教育部、财政部第六批高等学校特色专业建设点项目 全国普通高等教育物流管理[特殊品(化工)物流方向]特色专业系列教材

化工物流专业英语

Chemical Logistics English

景 平/编著

」上海财经大学出版社

教育部、财政部第六批高等学校特色专业建设点项目 全国普通高等教育物流管理[特殊品(化工)物流方向]特色专业系列

化工物流专业英语

景 平 编著

HUAGONG WULIU ZHUANYE KINGYU 化工物流专业英语

景 子 彩歌

■ 上海财经大学出版社

图书在版编目 (CIP) 数据

化工物流专业英语 / 景平编著 .- 上海:上海财经大学出版社,2015.1 全国普通高等教育物流管理 [特殊品(化工)物流方向]特色专业系列教材 ISBN 978-7-5642-2029-7/F·2029

I.①化··· Ⅱ.①景··· Ⅲ.①化学工业—物流—英语—高等学校—教材 Ⅳ.① H31

中国版本图书馆 CIP 数据核字 (2014) 第 252499 号

□ 责任编辑 顾晨溪

□ 封面设计 张克瑶

HUAGONG WULIU ZHUANYE YINGYU 化工物流专业英语

景 平 编著

上海财经大学出版社出版发行 (上海市武东路 321 号乙 邮编 200434)

 网
 址: http://www.sufep.com

 电子邮箱: webmaster @ sufep.com

 全国新华书店经销

 上海华教印务有限公司印刷装订

 2015 年 1 月第 1 版

 2015 年 1 月第 1 次印刷

787mm×960mm 1/16 16.5 印张(插页: 1) 351 千字 定价: 37.00 元

教育部、财政部第六批高等学校特色专业建设点项目 全国普通高等教育物流管理[特殊品(化工)物流方向]特色专业





编委会主任:周颐王笃鹏

编委会副主任: 李荷华 周艳军 郝 皓

编 委: (按姓氏笔画排序)

王 斌 邬星根 刘小卉 刘振超

杨 涛 杨敬辉 陈志刚 林慧丹

孟琪姚薇谌伟景平

蔡卫卫



本套教材是为"特殊品(化工)物流"专业方向教学所编著,整体规划的这套教材系列涵盖化工物流的各主要方面,涉及管理、工程、法律、语言等学科领域,以多学科交融的知识体系为培养复合型应用人才服务。

2008年,上海第二工业大学"物流管理"专业分设"特殊品(化工)物流"专业方向,2010年,本校"物流管理"专业被国家教育部、财政部批准为第六批高等学校特色专业建设点,"特殊品(化工)物流"专业方向成为重点建设项目。建设任务包括专业师资队伍、专业实验室("化工物流工程实验中心")、实践教学基地(中外运化工国际物流有限公司),以及专业教材系列。两年多的建设积累了可喜的成果,本套系列教材第一批三种先行付梓就是一个标志。

"特殊品(化工)物流"专业方向的开设,以及相应的本套教材规划、编著,是紧密跟随我国经济社会发展形势,尤其贴近上海与长江三角洲地区近年来调整经济结构、转变发展方式的实际,旨在应接当前关键而紧迫的转型期社会需要,服务眼下作用与地位日益凸现的生产性服务企业。世界发达国家的重化工业在其百余年的工业化过程中已经成熟,我国的工业化进程还在继续,而调整结构、转型发展又势在必行,因此,如何使第二产业的重化工业与第三产业的服务业形成共生共荣的联系,更深入具体而言,如何让生产性服务业密切地配套于重化工业,使之成为有机的组成部分,以此推动第二产业与第三产业的彼此融合、协同发展,这不仅是经济领域的使命,同时也是教育界的责任和课题。

社会紧缺相关的人力资源,企业急需新兴的生产性服务业领域的专门人才。我国高校一贯的学科分割、专业狭窄的教育方式形成人才培养的明显缺陷——就化工与物流管理来看,分属于工学与管理学两个门类,化工学生不学、不懂物流;物流管理学生不学、不懂化学和化工;更不用说这两个专业的学生都不具备有关职业健康、过程安全、环境保护等法律、法规、公约、标准方面的完备知识,相关人才紧缺的矛盾就越发突出。开设"特殊品(化工)物流"专业方向就是改变上述固有局限和缺陷的一种努力。新专业方向的人才培养目标是,学生通过四年本科阶段学科交融的专业知识学习,以及相应的专业实验和实践的能力锻炼,成长为化工物流运营和管理的复合型

人才。为实现人才培养目标,我们对专业课程体系和实验、实践体系重构重组,不仅设置"化工基础"、"安全科学与工程导论"等课程,强化学生的工学知识基础,而且设计出"化工物流 HSE 管理"、"化工物流安全与环保技术"、"危险货物物流法规与标准"、"化工物流专业英语"等全新的专业课程群,以国际化视野开拓学生思维,用多科交融的知识体系构建新的教学内容,以传授学生知识与能力。为此,新教材的编著就成为首当其冲的任务。一群以青年博士为主的教师承担了这项建设任务,他们意识到编著工作的责任及其意义。

经过近三年的努力,从课程讲义到书稿初成,当规划中的第一批教材即将出版,我们觉得这是做了一项填补空白的工作,也是以实际行动回应了企业和社会的期待。

"特殊品(化工)物流"专业方向是新的,用于专业教学的教材也是初编,如果闭门在校园,埋首于书桌,再竭尽全力也恐难完成编著。编著本套教材的教师是在广泛的学术交流和深入的实践学习中架构体例、撰写章节的。特别需要一提的是,我们和央企中国外运长航集团有限公司的十年校企合作,为建设"特殊品(化工)物流"专业方向,为规划和编著这一教材系列提供了难得的优越条件。企业的实际企业最了解,企业的需求也是企业最清楚,作为我国化工物流行业的标杆企业,中外运化工国际物流有限公司给了我们实质性的帮助:公司的高管、HSE 主管、实务运作的工程技术人员为专业建设,也为教材系列编著,自始至终提供专业领域中肯的学术性建议和有针对性的实践指导,正是他们富有价值的指导和帮助,不仅加快了本套教材的建设,而且保证了本套教材的质量。当本教材系列将陆续问世时,可以说,我们将不仅收获专业建设的成绩,还将收获产学合作的成果。

本套专业教材的编著是起步,我们认识到诸多的不足;国际化工物流行业在发展, 我们明白追踪前沿的紧迫性,所以我们会再接再厉,尽快拿出后续要出版的教材,同 时也争取不断修订、充实、更新、完善先行出版的教材。

同。最实的处理的经验及对不多。原来同位。会解对对电报名主承已处于**周》颐**所放从

社会家政和关码人员政策。企业总是每天回至产生原务业务政制专口人工。其内 在一度价多科分别,专业确定的数许方式形成人才显然的组录规陷——优化工、与数

至不学、不懂化学和化工。更不用说这两个专业的学生都不具备有美型业健康。这是 是全一环境保护等法律。该规、公约、标准方面的完备证法、相关人才能能的矛盾就

数发来的。弃没"特殊品工化工)特流"专业方向就是及支上还周有均限相联陷的一 第1887年,第1887年中间的人士以来自由是一些中国对100亿米以份份产品的现在分词

之为。以及和应的专业实现和实践的能力程序。或长为化工物就是互利管理的复合型

前言

化工工业是国民经济的重要组成部分,其巨大经济利益和社会效益的实现依赖于 化工产品及时、安全的存储和运输,同时,由于化工品本身所具有的特殊的物理和化 学特性使其潜藏着巨大的危险性,因此,对相应物流过程中的物流技术、流程等提出 了特殊的要求。同时,经济全球化的迅速发展呼唤大批既懂业务又精专业英语的人才, 而目前市场上可以找到的主要是化工英语和物流英语这两类教材,将化工和物流结合 在一起的专业英语教材非常少。

鉴于此,我们编写了这本教材,广泛收集并分析了化工物流各个领域的原版资料,介绍了化工品、物流及化工物流各个环节的特点和主要问题,将《联合国关于危险货物运输的建议书》、《国际海运危险品法规》(IMDG Code)、《国际船协危险品法规》(IATA DGR)等国际规则的规定和要求结合在具体的课文里。本书具体内容可以分为化工物流的基本知识(第1~4章)、化工物流业务活动(第5~10章)、特殊行业物流(第11、12章)、区域化工物流的发展(第13章)四个部分。

本书在每章内容后面编写了习题供读者反复练习,以便加强专业词汇的记忆和运用,习题中的小案例也可以让读者锻炼自己的案例分析能力,而阅读资料则可拓宽读者相关领域的知识面。为了便于学习,本书末尾为部分习题提供了参考答案。另外,本书在附录中提供了《联合国关于危险货物运输的建议书》和《国际海运危险品法规》这两个重要的国际规则的部分内容,供读者深入学习研究。

本书整体结构和全部内容均由景平拟定和完成。由于目前有关化工物流英语实际操作内容的书籍和资料很少,加之作者水平有限,不足之处难免,希望读者提出宝贵意见。如有疑问或建议,请发邮件至 jingping@sspu.edu.cn, 欢迎您的来信。

编 者 2015年1月

Contents

总 序		(1)
前言		(1)
Unit One	An Introduction to Chemical Products·····	(1)
Unit Two	An Introduction to Logistics·····	(20)
Unit Three	An Introduction to Chemical Logistics·····	(35)
Unit Four	Safety Management·····	(51)
Unit Five	Package····	(64)
Unit Six	Warehousing·	(81)
Unit Seven	Facility Location (104)
Unit Eight	Inventory (119)
Unit Nine	Transporting···· (132)
Unit Ten	Emergency Management····· (
Unit Eleven	Petroleum Logistics (
Unit Twelve	Healthcare Logistics (185)
Unit Thirteen	Trends of Chemical Logistics (200)
Keys to the Exe	rcises······(2	217)
Appendix One	United Nations Recommendations on the Transportation of Dangerous Go	ods
	(221)
Appendix Two	IMDG Code·····(2	226)
References·····	(2	252)



An Introduction to Chemical Products

Pre-reading notes:

Chemicals are part of modern life, and we are likely to encounter them everyday—from the chemicals used at work, to products in the home such as paint, and detergents and pesticides used in the garden.

This unit aims to give you an idea of the concept and types of chemical products, several main typical chemicals, identity and property of chemicals, as well as the hazards associated with chemicals. This unit gives the information needed to help identify and manage the risks from chemicals.

Text One Profile of Chemical Products

The chemical industry is an important driver of the global economy, with estimated global annual sales of €1 871 billion in 2009. The EU remains a leading chemical production area, valued at €449 billion and accounting for 24 percent of world chemical production in 2009.

Chemical engineering is the branch of engineering that applies the physical sciences (e.g., chemistry and physics) and/or life sciences (e.g., biology, microbiology and biochemistry) together with mathematics and economics to processes that convert raw materials or chemicals into more useful or valuable forms. In addition, modern chemical engineers are also concerned with pioneering valuable materials and related techniques—which are often essential to related fields such as nanotechnology, fuel cells and biomedical engineering. Within chemical engineering, two broad subgroups include: (1) design, manufacture, and operation of plants and machinery in industrial chemical and related processes ("chemical process engineers"), and (2) development of new or adapted substances for products ranging from foods and beverages to cosmetics to cleaners to pharmaceutical ingredients, among many other products ("chemical product engineers").

With the rapid development of chemical product engineers, more and more new chemicals are produced and applied in nearly all walks of life, up to now the chemical products total more than 24,000 and can be classified into the following types:

♦ Chemical mine

Sulfur ore, phosphorus ore, boron ore, potassium ore, and other chemical mine.

♦ Inorganic chemical raw materials

Acids, base class, inorganic salt, other metal salts, oxide, elementary substance, industrial gas, and other inorganic chemical raw materials.

♦ Organic chemical raw materials

Basic organic raw materials, organic intermediate materials, and common organic raw materials.

- ♦ Chemical fertilizer
- loss . Pesticides armeda to estre but toponus and to wabi me may avine of emitte time sid!
- bath High molecular polymer decimals to wrongers has within the almost calculations and the bath of the second minimum.

Synthetic resins, plastic, synthetic rubber, synthetic fiber monomer, and synthetic fiber polymer.

- ♦ Paint and inorganic pigment
- ♦ Colourant and organic pigment
- ♦ Chemicals for information

Film base, cine film, X-ray film, special purpose film, and magnetic recording materials.

being \$\dot\ Chemical reagent fodels and to rowith the rooms as a viceblat facilities of T

General reagents, high purity reagent, and high purity materials.

- m no Food and feed additives process for not satisfactors and soldied each in bonley person to the food and feed additives
 - ♦ Synthetic drugs
- Daily-use chemical many and granted grant to abased safe a semislations from safe

Soap, detergent spice, cosmetics, and others. Someton still and has reclaimed a ventile and a still and has reclaimed a

- location with distinguished and economics to processes that convention with distinguished the convention of the conventi
- kam > Rubber item

Tyre, belt, rubber latex, rubberized fabric, and others.

- Catalyst and chemical additives and also lost employed and an above solot page 19
- engineering the broad subgroups includes (1) design, manufacture, and series broad out increasing
- The Other chemical products seeding total of the leading of Thinkshoff of grandoser has

Coal chemical products, forest chemicals, enzyme, and others. To answere the coal chemical products of the coal chemical products of the coal chemical products.

New Words and Expressions

chemical engineering physical sciences life sciences biology microbiology

biochemistry nanotechnology

fuel cells

biomedical engineering

beverage cleaner

pharmaceutical ingredients

chemical mine

sulfur ore

phosphorus ore

boron ore potassium ore

inorganic chemical raw materials

acids

base class inorganic salt other metal salts

oxide

elementary substance

industrial gas

organic chemical raw materials basic organic raw materials organic intermediate materials

common organic raw materials

chemical fertilizer

pesticides

high molecular polymer

synthetic resins

化学工程

自然科学生命科学

生物学

微生物学

生物化学纳米技术

燃料电池

生物医学工程

饮料

清洁剂

药物原料,药品成分

化学矿 硫矿

磷矿硼矿

钾矿

无机化工原料

酸类 碱类 无机盐

其他金属盐

氧化物

元素

工业气体

有机化工原料

基本有机原料

有机中间体

一般有机原料

化学肥料

农药

高分子聚合物

合成树脂

plastic 塑料 synthetic rubber 合成橡胶 synthetic fiber monomer 合成纤维单体 synthetic fiber polymer 合成纤维聚体 paint 涂料 inorganic pigment 无机颜料 colourant 染料 organic pigment 有机颜料 chemicals for information 信息用化学品 film base 片基 cine film 电影胶片 X-ray film X光片 special purpose film 特种胶片 magnetic recording materials 磁记录材料 chemical reagents 化学试剂 general reagents 通用试剂 high purity reagents 高纯试剂 high purity materials 高纯物质 food and feed additives 食品和饲料添加剂 synthetic drugs 合成药品 日用化学品 daily-use chemical detergent 洗涤剂 spice 香料 cosmetics 化妆品 adhesive 胶粘剂 rubber item 橡胶制品 tyre 轮胎 belt 传动带 rubber latex 乳胶制品 was languaged singuing rubberized fabric 胶布制品 catalyst 催化剂 metern stribennestri oinegas chemical additives 化学助剂 strawart Simagno mornimo explosives 火工产品 煤炭化学产品 coal chemical products forest chemicals 林产化学品。mylog valueslost deid enzyme

neperbyd hag and Exercises - Isolando an anustro-analydroylog audi

Choose the correct answer. has realisable whose restau of another at emphasised.

- 1. Which is the leading chemical production area? () and) according to the leading chemical production area?
 - A. EU.
- B. South Africa. C. America. D. East Asia.
- 2. Which is inorganic chemical raw material? ()
- A. Pesticide. B. Sulfur ore. C. Acids. D. Plastic.

- 3. Which is high molecular polymer? () a half and a highest things of the state of
- A. Synthetic resins. B. Film. C. Salt. D. Oxide.

recolanical properties of

Text Two Typical Chemicals

Sodium Carbonate

Sodium carbonate (also known as washing soda, soda crystals or soda ash), Na₂ CO₃, is a sodium salt of carbonic acid. It most commonly occurs as a crystalline heptahydrate, which readily effloresces to form a white powder, the monohydrate; and is domestically well known for its everyday use as a water softener. It has cooling alkaline, and can be extracted from the ashes of many plants. It is synthetically produced in large quantities from table salt in a process known as the solvay process. The manufacture of glass is the most important use of sodium carbonate. It is also used as a relatively strong base in various settings.

anemicals are divided into 11 car egories of hesticides, dyestiffs coan fisher are divided in

Sulfuric acid, H₂ SO₄, is a strong mineral acid. It is soluble in water at all concentrations. Sulfuric acid has many applications, and is one of the top products of the chemical industry. World production in 2001 was 165 million tons, with an approximate value of US\$8 billion. Principal uses include lead-acid batteries for cars and other vehicles, ore processing, fertilizer manufacturing, oil refining, wastewater processing, and chemical synthesis.

> Polyethylene

The most widely produced plastic includes polyethylene, polypropylene and polyvinyl chloride.

Polyethylene is a thermoplastic polymer consisting of long chains of the monomer ethylene. The name is abbreviated to PE in a manner similar to that by which other polymers like polypropylene and polystyrene are shortened to PP and PS respectively.

The ethylene molecule C_2 H_4 is $CH_2 = CH_2$. Two CH groups connected by a double bond, thus polyethylene contains the chemical elements carbon and hydrogen.

Polyethylene is resistant to water, acids, alkalies, and most solvents. Its many applications include films or sheets for packaging, shower curtains, unbreakable bottles, pipes, pails, drinking glasses, and insulation for wire and cable.

Polyethylene is classified into several different categories based mostly on its density and branching. They are ultra high molecular weight polyethylene, ultra low molecular weight polyethylene, high molecular weight polyethylene, high density polyethylene, high density cross-linked polyethylene, cross-linked polyethylene, medium density polyethylene, linear low density polyethylene, low density polyethlene and very low density polyethlene. The mechanical properties of PE depend significantly on variables such as the extent and type of branching, the crystal structure and the molecular weight.

> Refining Petroleum

Petroleum products are usually grouped into three categories: light distillates (LPG, gasoline, naphtha), middle distillates (kerosene, diesel), heavy distillates and residuum (heavy fuel oil, lubricating oils, wax, asphalt). This classification is based on the way crude oil is distilled and separated into fractions (called distillates and residuum).

to 3. Fine Chemical (Catalyst) o successfureun off seesong ye rioz off as award eesong

The fine chemical industry is an industry to produce fine chemical products. Fine chemical products and special chemical products are both called fine chemicals. Fine chemicals are divided into 11 categories of pesticides, dyestuffs, coatings, pigments, reagents and high-purity chemicals, information chemicals, food and feed additives, adhesives, catalysts and auxiliaries, chemical drugs and chemicals for daily use.

New Words and Expressions

sodium	钠
carbonate lygorgytog carbythaglog cabu	碳酸盐
carbonic acid	碳酸
crystalline winds good to godinianou tem	结晶性,结晶度,晶体
heptahydrate od tedi of milimis isonach a	七水化物
effloresce wis visiones a 29 bay 99 of Baris	风化 an angular to g bain of

一水化物,一水合物 monohydrate softener alkaline www.managastar.beauto 碱度, 碱性 ad ma alamana multod ... 以合成方法,综合地 synthetically (餐桌上有的)精制食盐;精盐 table salt Sanarorina m 索耳维法 manahaman saam ada mad W C Solvay process sulfuric acid 硫酸 可溶解的 soluble described of the soluble of 铅酸电池 surborn on beautodoms dom W I leading-acid battery 聚乙烯 polyethylene 聚丙烯 polypropylene polyvinyl chloride 聚氯乙烯 乙烯 ethylene 碱金属,碱性液 alkali 密度,浓度,比重 density Altvirorultra narego wild a ro egata grimmalg ell 极端的 itarago conalgol ena redicat 英 dan ov molecular oo mid anotheroblanco grada 分子的 odi yllenan ai yilinobi lanmodo 交联的 cross-linked linear low density polyethylene 线型低密度聚乙烯 laboral polyethlene word bankeldars od ara ym 聚乙烯 mad) anodromisania ymbournos mechanical properties also man () 和 机械性能, 力学性能 homeon's lo minut Jednus crystal (IEAD) palvined posted A labored 结晶, 晶体 (MAT) pointer A thoras months (ns sA branching amada to (2081) Proceed 分叉 med to see the bank of the grant of the process of t 轻质馏出物 light distillates 石脑油;挥发油;粗汽油 naphtha middle distillates 中间蒸馏油 如此 pompro box obstil kerosene kerosene 煤油 煤油 diesel 柴油 heavy distillates 重馏分油 残渣 residuum 重油 heavy fuel oil container labels, shipping papers, M 軸 at Saliny Data Sheet (MSDS), an xxw [richn] asphalt was leading of south south min 沥青; 柏油 syupp O as vious and south min

fractions

(分)馏(部)分;级分

Exercises

Choose the correct answer.

1. Sodium carbonate can be synthetically produced in large quantities from () in Solvay process.

D. catalyst

D. Gasoline.

- A. acid B. table salt C. polyethylene
- 2. Which is the most important use of sodium carbonate? ()

 A. Production of glass.

 B. Production of wax.
 - C. Production of acid.

 D. Production of diesel.
- 3. Which can be used to produce shower curtain? ()
 - A. Carbonate. B. Acid. C. Polyethylene.

Text Three Identification of Chemicals

> Chemical Identity

Whether the logistics operation is in the planning stage or a fully operational activity, chemical identity is usually the first of many considerations in a comprehensive risk assessment.

The hazards of chemicals and commodities can be ranked by various systems of commodity classifications. Chemical identity can be established through the International Union of Pure and Applied Chemistry (IUPAC) name, trade name, common name, United Nations/North America(UN/NA) number, Chemical Abstract Service (CAS) registry number, Registry of Toxic Effects of Chemical Substances(RTECS) or chemical formula. As an example, acrylonitrile can be identified as follows:

IUPAC name: Cyanoethylene

Trade and common name: Acrylon, Acrylonitrile, AN, Carbacryl, Fumigrain,

Propenenitrile, VCN, Ventox, Vinyl, Cyanide

UN/NA number: 1093

CAS registry number: 107-13-1

RTECS: AT 5250000

Chemical formula: CH₂=CHCN

Containerized and packaged chemicals should be readily identifiable through the container labels, shipping papers, Material Safety Data Sheet (MSDS), and additional information such as Occupational Health Guidelines for Chemical Hazards, Condensed Chemical Dictionary can be referred to.