

Corrugated Paper Packaging Design

瓦楞纸包装设计

(西) 热尔曼·乌卡尔 / 编 张晨 / 译



辽宁科学技术出版社

014044233

TB484.1
06

Corrugated Paper Packaging Design

瓦楞纸包装设计

(西) 热尔曼·乌卡尔 编 张晨 译



辽宁科学技术出版社



北航

C1732212

TB 484.1

06

图书在版编目 (CIP) 数据

瓦楞纸包装设计/ (西) 乌卡尔 编; 张晨 译. —

沈阳: 辽宁科学技术出版社, 2014. 4

ISBN 978-7-5381-8440-2

I. ①瓦… II. ①乌… ②张… III. ①瓦楞纸板一包

装设计 IV. ①TB484. 1

中国版本图书馆 CIP 数据核字 (2013) 第 319216 号



北航

C1732212

出版发行: 辽宁科学技术出版社

(地址: 沈阳市和平区十一纬路29号 邮编: 110003)

印刷者: 利丰雅高印刷(深圳)有限公司

经销者: 各地新华书店

幅面尺寸: 184mm×230mm

印 张: 16

字 数: 50千字

印 数: 1~2000

出版时间: 2014年 4 月第 1 版

印刷时间: 2014年 4 月第 1 次印刷

责任编辑: 陈慈良 王丽颖 关木子

封面设计: 关木子

版式设计: 关木子

责任校对: 周 文

书 号: ISBN 978-7-5381-8440-2

定 价: 78.00元

联系电话: 024-23284360

邮购热线: 024-23284502

E-mail: lnkjc@126.com

http://www.lnkj.com.cn

本书网址: www.lnkj.cn/uri.sh/8440

Contents

目录

004 Preface

前言

010 Introduction

什么是瓦楞纸

011 - Common Forms of Corrugated Cardboard

瓦楞纸板的定义和常见类型

014 - Advantages of Corrugated Packaging

瓦楞纸包装的优点

015 Classification and Characteristics of Corrugated Cartons

瓦楞纸箱的分类及适用情况

015 - Slotted Carton

开槽型纸箱

016 - Full/Partial Telescope Carton

套合型纸箱

017 - Half Slotted Carton

锁底式开槽平摇盖纸箱

018 - Full Overlap Carton

固定类瓦楞纸箱

019 - Micro-corrugated Carton

微型瓦楞纸盒

020 Guidelines in Corrugated Packaging Design

瓦楞纸包装设计需要满足的条件

021 Design Process of Corrugated Packaging

瓦楞纸包装设计过程

021 - Preparation

前期准备

022 - Choosing Corrugated Material and Carton Style

确定瓦楞结构和箱型

023 - Size

确定瓦楞纸箱的尺寸

024 - Layout

瓦楞纸包装的版面布局

025 Major Considerations in Corrugated Packaging Design

瓦楞纸包装设计要点

025 - Package Design for Fragile Items

针对易碎物品的包装设计

- 026 - Design for Aesthetic Purposes
极具艺术性的瓦楞纸包装设计
- 028 - Colours
色彩丰富的瓦楞纸包装设计
- 030 - Application of Technology in Corrugated Packaging Design
采用多种工艺的瓦楞纸包装设计
- 032 - Transport and Carriage
便于携带的瓦楞纸包装设计
- 034 - Design for Special Products
针对特殊物品的瓦楞纸包装设计
- 036 - Recycling and Reuse
可循环利用的瓦楞纸包装设计

038 Printing on Corrugated Cardboard

瓦楞纸包装的印刷工艺

- 038 - Flexography
柔性版印刷工艺
- 039 - Offset Lithography
胶印工艺
- 040 - Serigraphy
丝网印刷工艺
- 041 - Rotogravure
凹印工艺

042 Cutting and Creasing of Corrugated Cardboard

瓦楞纸包装的切割工艺

044 Development Trend of Corrugated Packaging

瓦楞纸包装的未来发展趋势

- 044 - Smaller Products and Smaller Batches
产品小批量化
- 046 - Resource Conservation
资源节约化
- 048 - Multi-functions
功能多样化
- 049 - Wider Application
应用广泛化

050 Cases

瓦楞纸包装设计案例

254 Index

索引

014044233

TB484.1
06

Corrugated Paper Packaging Design

瓦楞纸包装设计

(西) 热尔曼·乌卡尔 编 张晨 译



TB 484.1

06

辽宁科学技术出版社



北航

C1732212

Contents

目录

004 Preface

前言

010 Introduction

什么是瓦楞纸

011 - Common Forms of Corrugated Cardboard

瓦楞纸板的定义和常见类型

014 - Advantages of Corrugated Packaging

瓦楞纸包装的优点

015 Classification and Characteristics of Corrugated Cartons

瓦楞纸箱的分类及适用情况

015 - Slotted Carton

开槽型纸箱

016 - Full/Partial Telescope Carton

套合型纸箱

017 - Half Slotted Carton

锁底式开槽平摇盖纸箱

018 - Full Overlap Carton

固定类瓦楞纸箱

019 - Micro-corrugated Carton

微型瓦楞纸盒

020 Guidelines in Corrugated Packaging Design

瓦楞纸包装设计需要满足的条件

021 Design Process of Corrugated Packaging

瓦楞纸包装设计过程

021 - Preparation

前期准备

022 - Choosing Corrugated Material and Carton Style

确定瓦楞结构和箱型

023 - Size

确定瓦楞纸箱的尺寸

024 - Layout

瓦楞纸包装的版面布局

025 Major Considerations in Corrugated Packaging Design

瓦楞纸包装设计要点

025 - Package Design for Fragile Items

针对易碎物品的包装设计

026 - Design for Aesthetic Purposes

极具艺术性的瓦楞纸包装设计

028 - Colours

色彩丰富的瓦楞纸包装设计

030 - Application of Technology in Corrugated Packaging Design

采用多种工艺的瓦楞纸包装设计

032 - Transport and Carriage

便于携带的瓦楞纸包装设计

034 - Design for Special Products

针对特殊物品的瓦楞纸包装设计

036 - Recycling and Reuse

可循环利用的瓦楞纸包装设计

038 Printing on Corrugated Cardboard

瓦楞纸包装的印刷工艺

038 - Flexography

柔性版印刷工艺

039 - Offset Lithography

胶印工艺

040 - Serigraphy

丝网印刷工艺

041 - Rotogravure

凹印工艺

042 Cutting and Creasing of Corrugated Cardboard

瓦楞纸包装的切割工艺

044 Development Trend of Corrugated Packaging

瓦楞纸包装的未来发展趋势

044 - Smaller Products and Smaller Batches

产品小批量化

046 - Resource Conservation

资源节约化

048 - Multi-functions

功能多样化

049 - Wider Application

应用广泛化

050 Cases

瓦楞纸包装设计案例

254 Index

索引

Preface |

We belong to a generation that witnessed the decline of plastic and the death of modernity at the end of the 90s, and is currently developing in the discovery of new forms of communication, the emergence of emotional advertising and the shift of society as a whole, and therefore businesses, towards a paradigm of sustainability through recycling.

This places us in a context of change, but especially where design is concerned, when have things been otherwise?

The re-industrialization of creativity.

As I see it, albeit in a different way and with caveats that I will deal with later, the market is currently undergoing a second industrial revolution, in which corrugated cardboard plays a major role. For aesthetic evidence, we only need to pick up a catalogue of design furniture, which these days finds its inspiration in rusty iron factories; or watch one of the movies featuring that incredibly aesthetic, futuristic and romantic new trend known as steampunk, with its dreams of a return to the age of steam and industry for the sake of a more humane society, free of the excesses of dehumanized technology we see today.

Awareness, ecology, sustainability, recycling, creativity... are all now synonymous with one thing: cardboard. Art directors search excitedly for experts in paper and cardboard craft with the ability to use them in producing accurate representations of reality. Nothing less than a piece of engineering in which, it would seem, the emphasis is now on detail and taking the time to create small works of art, a slight vestige of the art & craft movement, now at the service of multinationalisation and globalisation, where the leading brands reproduce their logos in cardboard... just as

我们算得上是见证 90 年代塑料产品衰退，现代化消亡的一代人。而在眼下的大环境里，人们对新型沟通方式存在着探索，情感式广告逐渐流行，社会转型正在悄然发生。我们这代人要寻求发展，就需要在商业模式中通过回收利用建立一个可持续发展的模式。

这一目标将我们处于变化的环境。但凡是与设计有关的事物，何尝又不是一直变化着的呢？

创造力的再工业化。

在我看来，市场正在经历第二次工业革命。这一过程中瓦楞纸板起到了重要的作用。从美学的角度出发，我们只需拿起一本家具设计的目录，现在这种目录从锈迹斑驳的钢厂寻找灵感；或者观看一部美得难以置信，充满未来感和浪漫气息的被称为“蒸汽朋克”的电影。

意识、生态、可持续性、循环、创意……这些都指向同一个名词——纸板。艺术总监们兴致高涨地寻找纸张和纸板工艺专家，希望他们用这些材料创造出精确的现实作品。纸板产品的设计无异于在一张板上进行的工程，工作的重点除了细节还需要在创作这些小型艺术品上投入时间。正如威廉·莫里斯先生一直希望的那样，领先的品牌在纸板制品上复制自己的标志，如同美术

前言 |

Mr. William Morris would have always wished.

It is abundantly obvious, and here this book can serve as an example, that corrugated cardboard is right now on the crest of the wave in design worldwide. Here, I think it is important to take a stand for design, in whatever form, as a universal yardstick, mirror, and accurate means of analysis of current aesthetic and intellectual trends.

Until now, corrugated cardboard, with its brown colour and simplicity of form, has systematically appeared before us whenever we have approached the world of industry, where factories, great and small, needed a practical packaging solution for their products. Design, colour, and creativity gave way to practicality and economy. Thus, the production of cardboard and its transformation into boxes became standardised to meet with requirements, eventually giving way to easily affordable standard sizes and formats that did not require complex dies. It has to be said that this economic and logistic advantage did not, at the time, in my opinion, receive the acknowledgement it deserved in ecological terms, whereas today, thanks to society's change of mentality, this is virtually its greatest value.

It could be said, therefore, that its use and function within this small industrial and practical ecosystem, were perceived as commonplace by us members of society.

This, for me, marks a major turning point. In the words of the philosopher Trías 'The commonplace, properly understood, can, and has demonstrated as much, become art, thought, beauty...'. Its value, over and above its practicality, was there and only needed to be brought to light. If analysed, this thought could reveal many keys. To quote the second epistle to the Corinthians 2:4:18:

工艺运动一般，这一应用为多重国有化和全球化服务。

显然，瓦楞纸板及产品正处在全球设计浪潮的顶峰，这本书可以看成是一种代表和记录的形式。我认为，无论以何种形式，作为普遍的标准、榜样和对当下流行审美和智趣的精确分析手段，设计者应在这个浪潮中有明确的立场。

目前看来，瓦楞纸板以其棕色简约的形式系统地出现在工业领域，因为大大小小的工厂都需要为它们的产品包装提供解决方案。设计、色彩、创意为实用性和经济性所代替。为了达到标准，纸板的生产和纸盒的加工过程被标准化，最终采用的是价格经济实惠且不需要复杂切割工艺的标准规格。不得不说的是，在我看来那时瓦楞纸板在价格和物流方面的优势在当时并未得到应有的认可。而如今由于整个社会的心态发生了变化，瓦楞纸制品的环保特性成为了它最大的优势。

对我来说，这是一个重要的转折。正如哲学家德里亚斯认为的：“司空见惯之物，经过恰当的解读，能够，也已经展现了许许多多的，艺术、思想、美……”这些物品的价值远远高于其实用性，而且它已经成熟，只需适当地加以利用。稍加分析，这个想法便可以揭示很多关键问题。这里我要引用哥林多前书第

...while we look not at the things which are seen, but at the things which are not seen: for the things which are seen are temporal; but the things which are not seen are eternal...

The value of what is hidden, but nevertheless exists, is eternal. Of this we, communication professionals, are well aware. When you are asked to create an advertising or branding campaign, the first thing you have to highlight and attempt to identify is that value in a label or advertising jingle which, despite being obvious, is nevertheless hidden from the consumer at first sight.

Nowadays, cardboard is everywhere, it has quite naturally worked its way into our lives, as if it has always been there, like an ever-present spirit that has only now made itself visible.

In the world of furniture and interior design, for example, cardboard is becoming established as a synonym of simplicity and practicality, still maintaining its intrinsic virtues. At the same time, however, it is also a synonym of elegance, trendiness, space, design... Major department stores use it in their window displays to represent animals and other elements of nature. These silhouettes and sometimes more complex 3D models convey the essence of the everyday objects they represent, transporting us into a world and a concept in which what matters is the origin, the return to a slower pace, to what is universal, to nature, and in contrast, the ephemeral nature of mankind.

We are also used to seeing how a couple of pieces of cardboard placed one on top of the other can become educational materials, tables and chairs for children, a celebration of the pastime or creativity in play, or the basis for a flight of the imagination. As Matisse put it, art should be 'rather like a good armchair which provides relaxation from physical fatigue', which is something that all of today's designers must keep in mind, or at least they

二封书信 (2:4:18) 中的段落：

..... 当我们所顾念的不是可见之物，而是那不可见的：因为可见的事物是暂时的，不可见之物才是永恒

这种虽然暂时隐藏但却客观存在的价值，是永恒的。作为信息与交流领域的专业人士，我们对此熟稔于心。做广告或品牌推广的过程中，首先要明确并强调的就是一个品牌或广告标语的价值。因为这些内容即便显而易见，也并非是消费者在首次接触品牌或广告时能注意到的。

如今，纸板在我们的生活中随处可见。它以极为自然的方式进入我们的生活，仿佛是一种永存的精神，一直默默存在，直到最近才吸引了人们的关注。

举例来说，在家具和室内设计的世界里，纸板在保留原本优点的同时正在成为简洁和实用的代名词。然而与此同时，它仍代表着优雅、时尚、空间、设计 在大型百货商场的橱窗展示中，纸板被用来表现动物和其他自然元素。这些纸板制成的剪影或是更为复杂的三维模型传递了所代表的日常物品的精髓，并带领人们进入一个世界或认识一个观念。在这个层面上，事物回归淳朴的本质，回到宇宙、自然以及相比之下人类短暂的存在。

should if they want their client firms to keep abreast of the times and make communication.

I have always thought that any design (and, all the more, advertising) which fails to communicate is like talent with no underlying effort, and in the case of cardboard, its value and ability to communicate have been with us since its origins. Furthermore, let us not kid ourselves, nowadays, cardboard sells.

In packaging, the concept changes little. In the information-saturated world of today, it is becoming increasingly difficult to find room on packages for all the information the customer requires and every millimetre of permitted printing space counts. In this respect, corrugated cardboard has already said a great deal. Its innate characteristics, its resistance to being printed in bright colours and its roughness for achieving fine detail have all contributed to the simplicity of design it tends to feature.

Unlike other materials, cardboard has greatly simplified the message in the food sector, where a surfeit of colours and lacquers used to be the norm and type of product took centre stage. On the whole, large stains and print are giving way to cardboard, which, as I am trying to explain, speaks its own language to the consumer. Right now, structure is taking over from appearance; the material is upstaging the image, while keeping its own identity intact.

Through concern for sustainability and the protection of nature this ancestral spirit has become visible in our civic social and ethical objectives. An ecological reindustrialization is underway. And I use the term reindustrialization because even today, due to the industrial heritage of cardboard, the complexity of producing it in small quantities and the unwillingness of the

我们也经常可以看到，一块块纸板堆叠起来可以充当教具，儿童的桌椅，消遣时发挥创意的道具，或者想象力博弈的基础。正如马蒂斯所认为的，艺术应该像“一个舒适的扶手椅一样能够放松身体，解除疲劳。”这一观点是当今所有设计师都要时刻铭记的，至少对于想要使客户与时俱进的设计师来说这是十分重要的。

一直以来，我都认为所有失败的设计（或者广告）就像没有付出最基本努力的天才。就纸板来说，它传达信息的价值和功能从出现之时起就一直存在。而且，事实就是如此：用纸板，有销路。

产品包装的概念始终变化不大。在信息饱和的今天，把客户需要的所有信息一个不落地印在包装上越来越难，可用的印刷空间珍贵到以毫米计算。在这方面，瓦楞纸板有许多优势。它固有的特点，对鲜艳色彩的耐印程度以及可达到的印刷精细程度都有利于瓦楞纸产品中简洁设计的实现。

不同于其他材料，纸板极大地简化了食品行业中产品色彩颜料使用过量的主流现象。从整体上看，大面积的渍染和印刷正在被瓦楞纸板所取代，因为和我一直想要说明的一样，纸板产品能够直接与消费者对话。当下，结构的重要性逐渐超过外形。纸板材料风头正劲，逐渐超过形象的影响，却仍能够保

industrial giants to cater for the creative world, small-scale supplies of corrugated packaging are still hard to obtain and we are left at the mercy of the major die-cutting firms, with all the expense this entails.

Nevertheless, this has certainly not stopped the big companies from making the most of all the advantages it has to offer. Right now, its sustainability offers huge potential that we in the world of advertising know how to put to use, and sometimes, it has to be said, even overuse.

I would even go so far as to describe it as universal; but in a positive sense, because the term can have its negative connotations. The homeless use cardboard to keep out the cold when sleeping rough on the streets; beggars present their pitiful requests printed on pieces of milk carton packages. At the same time, however, behind this revolution of industrial creativity, marketing departments want to use it to dress up their abandonment of plastic and shiny stucco; while perfume companies raise the price of their gift sets after packaging them in corrugated cardboard to fabricate the illusion of an adventure like those of yesteryear.

For an example, take some of the latest international campaigns that have passed through our studio, where the overriding objective is to create a universal message that works just as well in the Arab world as in South America. In two cases out of three, sooner or later in the meeting, the client will let slip the words recycled, cardboard or ecological.

And there's no denying the fact: the values contained in the material that forms the topic of this book are there for all cultures. Nor can it be denied that the endless categories and corporate social responsibility logos that appear on packages can drive consumers crazy, so they can be forgiven if they tend

持其独特之处。

对可持续发展和环境保护的关注使这种精神在公民、社会和道德目标中占越来越重要的比重。一场生态再工业化正在发生。我使用“再工业化”这个词是因为即便在今天，由于纸板工业的生产传统，小批量生产的复杂度以及行业巨头参与创意的消极意愿，小规模瓦楞纸包装生产始终难以进行。我们只能听凭主流模具切割企业的摆布，为所有的多余费用买单。

不过这并不妨碍这些大公司利用他们提供的一切资源。眼下它的可持续性提供了巨大的潜力，这种潜力通常在我们广告界会得到充分的利用，有时可以说是过度使用。

我甚至可以把这称为是普遍的现象，不过是褒义的，因为这个词本身可以带有负面的含义。无家可归的人可以在露宿街头时用纸板抵御寒冷，乞丐可以用牛奶包装盒写出他们无助的请求。然而，在这场创意革命背后，营销部门企图用纸板包装制品让塑料产品和闪亮的灰泥改头换面；香水公司将礼盒用瓦楞制品重新包装后提高售价，打造出崭新的产品形象，而内容还是几年前的那个内容。

举例来说，我们工作室近期参与的国际活动中，要达成的首要目标就是设计出无论在阿拉伯国家还是南美洲都适用的广告词。总有一天，客户们十有八九

to generalize, which they often do, and confuse corrugated cardboard packaging with the idea of own brand, inferior quality, or lack of resources.

Here, and may this book serve as an example, the responsibility lies with us designers and our ability to make proper use of a material whose honesty, beauty, strength of identity and wealth of possibilities are as great as our individual creativity is able to reveal.

Germán Úcar
estudioVACA's founding partner

会主动提出与可回收利用、纸板和生态有关的要求。

不可否认的是，构成这本书主题的瓦楞纸材料适用于所有文化。更重要的是，包装上冗长的类别信息和体现企业社会责任感的标识让顾客反感，因此也可以理解顾客常常一概而论，把瓦楞纸制品和自有品牌、质量低劣、资源缺乏的概念混淆。

在此以这本书为证，让一种兼具实用、美观、特色和无限可能的材料得到充分使用，不仅是设计师肩上的责任，也是对设计师能力的一个考验。

热尔曼·乌卡尔
estudioVACA 工作室合伙人

Introduction |

什么是瓦楞纸

As technology progresses and people's awareness of environmental protection increases, corrugated paper has witnessed a leap in its application in packaging. It is a green packing material of light weight, high strength; it is easy to mould, fold, store and transport; also easy for recycling and reuse; it features good printability and low cost, etc. It can be found in every sector in daily life, covering the consumer package and transport package of food, beverage, household products, electronic devices, industrial equipments, and stationary.

Corrugated fiberboard is a flat packaging material of fluted corrugated sheet and linerboards, often referred to as 'corrugated cardboard'. Regular corrugated cardboard, honeycomb cardboard and micro-corrugated cardboard are three most common types of corrugated material.

随着时代的进步和人们环保意识的增强，瓦楞纸越来越广泛被应用于商品包装。它是一种薄壁结构的绿色包装材料，具有质量轻、强度高、易于加工成型、易折叠、便于储存运输、易于回收循环利用、印刷适性好、成本低廉等特性，它在我们的生活中随处可见，例如食品、饮料、生活用品、电子产品、工业器件、文化用品等产品的销售包装和运输包装。

瓦楞纸是由挂面纸和通过瓦楞棍加工黏合而成的板状物。瓦楞纸做成的瓦楞纸板有三种类型，即普通瓦楞纸板、蜂窝纸板和微型瓦楞纸板。

Common Forms of Corrugated Cardboard

瓦楞纸板的定义和常见类型

Corrugated cardboard is also called corrugating cardboard. The ridges and grooves are like a row of arched doors, parallel to and supporting each other to form a triangular structure which has good mechanical strength. Its surface can bear certain degree of pressure and has good elasticity and buffering performance; it can be moulded into liner or container of all shapes and sizes, more convenient to produce than plastic cushioning materials; it is little affected by temperature, has good shading performance and does not degenerate in sunlight; it is also little affected by humidity (See figure 1).

瓦楞纸板又称波纹纸板。瓦楞纸板的瓦楞波纹好像一个个连接的拱形门，相互并列成一排，相互支撑，形成三角结构体，具有较好的机械强度，从平面上也能承受一定的压力，并富于弹性，缓冲作用很好；它可以根据需要制作成各种形状大小的衬垫或者容器，比塑料缓冲材料要更加简便、快捷；受温度影响较小，遮光性好，受光照不变质，一般受湿度影响也较小（如图1）。

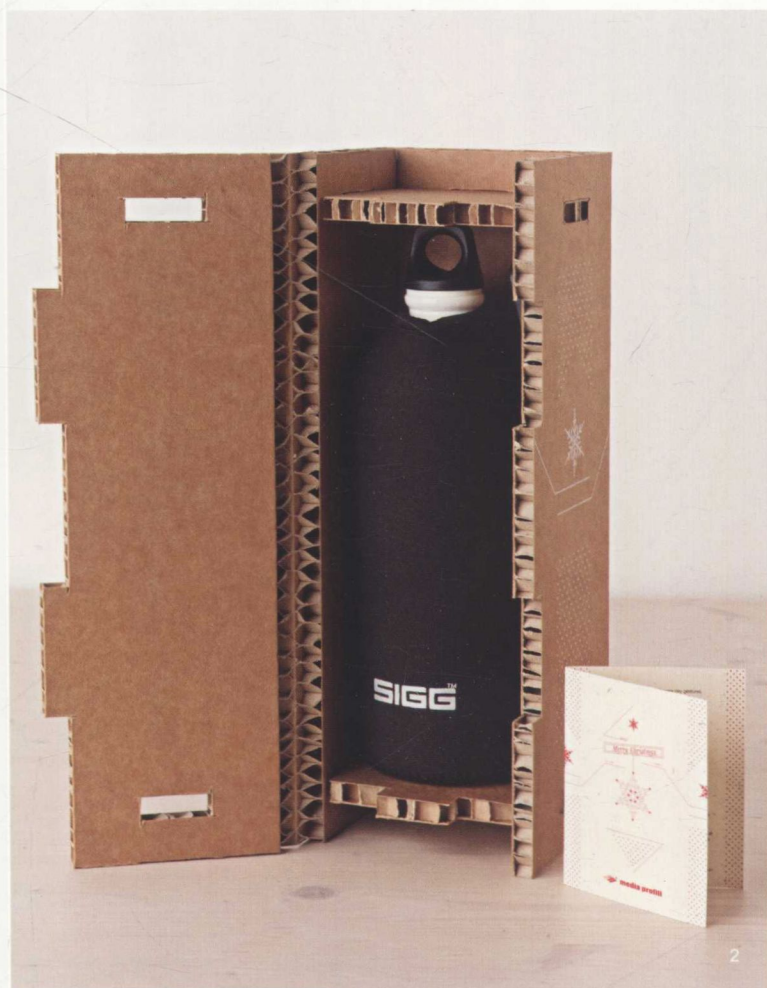


Corrugated cardboard package designed by Elyse Levass

Elyse Levass 设计的瓦楞纸板包装

Honeycomb cardboard is a new material, featuring light weight, high degree of utilisation and lower total cost; high strength, smooth surface, less likeliness of deformation; easy for decoration, large variety of products, wide application; biodegradable, recyclable, conform to environmental requirements; shock absorbing, sound absorbing, heat insulating, durable. Honeycomb cardboard can be made into trays, large boxes and cushioning. It is a green packaging material to be used instead of bamboo/wood trays, bamboo/wood boxes, heavy corrupted boxes and EPS foam plastic cushioning (See figure 2).

蜂窝纸板是新型材料，特点是重量轻，使用材料少，综合成本低；强度高，表面平整，不易变形；外表易装饰，产品种类多，应用广；可降解、回收，符合环保要求；减震、吸音、隔热、经久耐用。蜂窝纸板可以制作托盘、大型纸箱和内衬缓冲物，是替代竹木托盘、竹木箱、重型瓦楞纸箱和 EPS 发泡塑料衬垫的绿色包装材料（如图 2）。



Honeycomb cardboard package by O Zone design

O Zone design 设计的蜂窝纸板包装