

“十二五”普通高等教育本科规划教材

● 包装工程本科专业系列教材

Fundamentals of
Packaging Engineering

包装工程概论

(双语教学用)

第二版

陈满儒 主 编

孙德强 副主编



化学工业出版社

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· 北 京 ·

本书是在第一版同名教材的基础上修订而成的。全书由包装概述、包装材料和容器、包装动力学与运输包装、包装工艺与设备和包装研发共 5 个单元 20 课组成。修订后的教材内容补充了国外包装工程学科专业的最新资料,使之更能体现包装工程的专业特色。同时,为体现双语教学的内涵和特点,方便组织教学和自主学习,教材修订中也注重了内容的易于阅读和理解性。一是在每篇课文之后列出了专业词汇、疑难句注释和复习题;二是全部课文原文配有中文翻译和教学用演示文稿 ppt;三是在全书最后附了词汇总表及索引。本教材既适合包装工程本科专业开展双语教学,也可作为从事包装及相关专业的技术人员提高业务及其专业英语应用水平的学习参考书。

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本书编写人员名单

主 编：陈满儒

副 主 编：孙德强

编写人员（按姓名笔画排序）：

邢月卿 巩桂芬 孙德强 李国志 陈满儒
苟进胜 赵郁聪

二版前言

Preface to the Second Edition

自 2005 年 1 月本书第一版首印以来,有许多读者和大学选其作为包装工程本科专业双语教学(或专业英语)教材和提高专业英语应用水平的自学读物,为拓展其国际视野发挥了积极作用。同时,使用原教材的专业人员和读者也提出了一些好的意见与建议。意见集中在,一些课文的阅读理解偏难,篇幅偏长,学起来难度较大;专业词汇及难句注释少,教师不便于备课,读者不便于自学。建议精选精编包装组分之经典内容;丰富包装学科专业的特色内容;编写符合学生和读者基本特征,利于面向国际化包装专业人才培养的双语教学改革的辅助配套教材。为此,该教材第二版的修订上着重在以下几个方面:

一是在教材内容上,更新了包装的经典内容。如包装的历史沿革、包装功能、包装材料和容器等。替换增添了 6 节课,如测定缓冲曲线的应力-能量法、实用包装技术、包装研究与开发等,使得包装颇具特色的专业知识得到加强,也使得包装工程专业的人才培养更符合国家规范和行业标准。同时,教材内容也适宜于有效开展包装专业双语教学及读者自学。

二是在编写结构上,注意教材的易于理解性。首先,每篇课文增加了专业生词与词组(New Words and Expressions)中英文对照表,并在书后增加了词汇总表和词汇索引(Glossary);其次,就跨文化背景、惯用型表达和语法等对疑难句作了注释(Notes);第三,增加了课后习题;第四,为便于教学和自学,新增了所有课文的中文翻译和 ppt 文稿,供读者从出版社索取使用。

三是教材修订符合了专业课双语教育教学改革的要求。本教材的修订较好地贯彻了双语课程内涵式教学的 4Cs 核心要素:学科内容(Content)、交流表达(Communication)、认知思维(Cognition)和文化习俗(Culture)。保证了双语教材与只偏重外语语言再学习的专业英语书籍的不同,换句话说,双语教材更注重专业性与知识性,外语语言只充当专业知识的学习工具。

本书由 5 大单元 20 课组成。第 1 和第 11 课由陈满儒编写;第 2、第 14 和第 15 课由李国志编写;第 3~5 和第 9 课由赵郁聪编写;第 6~8 课由邢月卿编写;第 10、第 18 和第 19 课由孙德强编写;第 12 和第 20 课由北京林业大学苟进胜编写;第 13、第 16 和第 17 课由巩桂芬编写。编写人员中除署名单位外,其他人员均属陕西科技大学。

本书既适合包装工程本科专业开展双语教学，也可作为从事包装及相关专业的技术人员提高业务及其专业英语应用水平的学习参考书。

在修订本书的过程中，再次得到了北美包装教育资深教授 Walter Soroka 博士的大力支持，也得到了美国威斯康星-斯陶特大学教授 Louis Moegenburg 博士等的帮助，在此一并表示谢意。

由于编者水平所限，书中疏漏之处在所难免，敬请读者批评指正。

主编

2014 年 8 月于陕西科技大学

一版前言

Preface to the First Edition

20 世纪 80 年代初期, 依照发达国家包装工程高等教育的发展模式, 我国的一些大学相继创建了包装工程本科专业。20 多年来, 我国包装工程专业的办学规模、层次及其办学水平都有了很大的提高。进入 21 世纪以来, 随着我国包装科学技术的迅速发展, 随着我国从包装大国向包装强国迈进政策的实施, 迫切要求从事包装的专业技术人员努力提高自己的能力与素质, 更有效地学习和应用国外先进的包装技术。

国内各大学的包装工程专业自建立以来都开设有专业英语类课程, 这对巩固学生的基础英语水平, 拓宽知识面, 提高对国外技术资料的阅读应用能力起到很好的促进作用。为了贯彻教育部关于“本科教育要创造条件使用英语等外语进行公共课和专业课教学……”的文件精神, 一些学校在包装工程专业教学中开始用双语教学替代原有的专业英语教学。这种不是就英语学英语, 而是通过英语来学习专业知识, 将专业英语学习与专业知识学习融合一起的方法有利于学生第一时间用英语阅读和吸收英语原版专业科技信息打下基础, 有利于增强他们用英语进行专业交流的实际能力。然而, 国内尚缺少能全面反映包装工程学科特点、内容适当、系统性强、可供学生和技术人员选用的包装工程双语教材或读本, 影响了本专业双语教学的水平提高及其规范化。

包装工程是一门综合性的交叉学科, 内容非常丰富, 涉及面广。本书的选材力求在有限的篇幅内尽可能涵盖包装工程的学科领域。

本书由五个方面的内容组成, 即: 透视包装; 包装材料和容器; 包装印刷与装潢; 包装动力学和运输包装; 包装机械。

为方便学习理解, 书后列出了专业词汇与术语的中英文对照表。本书既可作为包装工程专业本科生技术基础课双语教学或专业英语教学用书, 也可作为从事包装工程及相关专业的技术人员提高业务及其专业英语应用水平的学习参考书。

在编写该书的过程中, 得到了加拿大莫哈克学院包装设计专业 Walter Soroka 教授、美国威斯康星-斯陶特大学包装专业 Robert Berkemer 教授、美国密歇根州立大学包装学院 Bruce Harte 教授和美国罗切斯特理工学院包装科学系 Daniel Goodwin 教授等的大力支持, 在此一并致谢。

由于编者的水平所限, 本书疏漏之处在所难免, 敬请读者批评指正。

编者

2004 年 10 月于陕西科技大学

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UNIT 1

An Overview Of Packaging

Lesson 1 A Historical Perspective On Packaging

1 What Is Packaging?

□ Packaging is best described as a coordinated system of preparing goods for transport, distribution, storage, retailing, and use of the goods. It is a complex, dynamic, scientific, artistic, and controversial business function, which in its most fundamental form contains, protects/preserves, transports, and informs/sells. Packaging is a service function that cannot exist by itself; it needs a product. If there is no product, there is no need for a package.

▢ Packaging functions range from those that are technical in nature to those that are marketing oriented (Figure 1.1). Technical packaging professionals need science and engineering skills, while marketing professionals need artistic and motivational understanding. Packaging managers need a basic understanding of both marketing and technical needs, mixed with good business sense. This unusual skill spread makes the packaging industry a unique career choice.

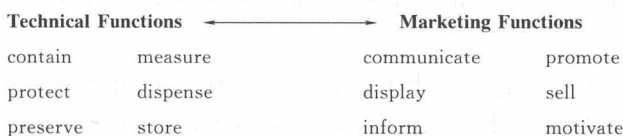


Figure 1.1 Packaging encompasses functions ranging from the purely technical to those that are marketing in nature

▣ Packaging is not a recent phenomenon. It is an activity closely associated with the evolution of society and, as such, can be traced back to human beginnings. The nature, degree, and amount of packaging at any stage of a society's growth reflect the needs, cultural patterns, material availability and technology of that society. A study of packaging's changing roles and forms over the centuries is, in a very real sense, a study of the growth of civilization.

▤ From an individual perspective, change often seems to be that which has already happened, but society is changing daily—meeting new challenges, integrating new knowledge, accommodating new needs and rejecting systems proven to be unacceptable. These changes are inevitably reflected in the way we package, deliver and consume goods.