

In the case of mechanical pulp, the wood is processed into fibre form by grinding it against a quickly rotating stone under addition of water. The yield of this pulp amounts to approx. 95%. The result is called **wood pulp** or MP – mechanical pulp.

The disadvantage of this type of pulp is that the fibre is strongly damaged and that there are all sorts of impurities in the pulp mass. Mechanical wood pulp yields a high opacity, but it is not very strong. It has a yellowish colour and low light resistance.

For the production of wood pulp, the pure fibre has to be set free, which means that the lignin has to be removed as well.

To achieve this, the wood chips are cooked in a chemical solution. In case of wood pulp obtained by means of chemical pulping, we differentiate between sulphate and sulphite pulp, depending on the chemicals used. The yield of chemical pulping amounts to approximately 50%. The fibres in the resulting pulp are very clean and undamaged. The wood pulp produced by this process is called woodfree. It is this type of pulp which is used for all fine papers.

The sulphate process is an alkaline process. It allows for the processing of strongly resinous wood types, but this requires expensive installations and intensive use of chemicals.

The **sulphite process** utilises a cooking acid consisting of a combination of free sulphur acid and sulphur acid bound as magnesium bi-sulphite (magnesium bi-sulphite process).

In the sulphite process, the cooking liquid penetrates the wood in the longitudinal direction of the fibres, which are aligned in this same longitudinal direction in the chips. When the cooking liquid penetrates the wood, it decomposes the lignin, which, during the actual cooking process, is converted into a water-soluble substance that can be washed out. The decomposition products of the carbohydrates are included in the cooking liquid as sugar.

When the waste fluids are concentrated in order to recycle the chemicals, these sugars are processed to alcohol and ethanoic acid. In this stage, the sulphite pulp is slightly brown and therefore has to be bleached to obtain a base colour suitable for white papers.

I. Reading comprehension:

1. Explain **with your own words** the following words:

Mechanical pulp – wood pulp – wood chips – sulphate pulp – sulphite pulp.

2. Say if the following statements are true or false and justify in both cases.
 - a) After the transformation of sugars into alcohol and ethanoic acid, sulphite pulp becomes brown coloured.
 - b) Wood decomposes the lignin and will be converted during the sulphite process into water-soluble substance.
 - c) The lignin removed from

II. Put the following sentences into the passive:

- 1) They are currently testing bone-growth hormones capable of regenerating bony tissue.
- 2) It is important to bear in mind that tissues more than a few millimetres thick require blood vessels.
- 3) Most people acknowledge that Judah Folkman has played a key role in neorgan engineering.
- 4) In 1972, Folkman discovered that developing tumours need their own blood vessels to supply themselves with nutrients.
- 5) Folkman suggested that we could use specific molecules to slow down the growth of tumours.
- 6) Up to now, they have only examined blood vessel growth thoroughly.
- 7) One solution is to use injectable polymers to convey bio-active molecules.
- 8) As the population ages, hospitals will need more and more replacement tissue.

III. Complete the following sentences using the right verb + the right preposition:**Invite- divide- fill- crashed- spend- give**

Ex: I wanted to go alone but she **insisted on** coming with me.

- 1) We've been The party but unfortunately we can't go.
- 2) It's a very large house. It's..... four flats.
- 3) Steve gave me an empty bottle and asked me to..... it with water.
- 4) We lost control of the car and the water.
- 5) How much do you food each weekend?
- 6) I don't like it when people borrow things but don't

IV. Choose the correct answer.

- 1) The device enables temperatures to be monitored,..... improving the safety margin. (thereby/ nevertheless/ e.g/ namely)
- 2) A new technique,the infra-red camera, means that dust surrounding new stars can be penetrated. (whereas/ namely/ besides/ for instance).
- 3) Superconducting, when materials lose all resistance, will boost computer performances. (thus/ besides/ obviously/ that's to say)
- 4) Programmable electronic systems are more reliable ,..... they can be used to handle radio-active material. (whereas/ such as/ moreover/ in other words)
- 5) Computers can process data extremely fast.this, they have several serious drawbacks. (in spite of/ however/ moreover/ whereas)
- 6) The new engine is far more efficient. more work is required to reduce noise levels. (Nevertheless / whereas/ i.e./ besides).

V. Witten expression:

Describe the process of paper manufacturing in exactly 150 words.

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I. Reading comprehension:

1. Explain **with your own words** the following words: (2.5 p)

Mechanical pulp – wood pulp – wood chips – sulphate pulp – sulphite pulp.

2. Say if the following statements are true or false and justify in both cases. (3.5)
 - a) After the transformation of sugars into alcohol and ethanoic acid, sulphite pulp becomes brown coloured.
 - b) Wood decomposes the lignin and will be converted during the sulphite process into water-soluble substance.

II. Put the following sentences into the passive: (4.P)

- 1) ... are being tested.
- 2) ... blood vessels are required ...
- 3) . It is (widely) acknowledged that a key role has been played ...
- 4) ... was discovered ...
- 5) ... specific molecules could be used ...
- 6) ... blood vessel growth has been thoroughly examined.
- 7) Using injectable polymers ...
- 8) ... more and more replacement tissue will be needed.

III. Complete the following sentences using the right verb + the right preposition: (3.p)**Invite- divide- fill- crashed- spend- give**

Ex: I wanted to go alone but she **insisted on** coming with me.

- 1) We've been **invited to** The party but unfortunately we can't go.
- 2) It's a very large house. It's **divided into** four flats.
- 3) Steve gave me an empty bottle and asked me to **fill** it with water.
- 4) We lost control of the car and crashed into the water.
- 5) How much do you spend on food each weekend?
- 6) I don't like it when people borrow things but don't give back.

IV. Choose the correct answer. (3. P)

- 1) The device enables temperatures to be monitored **thereby** improving the safety margin.
- 2) A new technique, **namely** the infra-red camera, means that dust surrounding new stars can be penetrated.
- 3) Superconducting, **that's to say** when materials lose all resistance, will boost computer performances. ()
- 4) Programmable electronic systems are more reliable **moreover** they can be used to handle radio-active material.
- 5) Computers can process data extremely fast **in spite of** this, they have several serious drawbacks.
- 6) The new engine is far more efficient **Nevertheless** more work is required to reduce noise levels.

V. Witten expression: (4.P)

Describe the process of paper manufacturing in exactly 150 words.