

化学专业英语文选

上 册

南京大学外文系普通英语教研组编

商 务 印 书 馆

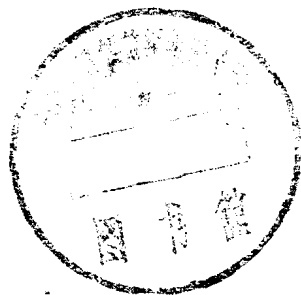


2 031 6050 5

化学专业英语文选

上册

南京大学外文系普通英语教研组编



商务印书馆

1973年·北京

内 容 提 要

化学专业英语文选上册共三十课。每课除正文外,还有词汇、词组和课文注释,重要的语法现象都加以详细的分析并附以译文,使读者减少理解上的困难。单词用国际音标标注。书末附总词汇表,以利读者查阅。

本书可供中学学过三年英语,掌握了基本英语语法知识并熟悉基本单词的高等学校专修化学的学生使用,也可作为研究化学的读者自修英语的参考书。

化 学 专 业 英 语 文 选

上 册

南京大学外文系普通英语教研组编

商 务 印 书 馆 出 版

(北京人民路 36 号)

新华书店北京发行所发行

北京第二新华印刷厂印刷

787×1092 毫米 1/32 4⁴/₁₆ 印张 111 千字

1961 年 12 月初版 1973 年 7 月北京第 7 次印刷

统一书号: 9017·286 定价: 0.35 元

CONTENTS

1. MATTER	3
2. IDENTIFICATION OF AND CHANGES IN MATTER.....	4
3. CLASSIFICATION OF MATTER	8
4. WATER AND ITS COMPOSITION	11
5. AIR	15
6. CARBON (I)	20
7. CARBON (II)	23
8. SULFUR	27
9. ACIDS OF SULFUR	31
10. CHEMICAL FORMULAS AND EQUATIONS (I)	34
11. CHEMICAL FORMULAS AND EQUATIONS (II)	37
12. ACIDS, BASES, AND SALTS	40
13. IONS AND ATOMS	44
14. METALS AND METALLURGY (I)	49
15. METALS AND METALLURGY (II)	53
16. IRON AND STEEL (I)	56
17. IRON AND STEEL (II)	60
18. ALUMINUM	64
19. OTHER NON-FERROUS METALS	68
20. CHLORINE AND BROMINE	71
21. IODINE AND FLUORINE	75
22. THE PHOSPHORUS FAMILY (I)	79
23. THE PHOSPHORUS FAMILY (II)	83
24. SOLUTIONS, SUSPENSIONS, AND EMULSIONS (I)	87
25. SOLUTIONS, SUSPENSIONS, AND EMULSIONS (II) ..	91
26. CALCIUM (I)	95
27. CALCIUM (II)	98
28. MAGNESIUM AND SILICON	101
29. SOME LESS COMMON METALS AND THEIR USES (I)	106
30. SOME LESS COMMON METALS AND THEIR USES (II)	109
VOCABULARY	115

CONTENTS

1. MATTER	3
2. IDENTIFICATION OF AND CHANGES IN MATTER.....	4
3. CLASSIFICATION OF MATTER	8
4. WATER AND ITS COMPOSITION	11
5. AIR	15
6. CARBON (I)	20
7. CARBON (II)	23
8. SULFUR	27
9. ACIDS OF SULFUR	31
10. CHEMICAL FORMULAS AND EQUATIONS (I)	34
11. CHEMICAL FORMULAS AND EQUATIONS (II)	37
12. ACIDS, BASES, AND SALTS	40
13. IONS AND ATOMS	44
14. METALS AND METALLURGY (I)	49
15. METALS AND METALLURGY (II)	53
16. IRON AND STEEL (I)	56
17. IRON AND STEEL (II)	60
18. ALUMINUM	64
19. OTHER NON-FERROUS METALS	68
20. CHLORINE AND BROMINE	71
21. IODINE AND FLUORINE	75
22. THE PHOSPHORUS FAMILY (I)	79
23. THE PHOSPHORUS FAMILY (II)	83
24. SOLUTIONS, SUSPENSIONS, AND EMULSIONS (I)	87
25. SOLUTIONS, SUSPENSIONS, AND EMULSIONS (II) ..	91
26. CALCIUM (I)	95
27. CALCIUM (II)	98
28. MAGNESIUM AND SILICON	101
29. SOME LESS COMMON METALS AND THEIR USES (I) ..	106
30. SOME LESS COMMON METALS AND THEIR USES (II) ..	109
VOCABULARY	115

本書所用語法術語略語

- a.* adjective (形容詞)
- adv.* adverb (副詞)
- conj.* conjunction (連詞)
- n.* noun (名詞)
- p. a.* participial adjective (分詞形容詞)
- pl.* plural (復數)
- pref.* prefix. (前綴)
- prep.* preposition (前置詞)
- pron.* pronoun (代詞)
- sing.* singular (單數)
- suf.* suffix (後綴)
- v. aux.* auxiliary verb (助動詞)
- v. i.* intransitive verb (不及物動詞)
- v. t.* transitive verb (及物動詞)

1. MATTER

The world is made of matter. Matter has weight and occupies space. Coal is a kind of matter. It has weight and occupies space. Water is a kind of matter. It has weight and occupies space. Air is also a kind of matter. It has weight and occupies space.

Matter exists in one of three states: solid, liquid or gaseous. Coal is in the solid state. It is not in the liquid or gaseous state. Water is in the liquid state. It is not in the solid or gaseous state. Air is in the gaseous state. It is not in the solid or liquid state.

Solids are rigid¹ and have definite form. Coal is rigid and has a definite form. Iron and steel are also solids. Liquids flow. They take the shape of the container. Water flows.² Water also takes the shape of the container. Mercury and bromine are also liquids. Gases diffuse and fill the container. Air diffuses. It also fills the container. Hydrogen and oxygen are also gases.

Matter changes from one state to another under different conditions. Changes in temperature and pressure often cause matter to change from one state to another. Under ordinary pressure, water changes into the gaseous state at the temperature of 100°C and changes into the solid state at the temperature of 0°C. We call the gaseous state of water steam,³ and the solid state of water ice. When water changes into steam, we say water boils.⁴ When water changes into ice, we say water freezes.

同 汇

matter ['mætə] *n.* 物质

weight [weit] *n.* 重量

occupy ['ɒkjʊpaɪ] *v.t.* 占有

space [speɪs] *n.* 空間

coal [kəʊl] *n.* 煤

kind [kaɪnd] *n.* 种类

exist [ig'zɪst] *v.i.* 存在
state [steɪt] *n.* 状态
solid ['sɒlɪd] *n.* 固体
liquid ['lɪkwɪd] *n.* 液体
gas [ɡæs] *n.* 气体
gaseous ['geɪʒəs] *a.* 气体的, 气态的
rigid ['rɪdʒɪd] *a.* 坚硬的
definite ['defɪnɪt] *a.* 确定的
form [fɔ:m] *n.* 形状
iron ['aɪən] *n.* 铁
steel [sti:l] *n.* 钢
flow [fləʊ] *v.i.* 流动
shape [ʃeɪp] *n.* 形状
container [kən'teɪnə] *n.* 容器
mercury ['mɜ:kjʊəri] *n.* 汞, 水银
bromine ['brəʊmi:n] *n.* 溴

diffuse [dɪ'fju:z] *v.i.* 扩散
fill [fɪl] *v.t.* 充填
hydrogen ['haɪdrədʒən] *n.* 氢
oxygen ['ɒksɪdʒən] *n.* 氧
change [tʃeɪndʒ] *v.i., n.* 改变, 变化
different ['dɪfrənt] *a.* 不同的
condition [kən'dɪʃən] *n.* 状况, 条件
temperature ['temprɪtʃə] *n.* 温度
pressure ['preʃə] *n.* 压力
cause [kɔ:z] *v.t.* 引起, 造成
ordinary ['ɔ:dɪnəri] *a.* 通常的
steam [sti:m] *n.* 蒸汽
ice [aɪs] *n.* 冰
boil [bɔɪl] *v.i.* 沸腾
freeze [fri:z] *v.i.* 冻结

詞 組

to be made of... 由...构成

to change into... 变成...

to take the shape of... 取...的形状

課 文 注 釋

1. Solids are rigid. 这句的主語是 solids. 連系動詞 are 和表語 rigid 構成謂語.
2. Water flows. 水能流动. 这句的主語是 water, 謂語是動詞 flows.
3. We call the gaseous state of water steam. 我們把水的气体状态叫做蒸汽. 这句的謂語由及物動詞加上賓語及賓語补足語 (steam) 構成.
4. When water changes into steam, we say water boils. 水变成蒸汽时, 我們就說水沸騰了. 本句是复合句, 主句是 we say water boils, 其中 water boils 是名詞从句, 作 say 的賓語; when water changes into steam 是状語从句, 說明 say 的时间.

2. IDENTIFICATION OF AND CHANGES IN MATTER

Different kinds of matter have different physical and chemical properties. The properties of a substance are its characteristics. In other words, we identify substances by their physical and chemical properties.

The physical properties of a substance are: colour,

odour, taste, solubility, hardness, density and melting point. In other words, we identify a substance physically by its colour, odour, taste, solubility, hardness, density and the melting point.¹ For example, hydrogen is colourless, odourless, and tasteless. It is slightly soluble in water and has the lowest density of all known substances. It diffuses more rapidly than any other gas. Thus we can identify hydrogen physically by its colourlessness, odourlessness, tastelessness, slight solubility in water and very low density.

The chemical properties of a substance are:

1. stability toward heat, light, and shock;
2. behaviour in the presence of other substances at ordinary and changed temperature. For example, hydrogen has its special chemical properties. It combines with oxygen. It burns in oxygen or air, forming water.² It is a powerful reducing agent. When a substance is reduced by hydrogen, the hydrogen itself is oxidized. Thus we can identify hydrogen chemically by its reducing power to form water.³

Matter undergoes physical and chemical changes. In a physical change, the composition of a substance is not changed. The substance keeps its identity. For example, the melting of ice is a physical change. The composition of water is not changed in any way.⁴ The boiling of water is also a physical change. The composition of water is also not changed.

In a chemical change, a substance loses its original identity. All the characteristic properties, such as colour, odour, taste, hardness, solubility, density, and melting point, disappear. One or more new substances are formed. These new substances have their own properties, quite different from the old properties of the original substance. For example when a wax candle is burned, its physical and chemical properties are changed. New substances are formed. They are carbon dioxide and water. Carbon dioxide and

water have entirely different properties from those of wax candle.

Heat and light often attend a chemical change. In the burning of a wax candle, heat and light attend the change. In every chemical change the weight of the materials taking part in the change is exactly equal to the weight of the substances produced by the change.⁵ This is known as the Law of Conservation of Matter.

詞 匯

identify [ai'dentifai] *v. t.* 識別, 鉴别

identification [ai'dentifi'keifən] *n.* 識別, 鉴别

physical ['fizikəl] *a.* 物理的

chemical ['kemikəl] *a.* 化学的

property ['prɒpəti] *n.* 性質

substance ['sʌbstəns] *n.* 物質

colour ['kʌlə] *n.* 顏色

odour ['ɒdə] *n.* 嗅, 气味

odourless [-lis] *a.* 无嗅的

odourlessness *n.* 无嗅

taste [teist] *n.* 味

tasteless *a.* 无味的

tastelessness *n.* 无味

soluble ['sɒljubl] *a.* 可溶解的

solubility [sɒlju'biliti] *n.* 溶解度

hardness ['hɑ:dnɪs] *n.* 硬度

density ['densiti] *n.* 密度

conservation [ˌkɒnsə'veiʃən] *n.* 恆存, 守恒

守恆

melt [melt] *v. i.* 熔化, 融化

point [point] *n.* 点

melting point *n.* 熔点

example [ig'zɑ:mpl] *n.* 例子

slight [slait] *a.* 輕微的

low [lou] *a.* 低的

rapid ['ræpid] *a.* 迅速的

than [ðæn] *conj.* 比

thus [ðʌs] *adv.* 这样, 因此

stability [ste'biliti] *n.* 稳定性

toward [tə'wɔ:d] *prep.* 对于, 向

heat [hi:t] *n.* 热

light [lait] *n.* 光

shock [ʃɒk] *n.* 震蕩

behaviour [bi'heivjə] *n.* 行为, 行径, 表現

presence ['prezns] *n.* 在場, 存在

special ['speʃəl] *a.* 特殊的

combine [kəm'beɪn] *v. i.* 結合, 化合

burn [bɜ:n] *v. i.* 燃燒

form [fɔ:m] *v. t.* 形成

power [paʊə] *n.* 力, 能力

powerful ['paʊəfʊl] *a.* 强大的

reduce [ri'dju:s] *v. t.* 还原, 減少

agent ['eidʒənt] *n.* 剂

reducing agent 还原剂

oxidize ['ɒksidaɪz] *v. t.* 使氧化

undergo [ʌndə'gəʊ] *v. t.* 經受, 經歷

composition [kɒmpə'zɪʃən] *n.* 构成, 組成

identity [ai'dentiti] *n.* 本性

way [wei] *n.* 方式, 方法

original [ə'ridʒɪnəl] *a.* 原有的

characteristic [ˌkærɪktə'ristɪk] *a.* 特

有的; *n.* 特性

disappear [dɪsə'piə] *v. i.* 消失

wax [wæks] *n.* 蜡

candle ['kændl] *n.* 烛

carbon ['kɑ:bən] *n.* 碳

dioxide [daɪ'ɒksaɪd] *n.* 二氧化碳

carbon dioxide *n.* 二氧化碳

entirely [in'taiəli] *adv.* 完全
attend [ə'tend] *v.t.* 伴随, 参加
exactly [ig'zæktli] *adv.* 正好

equal ['i:kwəl] *a.* 相等(的)
produce [prə'dju:s] *v.t.* 产生
material [mə'tiəriəl] *n.* 材料

前綴和后綴

dis- 表示“别离, 分开, 除去”等意, 如 disappear.
-less 表示“无”的意思, 形容詞后綴, 加于名詞之后构成形容詞, 如 odourless.
-al 形容詞后綴, 如 chemical, original.
-ble 有“可...”之意, 如 soluble.
-ness 名詞后綴 加于形容詞之后, 构成名詞, 如 hardness.
-ity 名詞后綴, 如 density, solubility.
-tion 名詞后綴, 一般加于動詞之后构成名詞, 如 composition, identification.
-fy 動詞后綴, 如 classify, identify.
-ly 副詞后綴, 一般加于形容詞之后构成副詞, 如 physically, rapidly.

同 組

in other words 換言之, 換句話說
for example 例如
in the presence of... 有...时, 与...在
一起时
not in any way 無論如何不, 决沒有

such as... 如...
to take part in... 参加...
the Law of Conservation of Matter
物质守恒定律

課 文 注 釋

1. In other words, we identify a substance physically by its colour, odour, taste, solubility, hardness, density and the melting point. 換言之, 在物理上我們是凭物质的色、嗅、味、溶解度、硬度、密度和熔点来鉴别它的。在这句中, 主語及謂語是 we identify a substance. In other words 是插入語, 它和句子其他成分沒有語法上的联系。physically 是副詞, 是修飾 identify 的狀語。by its colour, odour... 是前置詞短語, 也是修飾 identify 的狀語。
2. It burns in oxygen or air, forming water. 在本句中, 分詞短語 forming water 含有狀語意味, 說明 burns 的結果。
3. Thus we can identify hydrogen chemically by its reducing power to form water. 因而在化学上我們能够凭氢生成水的还原能力来鉴别它。这句的主語及謂語是 we can identify hydrogen. Thus 及 chemically 是修飾 identify 的狀語。by its reducing power 是前置詞短語, 也是修飾 identify 的狀語, 其間 reducing 这分詞是修飾 power 的定語。to form water 是不定式短語, 也是修飾 power 的定語。
4. The composition of water is not changed in any way. 水的組成無論如何

总是不变的。前置詞短語 *in any way* (無論如何) 常用在否定句中來加重否定的語氣。在本句中它是修飾 *is not changed* 的狀態。

5. *In every chemical change the weight of the materials taking part in the change is exactly equal to the weight of the substances produced by the change.* 在每一個化學變化中參加變化的物質重量正好等於由變化所產生的物質的重量。這句的主語及謂語是 *the weight is equal*. *In every chemical change* 這前置詞短語是處所狀態，修飾謂語 *is equal*. *of the materials* 是修飾 *weight* 的定語，*taking part in the change* 是分詞短語，用作修飾 *materials* 的定語。*exactly* 起加強語氣的副詞的作用，*the weight* 加上它的定語 *of the substances produced by the change* 是 *to* 的賓語。

3. CLASSIFICATION OF MATTER

A substance is homogeneous. All parts of a substance are alike and have the same properties. Water is a substance, because all parts of it are alike and have the same properties.

A mixture is composed of two or more substances merely put together. All these substances keep their own properties. The characteristics of a mixture are:

1. It is not homogeneous, but heterogeneous.
2. The composition is variable.
3. The constituents may be separated by mechanical means.¹
4. Each constituent in a mixture keeps the same amount of energy it had before the mixing.

Substances can be classified into elements and compounds. An element is a substance which has not been decomposed into other substances.² The properties of an element give it a definite place in the periodic table. Hydrogen and oxygen are elements. A compound is a substance composed of two or more elements chemically combined in definite proportions by weight. The characteristics of a compound are:

1. It is homogeneous. The constituent elements have lost their original identity.

2. The constituent elements can be separated only by chemical means.

3. The energy stored within the compound is not equal to the sum of the energies possessed by the uncombined elements.³

Elements may be divided into two groups, metals and non-metals. There is no sharp dividing line between the two groups.⁴ Some elements have properties of both. But, in general, we may say the following physical properties are typical of the metals:

1. They are tenacious solids of high density possessing a metallic luster.

2. They are malleable and ductile.

3. They are good conductors of heat and electricity.

4. Many metals are silver or greyish-white in colour.

An alloy is a mixture of two or more metals.

The important physical properties typical of non-metals are:

1. The solids among them are of comparatively low density, and of low tensile strength.

2. All are poor conductors of heat and electricity.

3. Many of them have characteristic colours. Thus, sulfur is pale yellow; bromine is reddish brown; chlorine is greenish yellow; phosphorus is white or red; carbon is transparent or black.

Compounds are classified according to their composition and properties. Those of similar composition and properties are grouped together.⁵ For example, acids are compounds containing hydrogen, and it can be replaced by metals. Acids neutralize bases to form salt solutions. And bases are hydroxides of metals. They neutralize acids to form salt solutions.

同 汇

classify ['klæsɪfaɪ] *v.t.* 分类

classification [klæsɪfi'keɪʃən] *n.* 分

类, 类别

homogeneous [həmə'dʒiːniəs] *a.* 同

种的, 同质的

alike [ə'laɪk] *a.* 相似, 相同

mix ['miks] *v.t.* 混合
mixture ['mɪkstʃə] *n.* 混合物
merely ['miəli] *adv.* 仅仅
heterogeneous [hetərə'dʒiːniəs] *a.*

异种的, 异质的
variable ['veəriəbl] *a.* 易变的
constituent [kəns'tɪtjuənt] *a.* 构成的,
成分的; *n.* 成分

separate ['sepəreɪt] *v.t.* 分离, 分开
mechanical [mi'kænikəl] *a.* 机械的
means [miːnz] *n.* 方法, 手段

amount [ə'maʊnt] *n.* 量
energy ['enədʒi] *n.* 能, 能量
element ['elɪmənt] *n.* 元素, 要素
compound ['kɒmpaʊnd] *n.* 化合物
decompose [ˌdiːkəm'pəʊz] *v.t.* 分解
periodic [piəri'ɒdɪk] *a.* 周期的

periodic table 周期表
uncombined *a.* 未化合的
proportion [prə'pɔːʃən] *n.* 比例
store [stɔː] *v.t.* 贮藏

within [wi'ðɪn] *prep.* 在...之内
sum [sʌm] *n.* 总数
possess [pə'zes] *v.t.* 占有
divide [di'vaɪd] *v.t.* 分成
group [gruːp] *n.* 组, 群; *v.* 分组, 组合
metal ['metl] *n.* 金属

non-metal ['nɒn'metl] *n.* 非金属
metallie [mi'tæliːk] *a.* 金属的
sharp [ʃa:p] *a.* 尖锐的, 鲜明的
line [laɪn] *n.* 线, 界线
between [bi'twiːn] *prep.* 在...(二者)

之間
following ['fɒləʊɪŋ] *a.* 下列的
typical ['tɪpɪkəl] *a.* 代表的, 典型的

tenacious [ti'neɪʃəs] *a.* 坚韧的
luster ['lʌstə] *n.* 光泽
malleable ['mæliəbl] *a.* 有展性的
ductile ['dʌktail] *a.* 有延性的
conductor [kən'dʌktə] *n.* 导体
electricity [ilek'trɪsɪti] *n.* 电
silver ['sɪlvə] *n.* 银; *a.* 银色的
grey [greɪ] *a.* 灰色的
greyish ['greɪɪʃ] *a.* 微带灰色的
important [ɪm'pɔːtənt] *a.* 重要的
alloy ['æli] *n.* 合金
among [ə'mʌŋ] *prep.* 在...之間
comparatively [kəm'pærətɪvli] *adv.*

比較地
tensile ['tensail] *a.* 张力的
tensile strength 抗拉强度
sulfur ['sʌlfə] *n.* 硫
pale [peɪl] *a.* 淡色的
reddish ['redɪʃ] *a.* 微带红色的
brown [braʊn] *a.* 棕色的
chlorine ['klɔːrɪn] *n.* 氯
greenish ['grɪːnɪʃ] *a.* 微带绿色的
phosphorus ['fɒsfərəs] *n.* 磷
similar ['sɪmɪlə] *a.* 相似的
acid ['æsɪd] *n.* 酸
transparent [træns'peərənt] *a.* 透明
的

contain [kən'teɪn] *v.t.* 包含
replace [ri'pleɪs] *v.t.* 取代
neutralize ['njuːtrəlaɪz] *v.t.* 中和
base [beɪs] *n.*
salt [sɔːlt] *n.* 盐
solution [sə'ljuːʃən] *n.* 溶液
hydroxide [haɪ'drɒksaɪd] *n.* 氢氧化物

前綴和后綴

non-	表示“否定”, 如 non-metal.
un-	表示“否定”, 如 uncombined.
de-	表示“否定”, 如 decompose.
-ish	形容詞后綴, 表示“微带”, 如 greenish, reddish.
-ous	形容詞后綴, 如 homogeneous.

- ious 形容詞后綴, 如 tenacious.
 -ize 動詞后綴, “使”或“...化”之意, 如 neutralize.
 -or (-er) 表示“人”, “者”, 構成名詞后綴.
 -oxide 氧化物之意, 可構成合成詞, 也可獨立使用.

詞 組

- | | |
|-----------------------------|-----------------------------|
| to be composed of... 由...組成 | in general 一般說來 |
| different from... 不同于... | to be typical of... 是...的特征 |
| to divide into... 分(類)成... | according to... 根據, 依照 |
| dividing line 分界線 | |

課 文 注 釋

1. The constituents may be separated by mechanical means. 這句的主語是 the constituents. 謂語 may be separated 是被動語態, may 是助動詞, by mechanical means 是前置詞短語, 修飾 may be separated.
2. Which has not been decomposed into other substances. 這是定語從句, 修飾 substance. 這個從句是被動語態的現在完成式.
3. The energy stored within the compound is not equal to the sum of the energies possessed by the uncombined elements. 化合物內所蘊藏的能量不等於未化合的各元素的總能量. 句中黑體字部分是分詞短語, 用作定語, 修飾 energy 和 energies.
4. There is no sharp dividing line between the two groups. 在這裡, there 並不是指“那里”, 而只是起引導詞的作用, 它和動詞 to be 的各種形式一起表達了“有”和“存在”的意思. 句子的主語是隨在動詞 to be 之後的名詞, 在這句裡是 line, 因此 to be 的數的變化必須和它相適應. 這類的句子我們通常稱為以 there 作引導詞的句子.
5. Those of similar composition and properties are grouped together. 本句承接上句而來, 因此代詞 those 是代替上句中的 compounds, group 在此是動詞, 作“組合”、“集合”解.

4. WATER AND ITS COMPOSITION

Water is the most familiar and the most important of all chemical compounds. It covers about five-sevenths of the earth's surface. It is contained in varying amounts in many of the commonest objects. The soil under normal

conditions contains water. Water is necessary for the growth of plants. The plants themselves contain large quantities of it. In fact, most of the vegetables used for food are at least three-quarters water.

The human body consists of about 70 per cent water. This water is derived from our food and drink. The presence of water vapor in the atmosphere, its formation into rain and snow under varying conditions, and the important part played by it in climatic changes are familiar to everyone¹. Because water is so important in the growth of plants and animals and in the production of climatic changes, it is not too much to say that life without it is impossible.²

Pure water is an odourless liquid. In small quantities it is colourless, but large masses show a distinctly greenish-blue colour. When sufficiently cooled, it becomes a colourless solid known as ice. When heated, it boils and changes rapidly into water vapor, or steam. Pure water freezes at 0°C (32°F) and boils at 100°C (212°F) under standard pressure (760 mm). These temperatures serve as a means of identifying water.

The heat required to raise the temperature of one gram of water one degree centigrade is taken as the heat unit and is called a calorie.³ The number of calories required to raise the temperature of one gram of any substance one degree centigrade is called the specific heat of that substance.

When water boils, it takes about 540 calories to change one gram of boiling water at 100°C into steam at the same temperature. This is called the heat of vaporization of water. When ice melts, it takes about 80 calories to change one gram of ice at 0°C into water at the same temperature. This is called the heat of fusion of ice.

Water is an excellent solvent for many substances; resulting solutions are called aqueous solutions. Natural

waters are impure; they contain dissolved and suspended material and sometimes bacteria. Pure water can be prepared by distillation. Suspended materials may be removed by filtration. Disease bacteria may be killed by boiling, or by adding small amounts of certain chemicals.⁴

The composition of water can be shown by analysis and by synthesis. Analysis means "tearing apart" or decomposition. Water can be decomposed by an electric current. The method is called the electrolysis of water. Synthesis means "putting together". Two volumes of hydrogen unite with 1 volume of oxygen to form 2 volumes of steam.

The composition of water by weight is 1 part by weight of hydrogen and 7.94 parts by weight of oxygen. In other words, water is about 8/9 oxygen and 1/9 hydrogen by weight.

詞 匯

familiar [fə'miljə] *a.* 熟悉的
cover ['kʌvə] *v. t.* 复盖
five-sevenths 七分之五
surface ['sɜ:fis] *n.* 表面
varying ['væəriɪŋ] *a.* 不同的
commonest ['kɒmənist] *a.* 最普通的
object ['ɒbdʒɪkt] *n.* 物体
soil [soɪl] *n.* 土地
normal ['nɔ:ml] *a.* 正常的
necessary ['nesisəri] *a.* 必要的
growth [grəʊθ] *n.* 生长
plant [plɑ:nt] *n.* 植物
quantity ['kwɒntiti] *n.* 数量
vegetable ['vedʒitəbl] *n.* 蔬菜
least [li:st] *a.* 最少, 最小
three-quarters ['kwɔ:təz] 四分之三
human ['hju:mən] *a.* 人的
body ['bɒdi] *n.* 身体, 物体
consist [kən'sist] *v. i.* 组成
derive [di'raiv] *v. t.* 获得, 得出
drink [drɪŋk] *n.* 飲料
vapor ['veɪpə] *n.* 蒸汽

atmosphere ['ætməsfɪə] *n.* 大气
formation [fɔ:'meɪʃən] *n.* 形成
climatic [klaɪ'mætɪk] *a.* 气候的
animal ['æniməl] *n.* 动物
production [prə'dʌkʃən] *n.* 生产, 产生
without [wið'aut] *prep.* 没有
pure [pjʊə] *a.* 純的
mass [mæs] *n.* 大量
show [ʃəʊ] *v. t.* 呈现, 表明
distinctly [dis'tɪŋktli] *adv.* 显然地
sufficiently [sə'fɪʃəntli] *adv.* 充分的
cool [ku:l] *v. t.* 冷却
rapidly ['ræpidli] *adv.* 迅速地
standard ['stændəd] *a.* 标准的
mm=millimeter ['milimɪ:tə] *n.* 毫米
require [ri'kwaɪə] *v. t.* 需要
raise [reɪz] *v. t.* 提高
gram [græm] *n.* 克
unit ['ju:nɪt] *n.* 单位
heat unit 热量单位