

英语进修班教材

印染专业

无锡市纺织工程学会翻印

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I. THE NATURAL FIBRES

(1) Cotton

Cotton remains the chief natural fibre which is now widely used in the textile industry although different types of man-made fibres have recently, to a great extent, taken the places of natural fibres.

Each cotton fibre is a very interesting mass cellulose. In the cotton fibre it is associated with a number of other substances, notably waxes, pectic products and mineral substances. These are quite small in amount, say, not more than 4 per cent altogether. They are referred to as impurities by the manufacturer of cotton goods. These impurities give the raw cotton a yellowish colour and make it somewhat harsh in handle. The waxy impurities give water-repellency. Generally these are objectionable effects and would make it difficult to colour and finish cotton fabrics satisfactorily, so it is always a first step in the art of dyeing and finishing to purify the cotton as completely as possible.

The cellulose of which cotton is made of a very tough and durable substance. It consists solely of carbon, hydrogen and oxygen ($C_6H_{10}O_5$). So permanent and stable is cellulose that it has universally been accepted as the most suitable raw material for making the highest qualities of viscose rayon and cellulose acetate fibres now so much used,

NEW

WORDS

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|----------------------|--------------------|
| 1. cotton | n. 棉, 棉花 |
| 2. remain | v. 保持, 仍是, 余留, 逗留 |
| 3. chief | a. 主要的, 首席的 |
| 4. natural | a. 天然的, 自然的 |
| 5. fibre | n. 纤维 |
| 6. textile | a. 纺织的 n. 纺织品 |
| 7. recently | adv. 最近, 近来 |
| 8. extent | n. 程(限)度, 范围, 广度 |
| to a ... extent | 达到...程度 |
| to the extent of ... | 达到...程度 |
| 9. interesting | a. 有趣的, 有价值的, 有意义的 |
| 10. mass | n. 团, 块, 堆, 群 |
| a mass of ... | 一团(堆)... |
| 11. cellulose | n. 纤维素 |
| 12. associate (with) | v. 与...发生联系 |
| 13. notably | adv. 显著地 |
| 14. wax | n. 蜡, 蜡状物 |
| 15. pestic | a. 果胶的 |
| 16. say | v. 比如说, 大约(用作插入语) |
| 17. altogether | adv. 总共, 统统, 总的说来 |
| 18. refer | v. 提到, 指, 查询 |
| refer to ... as | 称某(人、物)为 |
| 19. impurity | n. 杂质 |
| 20. goods | n. 货物, 货品 |
| 21. raw | a. 生的, 未加工的 |
| 22. yellowish | a. 淡(带)黄色的 |

23. colour	n. 顏色, 顏(染)料 v. 染色
24. somewhat	adv. 有矣, 稍微
25. harsh	a. 粗糙的, 苛刻的
26. handle	n. 手志
27. waxy	a. 蜡质的, 涂蜡的, 似蜡的
28. water-repellency	n. 防水性
29. objectionable	a. 引起反对的, 要不得的
30. effect	n. 结果, 作用, 效果(应)
31. finish	n. 结束, 整理 v. 结束, 完成, 整理
32. fabric	n. 织物
33. satisfactorily	adv. 令人满意地, 符合要求地
34. art	n. 艺术, 工艺
35. dyeing	n. 染色(工艺)
36. purify	v. 使纯净
37. completely	adv. 完全地
38. durable	a. 耐用的, 持久的
39. solely	adv. 单独, 唯一, 全
40. permanent	a. 永(持)久的
41. stable	a. 稳定的, 坚固的
42. universally	adv. 普遍地
43. accept	v. 接受, 承认
44. suitable	a. 合适的, 适宜的
45. viscose	n. 粘胶液(纤维)
46. rayon	n. 人造丝(纤维), 嫫索
47. acetate	n. 醋酸盐(酯) 醋酸根(基)
cellulose acetate	醋酸纤维素

I. THE NATURAL FIBRES

(2) Wool

Wool, the so-called animal fibres, is perhaps the most useful of all fibres. Not only is it obtainable in very large quantities, but is a warm soft-handling and is thus particularly suitable for outer clothing and underwear.

Wool fibres are quite different in form and composition from cotton and linen. Raw wool also contains a high proportion of impurities, mainly of a greasy character, which have to be removed by a scouring process before spinning and weaving operations can be carried out.

In its purified condition each wool fibre is composed of the protein known as keratin, a substance which consists of carbon, hydrogen, oxygen, nitrogen and sulphur. Keratin differs from cellulose in containing nitrogen and sulphur, and it is the presence of these two additional elements in the wool molecule which gives wool fibres properties profoundly different from those of the vegetable fibres. Notably greater warmth of handle is associated with a protein fibre.

Wool fibres are extremely resilient and so wool materials are highly resistant to crushing and do not form permanent creases under ordinary conditions. They are also very elastic (arising from the wool molecules being long, folded instead of straight and also crosslinked) and when the tension is released after stretching (wet or dry) they quickly spring back to their original length. No other natural textile fibre is the equal of wool in this respect.

NEW

WORDS

1. wool	n. 羊毛
2. animal	n. 动物
3. perhaps	adv. 或许, 也许
4. obtainable	a. 可获得的
5. soft-handling	a. 柔软柔和的
6. outer	a. 外部(层)的
7. clothing	n. 衣着
8. underwear	n. 内衣
9. composition	n. 组成, 成分, 合成物
10. linen	n. 亚麻布(织物)
11. contain	v. 包含, 含有, 包括
12. mainly	adv. 主要地
main	a. 主要的
13. greasy	a. 油腻的, 油污的
14. character	n. 特性
15. remove	v. 去除, 排除, 移动
16. scouring	n. 煮炼, 精炼
17. spinning	n. 纺纱
18. weaving	n. 织造
19. compose	v. 构成
be compose of	由... 组成
20. protein	n. 蛋白质, 朊
21. keratin	n. 角朊
22. sulphur	n. 硫(磺)
23. presence	n. 存在
24. additional	a. 附加的, 额外的

25. profoundly	adv. 深深地, 极度地
26. vegetable	n. 蔬菜, 植物
27. warmth	n. 暖和
28. extremely	adv. 极端地, 非常
29. resilient	a. 有弹性的
30. highly	adv. 非常, 十分, 高度地
31. crush	n. v. 压碎, 毁坏, 弄(梅)烂
32. crease	n. 折痕 v. 起皱
33. elastic	a. 弹性
34. arise	v. 升起, 出(呈)現
arise from ...	产生(引起)
35. fold	v. 折迭, 合拢, 包
36. instead	adv. 代替
instead of...	代替, 不是
37. crosslink	n. 交链(键)
38. tension	n. 张力
39. release	v. 放松, 释放
40. stretch	v. (纤维, 织物的)伸张, 拉伸
41. wet	a. 湿的
42. original	a. 最初的, 原始的, 原先的
43. length	n. 长度
44. respect	n. 方面, 关系

1. THE NATURAL FIBRES

(3) Silk

Silk as produced by the cultivated silkworm was at one time the most prized of all the textile fibres. There are two main types of silkworm, the cultivated and the wild ones. It is the former type which is under strict control that produces the highest quality of silk. Wild silkworms usually give a stronger, more alkali-resistant silk, but it has the disadvantage of lacking uniformity.

Characteristics of silk are its great strength, its softness, pleasing lustre and excellent elasticity. In addition, silk is a bad conductor of heat and thus handles warmly. All these desirable properties united in the one fibre make silk the most valuable of all the fibres used in textile manufacture. It is no wonder that the rayon industry has arisen with initial idea of producing artificial fibres at least the equal of silk.

Raw silk has a specific gravity of 1.33 but degumming gives pure fibroin having the lower specific gravity of 1.25. With this change brought about by degumming, the silk fibres become nearly white or transparent and gain in softness.

The silk-gum affords some protection to the fibroin fibres which it coats and cements together so that, where circumstances permit, it is better to weave or knit with raw silk and then degum the fabric so produced. However, to allow this the raw silk threads must first be softened with an oil emulsion so that they are more supple.

NEW

WORDS

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| 1. silk | n. 丝 |
| 2. cultivate | v. 栽培, 养殖, 培养 |
| 3. silkworm | n. 蚕 |
| 4. prize | v. 珍视 n. 奖品, 众人争求的东西 |
| 5. wild | a. 野生的, 荒凉的 |
| 6. former | n. 前者 a. 从前的 |
| 7. strict | a. 严格的 |
| 8. usually | adv. 通常 |
| usual | a. 通常的 |
| 9. alkali-resistant | a. 抗(拒)碱的 |
| 10. disadvantage | n. 不利条件, 缺点 |
| 11. uniformity | n. 均匀性 |
| 12. characteristic | n. 特性, 特征 |
| 13. strength | n. 强度, 力 |
| 14. softness | n. 软度 |
| 15. pleasing | a. 使人愉快的, 合意的 |
| 16. luster | n. 光泽 |
| 17. excellent | a. 极好的, 卓越的 |
| 18. elasticity | n. 弹性 |
| 19. addition | n. 增加物 |
| in addition | 另外 |
| 20. warmly | adv. 温暖, 热烈 |
| 21. desirable | a. 合意的, 合适的 |
| 22. valuable | a. 有价值的, 宝贵的 |
| 23. wonder | n. 惊奇, 疑惑, 奇迹 |
| 24. initial | a. 最初的, 开始的, 初速的 |

25. artificial	a. 人造(工)的
26. specific	a. 特有(定)的,具体的,比的
27. gravity	n. 重力,引力
specific gravity	比重
28. degum	v. 使脱胶
29. fibroin	n. 丝(心)蛋白,丝纤朊
30. white	a. 白的,白色的
31. transparent	a. 透明的
32. gain	v. 增加,增进,获得利益,获得
33. silk-gum	n. 丝胶
34. afford	v. 提供,给予,负担得起(费用) 损失
35. protection	n. 保护
36. coat	v. 涂层
37. cement	v. 粘接,胶合
38. circumstance	n. 情况,环境,处境
39. permit	v. 允许,许可
40. knit	v. 编结,针织
41. thread	n. 线
42. soften	v. 使柔软,使松软
43. emulsion	n. 乳胶,乳浊液
44. supple	a. 柔软的,易弯曲的

1. THE NATURAL FIBRES

(4) Linen

Linen materials are made from fibres found in flax.
For extracting the long bundles of linen fibres the traditional method, which is still used, is that of

exposing the flax stalks, after rippling, to the action of weather or water. The conditions are such that bacteria and other organisms act on the stalks and disintegrate their substance with the exception of the linen fibres. At a suitable stage of this decomposition the stalk substance is so loosened that the linen fibres can be separated mechanically from the other part of the stalks which have been softened and solubilised.

Compared with cotton, linen fibres have a lower cellulose content. On an average the linen fibres contain only about 75 per cent of pure cellulose, the remaining matter being a gummy pectic substance. The surface of each fibre is smooth and this helps to give linen materials their characteristic high lustre.

In many of its chemical properties linen closely resembles cotton. Thus it is resistant to alkalis and is easily deteriorated by acids. Actually linen is stronger than cotton. It is extremely durable and evidence for this is to be found in the numerous linen mummy cloths which have been taken from Egyptian tombs and which even today have a fair degree of strength.

NEW WORDS

1. flax	n. 亚麻植物
2. extract	v. 抽出, 萃取
3. bundle	n. 束, 捆
4. traditional	a. 传统的, 习惯的

5. expose	v. 使暴露, 揭露(发)
6. stalk	n. (植)花梗, 主茎
7. ripple	v. 梳麻
8. weather	n. 气候, 天气
9. condition	n. 情况, 条件
10. bacteria	n. 细菌
11. organism	n. 生物体, 有机体
12. disintegrate	v. 使分离, 使分解
13. substance	n. 物质, 实体, 本体
14. exception	n. 例外, 除外
15. stage	n. 阶段, 时期
16. decomposition	n. 分解
17. loosen	v. 解开, 放松, 使松弛
18. solubilise	v. 使溶解
19. compare (with)	v. 与...相比
20. average	n. 平均
21. gummy	a. 胶粘(性)的
22. smooth	a. 光滑的
23. resemble	v. 象, 类似
24. deteriorate	v. 使恶化, 使退化
25. actually	adv. 实际上, 竟然
actual	a. 实际的, 现实的
26. evidence	n. 根据, 证据
27. numerous	a. 无数的, 许许多多的
28. mummy	n. 木乃伊
29. cloths	n. 衣料, 织物
30. Egyptian	a. 埃及的
31. tomb	n. 坟墓, 墓碑

II. THE MAN-MADE FIBRES

(1) Viscose Rayon

Fibres composed of regenerated cellulose are known as rayons. Viscose rayon, which is often referred to as a regenerated cellulose rayon, is one of the different types of rayon. It is made from cellulose which can be obtained either from cotton linters or, more frequently today, from the cheaper wood pulp (preferably spruce).

The regenerated rayon has exactly the same chemical composition as the cellulose used as raw material but , nevertheless, there is a difference between them so that the regenerated cellulose is somewhat less durable than the original although the fibres have many compensating advantages.

Many properties of the viscose rayon, such as lustre, strength, softness and affinity for dyes, are influenced by the degree of stretch to which the freshly formed yarn is subjected in travelling from the spinneret to the centrifugal pot. So apart from producing a finer filament rayon the better use of stretching treatments is most important for manufacturing very strong rayon. By highly stretching rayon fibres at the time of their formation or during the process of their coagulation, it has become possible to produce fibres having a very high tensile strength.

Considerable trouble might occur in dyeing and finishing if in the same fabric there were present more than one quality of viscose rayon arising from differences in the manufacturing operation as just described.

NEW

WORDS

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|------------------|--------------------------|
| 1. regenerate | v. 再生 |
| 2. obtain | v. 获得, 取得 |
| 3. linter | n. 棉短绒, 棉籽绒 |
| 4. frequently | adv. 经常 |
| 5. cheap | a. 便宜, 价廉 |
| 6. pulp | n. 浆状物, 浆 |
| 7. preferably | adv. 更可取, 宁可 |
| 8. spruce | n. 云杉木 |
| 9. exactly | adv. 恰好, 恰恰, 真是 |
| 10. nevertheless | conj. 然而, 不过 adv. 仍然, 不过 |
| 11. compensate | v. 补偿, 赔偿 |
| 12. affinity | n. 亲和(合)力 |
| 13. influence | v. n. 影响 |
| 14. freshly | adv. 刚才, 精神饱满地 |
| fresh | a. 新的, 新近的, 新鲜的 |
| 15. yarn | n. 纱 |
| 16. subject | v. 使遭受, 使受到 |
| 17. spinneret | n. 喷丝头 |
| 18. centrifugal | a. 离心的 |
| 19. pot | n. 罐 |
| centrifugal pot | 离心(纺丝)罐 |
| 20. filament | n. 长丝 |
| 21. treatment | n. 处理 |
| 22. formation | n. 构成, 形成 |
| 23. coagulation | n. 凝结 |
| 24. tensile | a. 张力的, 拉力的, 抗张的 |
| considerable | a. 相当大(多)的 |

26. occur

v. 发生, 出现

27. present

a. 現存的

28. describe

v. 描绘, 叙述

II. THE MAN-MADE FIBRES

(2) Cellulose Acetate Fibres

The properties of acetate fibres are in general quite different from those of viscose rayon. Two important differences must be mentioned. Firstly, that acetate is thermoplastic and secondly that it is soluble (or at least, swellable) in many organic solvents. Cotton , wool, silk, linen and the viscose cuprammonium rayons are almost inert in these directions.

When heated to about 210 C acetate fibers soften and, if the heating is continued, the filaments fuse together to form a solid brittle thread. So, in ironing acetate rayon materials, care must be taken to avoid the use of too hot an iron.

Acetate fibres can have their safe ironing temperature raised about 20 C by partial saponification, say by treating them with a boiling solution of sodium carbonate. This treatment hydrolyses the fibres so as to split off some of the acetyl groups (only a small proportion is necessary) and bring the fibres nearer to the regenerated cellulose type of fibre.

Owing to the fact that acetate fibres are composed of cellulose acetate they are less creasable than regenerated

cellulose fibres and they handle warmer.

Acetate fibres absorb considerably less moisture from the air than other textile fibres. This has given much trouble in that under the influence of heat and moisture acetate fibre materials can develop permanent creases during dyeing operations.

It may be pointed out that cellulose acetate is not only used for the production of textile fibres. It is a most important plastic and as such is widely used in the plastic industry for moulded articles.

NEW WORDS

1. general	n. 普通事物 a. 一般的
in general	一般地, 大体上
2. mention	v. 提到, 说起
3. thermoplastic	a. 热塑的
4. soluble	a. 可溶的, 溶解的
5. swellable	a. 可(会)膨胀的
6. organic	a. 有机的
7. solvent	n. 溶剂
8. cuprammonia	n. 铜铵
9. inert	a. 惰性的
10. direction	n. 方面, 方向
11. fuse	v. 熔化

12. brittle	a. 脆的
13. iron	v. 熨烫
14. avoid	v. 避免
15. raise	v. 使升高, 举起
16. partial	a. 部分的, 不完全的, 偏袒的
17. saponification	n. 皂化(作用)
18. sodium	n. 钠
19. carbonate	n. 碳酸盐(酯)
sodium carbonate	碳酸钠, 纯碱
20. hydrolyse	v. 使水解
21. split (off)	v. 使分裂, 割裂
22. group	n. 基团, 原子团
acetyl group	乙酰基
23. proportion	n. 比例
24. owing (to)	prep. 由于
25. creasable	a. 起绉的
26. absorb	v. 吸收
27. considerably	adv. 相当
28. moisture	n. 水分, 潮湿, 湿度
29. develop	v. 逐步显现出, 产生
30. mould	v. 霉菌 n. 浇铸, 模压
31. article	n. 物品, 物件