regulations.

Uses

The three major uses in cellulose materials for borate flame retardants are cellulose insulation, wood products and composites used in the construction industry, and cotton batting used as a filler in mattresses and futons. However, because most borates are water-soluble they are not suitable for clothing or materials that have to be laundered regularly.

Formulation factors

The decision to use borates depends on several factors including:

- The type of product
- The application methods
- The compatibility with other additives
- Compliance with fire test standards
- The composition/quality of final products
- The cost and local availability of borates
- Local legislative requirements

Combustion factors

Combustion of materials can occur both in a primary mode, where visible flames are present, and in a secondary mode, where flames are absent. In the latter case, the combustion is referred to as glowing or smoldering, depending on whether or not light is emitted. Borates are included in cellulose insulation, wood composites, mattresses, fabrics and paper primarily to:

- Prevent flaming combustion
- Suppress glowing and smoldering

Cellulose insulation — Cellulose insulation is produced by passing shredded waste paper through a hammer mill which converts it to a fibrous consistency with a high thermal insulation value. Cellulose insulation is flammable and particularly prone to smoldering combustion, so it requires the incorporation of flame retardants. Boric Acid has long been recognized as an effective flame retardant additive due to its capability of preventing smoldering. The combination of boric acid and Neobor yields reliable fire and corrosion test performance.

Cellulose insulation is used mainly as loose-fill for insulating lofts, attics or cavity walls, though spray-on varieties are available for application to ceilings or side walls by means of an adhesive.

Wood products — Flame retardant lumber, plywood shingles and shakes can be made by vacuum or pressure impregnation with Boric Acid or Polybor solutions.

Technical Information from Rio Tinto Chemicals

http://www.borax.com/docs/euf_pdfs/euf-borates-boratesinflameretardantcellulosematerials.pdf?sfvrsn=2



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The production of various types of resin-bonded wood composite boards such as chipboard, waferboard and fiberboard has been rapidly increasing in recent years. Boric Acid and Polybor are the principal boron compounds used as the flame retardant in wood composite board.

Mattresses/futons — Boric Acid is commonly used to flame retard cotton-batting employed as an infill material in mattress and futon manufacture. The mattress or futon thus produced will have superior smoldering resistance.

Fabrics — Fabrics requiring flame retardant treatments include some clothing, drapes or curtains, rugs, ironing board covers, fireman's clothing, fabric heat deflectors for stoves or fireplaces, and fire-smothering blankets. Solutions of Boric Acid or Polybor can be applied by direct spraying or dipping.

Paper — Solutions of Boric Acid, Polybor or Ammonium Pentaborate can be applied on paper, such as high gloss or file storage boxes by spraying or dipping to yield a fire-retarded product. The high levels of flame retardants used in paper result in a stiffening effect which can be overcome by inclusion of a softening agent such as urea in the treating solution.

About Rio Tinto Minerals

Rio Tinto Minerals is the acknowledged world leader in developing industrial minerals – building blocks for life, and for products that contribute to better living – and in developing solutions to build its customers' businesses. The company supplies nearly half the world's demand for refined borates from its principal mine in California, and offers:

Minerals that make a difference – consistent product quality secured by ISO 9000:2001 registration of its integrated quality management systems

People who make a difference – world leaders in borate chemistry, technical support and customer service

Solutions that make a difference – Strategic Inventory Placement and long-term contracts with shippers to ensure supply reliability

About 20 Mule Team® Borax products

20 Mule Team® borates are naturally occurring minerals that have an excellent reputation for safety when used as directed. Borates are essential nutrients for plants, part of a healthy diet for people, and key ingredients in fiberglass, glass, ceramics, detergents, fertilizers, wood preservatives, flame retardants and personal care products.

20 Mule Team® Borax products in flame retarding cellulose materials:

Neobor® Borax Pentahydrate

Optibor® Boric Acids

Polybor® Disodium Octaborate Tetrahydrate

Ammonium Pentaborate

Minerals that make a difference

www.riotintominerals.com

They say that the high levels of flame retardant chemicals in cellulose result in stiffening, so a urea softening agent is added!

http://www.borax.com/docs/euf_pdfs/euf-borates-boratesinflameretardantcellulosematerials.pdf?sfvrsn=2

http://www.riotinto.com/sustainabledevelopment2012/performance/performance_data/overview.html

Performance data

Rio Tinto's sustainable development data are reported for calendar years and, unless otherwise stated, represent 100 per cent of the parameter at each managed operation, even though Rio Tinto may have only partial ownership. You can also see detailed performance data of selected parameters broken down by product and location. Please see the [glossary](#) for further information on the terms used.

Environment

	2012	2011	2010	2009	2008
Significant environmental incidents	7	11	18	12	17
Fines and prosecutions – environment (US\$ '000)	47.1	236.4	540.3	80.1	15.5

Rio Tinto's environmental fines!



