


# 英语进修班教材



印染专业

无锡市纺织工程学会翻印

一九八二年三月

## VIII Bleaching (1)

So far we have dealt with scouring. The essential feature of the scouring is that it has removed most of the impurities, and those that are left, including the natural colouring matters, can only be destroyed by a bleaching treatment which follows. Bleaching is therefore a final treatment to complete the purification, which at the same time ensures the production of a good white and increases the ability of the fabric to absorb dyestuffs uniformly if it is to be dyed or printed later on.

The chemicals made use of for bleach purposes are termed "bleaching agents." Those which are most commonly used are sodium hypochlorite, hydrogen peroxide, and sodium chlorite.

Sodium hypochlorite tends to decompose on storage, especially when exposed to light and in hot weather. It is, therefore, often necessary to determine the amount of available chlorine in a delivery or a stock solution. The concentration of available chlorine required in the bleach liquor varies between 1 and 3 g per litre, but for most purposes good results can be obtained with 1.5 g per litre. Commercial sodium hypochlorite solutions generally contain 15 to 18 per cent of available chlorine. One gallon per

100 gallons of water will therefore make a bleaching liquor which contains near enough to 1.5 g per litre of available chlorine for most practical purposes.

Hydrogen peroxide is a very useful bleaching agent which is finding increasing application to cellulosic fibres. The strength of commercial hydrogen peroxide is expressed in terms of the volume of oxygen liberated by a unit of volume of the solution. Thus a 10-volume peroxide solution is one of which 1 ml is capable of liberating 10 ml of oxygen. When bleaching with hydrogen peroxide, it is advantageous to introduce the cotton into the liquor in an unsoured or only partially-soured state. The impurities do not form objectionable derivatives with hydrogen peroxide as they do with hypochlorites, and they exert a useful stabilizing action. The water should have 2-5 degrees of hardness because of the stabilizing effect of traces of calcium and magnesium salts, and when the water supply is of zero hardness, 1 oz per 100 gallons (0.06 g per litre) of magnesium sulphate should be added.

Sodium chlorite is another bleaching agent which can be used for the bleaching of cellulose fibre goods instead of sodium hypochlorite. It has disadvantages, for example, the bleaching liquor can liberate obnoxious vapours harmful to the health of the operatives and it can

be corrosive towards the materials ordinarily employed in the construction of bleaching equipment, but by contrast it can give a very good white without appreciable deterioration or weakening of the cotton. Titanium metal resists corrosion and is now being used for bleaching plant.

### New Words

1. essential (i'senʃəl) a. 基本的、主要的
2. feature ('fi:tʃə) n. 特征、特点
3. absorb (əb'sɔ:b) v. 吸收
4. dyestuff ('daɪstʌf) n. 染料
5. hypochlorite (haɪp'klɔ:rit) n. 次氯酸盐  
sodium hypochlorite 次氯酸钠
6. peroxide (pə:'rɒksaɪd) n. 过氧化物 hydrogen peroxide 过氧化氢(双氧水)
7. chlorite ('klɔ:raɪt) n. 亚氯酸盐  
sodium chlorite 亚氯酸钠
8. tend (to) (tend) v. 倾向于、务必
9. storage ('stɔ:ridʒ) n. 贮存、贮存
10. determine (dɪ'tɜ:mɪn) v. 决定、测定
11. delivery (dɪ'lɪvəri) n. 传送、送货
12. stock (stɒk) n. 存货 stock solution 贮存(配的)溶液
13. concentration (kɒnsən'treɪʃn) n. 浓度
14. litre ('li:tə) n. 升(容量单位)
15. commercial (kə'mɜ:ʃəl) a. 商业的、商品的、工业用

16. gallon ('gælən) n. 加侖
17. application (æpli'keiʃən) n. 应用、使用、敷用
18. cellulose (selju'lousik) a. 纤维素的
19. term (tɜ:m) n. 用語(专门)名詞、期限  
in terms of prep. 依据、用……詞句
20. volume ('vɒljum) n. or ('vɒljəm) 体积、容积
21. liberate ('libəreit) v. 释放、解放
22. ml (millilitre) ('mɪlɪli:tɹ) n. 毫升
23. advantageous (ədven'teidʒəs) a. 有利的、有助的
24. unscoured (ʌn'skaʊəd) a. 未经磨練的
25. derivative (di'rɪvətɪv) n. 衍生物
26. exert (ɪg'zɜ:t) v. 发挥、施加、行使、产生
27. stabilize ('steɪbalaɪz) v. 稳定、安定
28. hardness ('hɑ:dnɪs) n. 硬度
29. trace (treɪs) n. 微量、痕迹
30. calcium ('kælsiəm) n. 鈣
31. magnesium (mæg'ni:ziəm) n. 鎂
32. salt (sɔ:lt) n. 盐
33. supply (sə'plai) n. v. 供给、供应、提供

water supply 供水

34. oz (ounce) (aʊns) n. 兩(盎司)
35. sulphate ('sʌlfeɪt) n. 硫酸盐  
magnesium sulphate 硫酸鎂
36. vapour ('veɪpə) n. 蒸汽、汽雾

37. obnoxious (əb'noxjəs) a. 令人非常不快的, 讨厌的  
 38. health (helθ) n. 健康  
 39. operative ('ɒperətɪv) n. 操作者, 技工, 工人  
 40. equipment (ɪ'kwɪpmənt) n. 装备, 设备  
 41. contrast ('kɒntrəst) n. v. 对比, 对照

by contrast 相比之下, 反过来看

42. appreciable (ə'pri:ʃəbl) a. 可感觉到的, 明显的  
 43. titanium (taɪ'teɪnjəm) n. 钛  
 44. plant (plɑ:nt) n. 工厂, 车间, 植物

#### Notes

1. ...and those that are left, including...which follows.

这是本句表语从句 ...is that... 中的并列部分; that are left, including... 又是同义 those 的两个并列的后置定语。

2. The chemicals made use of for bleach purpose.....

这里 made use of 是短语动词 make use of 的过去分词形式, 作 chemicals 的后置定语。“动词+名词+介词”这类短语动词在变为被动概念时仍应连同名词和介词一起作为该短语动词的组成部分。又如:

(1) The children are well taken care of in the nursery. 孩子们在托儿所受到很好的照管。

(2) This must be paid due attention to. 这一点应当注意。

5. ...tends to decompose on storage, especially when...

tend 作为不及物动词往往后跟不定式, 表示具有某种动作(行为)的倾向, 有时可译为“势必会-----”。目前对

tend + 不定式很多作为一个动词组合看待, 不把后面的不定式作

tend的状语, 这里 especially when...系同

on storage 并列的两个状语, 说明动词 tends to compose.

### Exercises

I. Find words (the first and last letters have been given) in the passage to complete the sentences below, and then put each of the sentences into Chinese:

1. So f\_r we have d\_\_\_\_\_t only w\_\_\_h a few points of the problem that often happens in the process of s\_\_\_\_\_g.

2. In s\_\_\_\_\_g m\_\_\_\_\_t of the i\_\_\_\_\_s have been r\_\_\_\_\_d except t\_\_\_\_\_e that, i\_\_\_\_\_g the natural c\_\_\_\_\_g matters, can only be d\_\_\_\_\_d by a b\_\_\_\_\_g treatment which f\_\_\_\_\_s. This is the e\_\_\_\_\_l f\_\_\_\_\_e of scouring.

3. The p\_\_\_\_\_n of fabric is usually c\_\_\_\_\_d by bleaching, which is t\_\_\_\_\_e referred to as a f\_\_\_\_\_l treatment given to the f\_\_\_\_\_c for its purification.

4. Bleaching, while e\_\_\_\_\_g the p\_\_\_\_\_n of a

- g\_\_\_\_d w\_\_\_\_e, increases the a\_\_\_\_y of the fabric to a\_\_\_\_b dyestuffs u\_\_\_\_y in the dyeing and printing processes to be continued l\_\_\_\_r on.
5. The c\_\_\_\_s termed "bleaching a\_\_\_\_s" are made u\_\_\_\_e of for bleach p\_\_\_\_s.
6. Sodium h\_\_\_\_c, hydrogen p\_\_\_\_e, and s\_\_\_\_m chlorite are the b\_\_\_\_g a\_\_\_\_s which are most c\_\_\_\_y used today.
7. When e\_\_\_\_d to light and in h\_\_t w\_\_\_\_r, and even on s\_\_\_\_e, sodium hypochlorite t\_\_\_\_s to d\_\_\_\_e.
8. It is often n\_\_\_\_y for the user of sodium h\_\_\_\_e to d\_\_\_\_e the amount of a\_\_\_\_e c\_\_\_\_e in a d\_\_\_\_y or a s\_\_\_\_k solution.
9. To o\_\_\_\_n good r\_\_\_\_s of bleaching for most p\_\_\_\_s, it is required to have a c\_\_\_\_n of 1.5 g per l\_\_\_\_e of a\_\_\_\_e chlorine in the bleach l\_\_\_\_r, but in general, the concentration required v\_\_\_\_s between 1 and 3 g per litre.
10. A bleaching liquor c\_\_\_\_g near e\_\_\_\_h to 1.5 g per litre of available c\_\_\_\_c can be made with one g\_\_\_\_n of c\_\_\_\_l sodium hypochlorite per 100 g\_\_\_\_. s. of water.

11. H\_\_\_\_\_n peroxide which is f\_\_\_\_\_g increasing a\_\_\_\_\_n to cellulose fibres is another very u\_\_\_\_\_l bleaching a\_\_\_\_\_t that is widely known.
12. It is usual to e\_\_\_\_\_s the s\_\_\_\_\_h of c\_\_\_\_\_l hydrogen peroxide in t\_\_\_\_\_s of the v\_\_\_\_\_e of oxygen l\_\_\_\_\_d by a unit of v\_\_\_\_\_e of the solution.
13. A p\_\_\_\_\_e solution by 1 ml of which 10 ml of o\_\_\_\_\_n may be l\_\_\_\_\_d is said to be a 10-volume p\_\_\_\_\_e solution.
14. For the b\_\_\_\_\_g of cotton fabrics w\_\_\_\_\_h hydrogen peroxide it is a\_\_\_\_\_s to have them i\_\_\_\_\_d into the l\_\_\_\_\_r in an u\_\_\_\_\_d or only p\_\_\_\_\_y-s\_\_\_\_\_d state.
15. When h\_\_\_\_\_n p\_\_\_\_\_e is used for bleaching cotton, the impurities do not form o\_\_\_\_\_e d\_\_\_\_\_s as they do with h\_\_\_\_\_e, and instead they e\_\_\_\_\_t a useful s\_\_\_\_\_g action.
16. When bleaching w\_\_\_\_\_h hydrogen peroxide, the w\_\_\_\_\_r used should have 2-5 d\_\_\_\_\_s of h\_\_\_\_\_s because of the s\_\_\_\_\_g e\_\_\_\_\_t of traces of c\_\_\_\_\_m and m\_\_\_\_\_m salts, and 1 oz per 100 gallons (0.06 g per litre) of m\_\_\_\_\_m s\_\_\_\_\_e should be a\_\_\_\_\_d when the water s\_\_\_\_\_y is of z\_\_\_\_\_o h\_\_\_\_\_s.

17. Apart from those i\_\_\_\_\_d above there is also s\_\_\_\_\_m o\_\_\_\_\_e which has been known to be another b\_\_\_\_\_g a\_\_\_\_\_t widely used for the bleaching of c\_\_\_\_\_e fibre g\_\_\_\_\_s i\_\_\_\_\_d of sodium hypochlorite.

18. D\_\_\_\_\_s are found with the use of sodium chlorite in bleaching, for o\_\_\_\_\_e, the o\_\_\_\_\_s can suffer from the h\_\_\_\_\_l o\_\_\_\_\_s vapours l\_\_\_\_\_d by the bleaching liquor.

19. Sodium chlorite, though c\_\_\_\_\_e t\_\_\_\_\_s the materials o\_\_\_\_\_y employed in the c\_\_\_\_\_n of bleaching e\_\_\_\_\_t, can give a very good w\_\_\_\_\_e w\_\_\_\_\_t a\_\_\_\_\_e deterioration or w\_\_\_\_\_g of the cotton.

20. T\_\_\_\_\_m has been found in practice a very useful kind of m\_\_\_\_\_l for r\_\_\_\_\_g corrosion, and so it is now b\_\_\_\_\_g used for bleaching plant.

II. Give the Chinese and the English equivalents of the following, respectively:

1. the processes so far they have dealt with

2. 迄今为止研究过的一些主要(基本)特征

3. the smaller part of the impurities that are left

4. 已除去了的这大部分杂质

6. the impurities including natural colouring matters
8. 包括煮练和漂白在内的这些工序
7. to be destroyed by a bleaching treatment which follows
8. 由接下去的净化处理来完成
9. ensure the production of a good white
10. 保证聚酰胺的形成
11. the ability of the bleached fabric to absorb dyestuffs
12. 经处理过织物的抗(耐)折缩和磨损的能力
13. the chemicals made use of for bleach purposes
14. 利用来作为各种不同用途的润滑剂
15. tend to decompose on storage
16. 在传送中势必会凝聚
17. to determine the amount of available chlorine in a delivery or a stock solution
18. 测定在即用液或贮备液中次氯酸钠的总量
19. be finding increasing application to cellulosic fibres
20. 正在得到对各类合成纤维的染色更广泛的应用
21. to be expressed in terms of the volume of oxygen
22. 按照含氧量来表示
23. the oxygen liberated by a unit of volume of the solution
24. 溶介在一个单位有机溶剂中的聚酰胺

25. be capable of liberating 10 ml of oxygen
26. 能吸收200毫升的水分
27. to introduce the cotton into the liquor in an un-scoured or only partially-scoured state
28. 把织物在未漂白或半漂白状态下引入染液
29. exert a useful stabilizing action
30. 发挥直接的转化作用
31. to use sodium chlorite for bleaching cellulose fibre goods instead of sodium hypochlorite
32. 用苛性碱(烧碱)而不是用碳酸钠(纯碱)制备漂液
33. the obnoxious vapours harmful to the health of the operatives
34. 有助(利)于去除杂质的漂白处理

### III. Put the following into English:

1. 漂白是接着煮练最后的纯化处理。它不仅产生高度洁白,而且在以后的染色或印花中增进织物均匀吸收染料的能力。
2. 次氯酸钠是一种易于分解的漂白剂。因此在使用前常有必要测定次氯酸钠溶液所含的有效氯含量,不管它是即用的或贮备的溶液。
3. 就具有百分之15~18有效氯含量的商品次氯酸钠溶液来说,制成每升含有1.5克有效氯的漂液只需要每100加仑水的1加仑此溶液。
4. 棉织物用二氧化氯(双氧水)漂白的优点之一是织物可以在未煮练或半煮练状态下引入漂液而没有任何不良的(要不得的)效应。
5. 亚氯酸钠是能产生极度洁白但释放有害于操作者健康的灰恶气体,而同时通常用于构造漂白设备的材料会有腐蚀性的—种漂白剂。

IV. Translate the following passage with the help of a dictionary: ( 50 分钟 )

In most cases the textile material will be whiter after scouring than before, owing to the removal of impurities, but this is not necessarily the case. Much depends on the type of material. For example, after kiering with alkaline liquors, cotton goods may be much browner or yellower than before the treatment. This is because some residual impurities have become more highly coloured by partial decomposition. Bleaching is then necessary.

The hypochlorite bleach is often combined with an alkaline treatment. The white obtained is often adequate also for pastel shades. Complete removal of husk, however, cannot be guaranteed. No fibre damage will occur if the process is carried out at the prescribed PH and within the reaction time indicated. Goods bleached by the combined alkali/hypochlorite process exhibit excellent absorbency.

The alkaline hydrogen peroxide bleach produces a very high degree of white. It removes husks completely. The alkaline peroxide bleach permits a very wide variation from cold batch bleaching to the rapid bleach. The bleach is stabilized with waterglass or organic stabilizers or their mixtures. Continuous processes

involve the danger of silicate deposits which are liable to cause difficulties in dyeing.

Sodium chlorite is the only chemical that can be used for bleaching polyester fibres; all other bleaches do not produce a satisfactory white effect.

## VIII BLEACHING (2)

There has always been a strong incentive to design machines to bleach cotton woven and knitted fabrics continuously on account of the large quantities which are processed. Completely continuous processing did not make great progress until hydrogen peroxide and sodium chlorite became available, both of which are oxidizing bleaching agents which give good results without being preceded by a prolonged alkali boil.

The continuous steaming is, in fact, a constituent part of the continuous bleaching system. In this operation, the fabric, either in rope form or in open width, is run through a 2 to 4 per cent solution of caustic soda contained in the trough of a padding machine and excess of this liquor is squeezed out by mangling rollers. The fabric then passes forward through a steaming device which raises the temperature of the fabric to about 100 C as it is being piled or plaited downwards into the long

arm of a J-box. The fabric may be led into this J-box at a rate of, say, 100yd/min(90m/min), but the capacity of the box is so large that the folds of fabric take 1 or 2 h. to work downwards into the short arm so that the fabric can be withdrawn at the same high rate to pass through a roller washing machine where the caustic soda and loosened and solubilised impurities are completely washed out of it. If it is now desired to bleach this purified cotton fabric it is either led through the same or a modified but similar plant where it is first impregnated with an alkaline solution of hydrogen peroxide instead of caustic soda, suitably heated in the steaming device which precedes the J-box and is then allowed sufficient time within the J-box to become fully whitened. Finally the fabric is thoroughly washed in a roller washing machine.

The essential part of such a continuous kiering and bleaching plant is the J-box, for it is this with its high fabric storage capacity which allows the fabric to pass through the plant continuously at a high rate. Although it is usual to treat cotton fabric in rope form, similar plant is available for treating fabric in open width. This form is used when there is a possibility that the fabric will become permanently creased or frayed by handling it in a folded state.

Pad-roll methods, although not continuous, are convenient, especially when the quantities to be bleached are less. The cloth passes, in open width, through an impregnater between two perforated pipes which direct steam onto it to heat the material, and then to a rolling device. The whole is enclosed in an insulated box so that the roll will remain hot for several hours. A typical process specification would be to pad with a liquor containing, per 100 gallons:

Sodium silicate	25 lb
Caustic soda	5 lb
Trisodium phosphate	13 lb
Soda ash	6 lb
Wetting agents	up to 10 lb
Hydrogen peroxide (35 per cent)	4 gal

The method does not give a full white but is useful as a preparation for printing or dyeing pale or bright shades.

#### New Words

1. account (ə'kaunt) n. 理由, 缘故, 会计  
on account of 由于(因)-----缘故
2. progress ('prougres) n. 进步, 发展

3. oxidize ( 'ɒksidaɪz ) v. 氧化  
 4. precede ( pri: 'si:d ) v. 先于-----, 优于-----  
 5. prolong ( prə'loŋ ) v. 延长、拖长  
 6. system ( 'sɪstɪm ) n. 系统、体系、制度、(方)法  
 7. rope ( rəʊp ) n. 绳子

in rope form 绳状

8. width ( wɪð ) n. 宽度、阔  
 9. pad ( pæd ) v. 浸轧、轧染

padding machine 浸轧机、轧染机

10. excess ( ɪk'ses ) n. a. 过量、过剩、过度  
 11. squeeze ( skwi:z ) v. 挤压  
 12. mangle ( 'mæŋɡl ) n. v. 轧液机、(辊筒)轧车  
 13. device ( di'veɪs ) n. 装置、设备  
 14. pile ( paɪl ) v. 堆置、堆放  
 15. plait ( pleɪt ) v. 褶、折叠  
 16. downwards ( 'daʊnwədz ) adv. 向下  
 17. arm ( a:m ) n. 臂  
 18. J-box ( 'dʒei-bɒks ) n. J形箱  
 19. rete ( reɪt ) n. 速率、速度  
 20. yd ( yard ) ( jɑ:d ) n. 码  
 21. capacity ( kə'p sɪtɪ ) n. 容量、收容力、知能  
 22. fold ( fəʊld ) n. v. 折叠、合拢  
 23. loosen ( 'lu:sn ) v. 放松、解散、松散  
 24. desire ( di'zaɪə ) v. 忌欲、渴求、要求