Material Cost and Control

Syllabus: *Importance and need for material control; Material purchase procedure; Stores functions: receiving, inspecting, storing, issue of materials; materials costing- pricing of receipts, pricing of issues: LIFO and FIFO (and Standard price-3rd year.) stores ledger, inventory control techniques- EOQ, level settings, ABC analysis, Perpetual (continuous) inventory system.*

Materials:

The term material simply means any commodity or substance which is processed in a factory in order to be converted into finished product. It is the first and most important element of cost. It includes: raw materials, components, tools, spare parts, consumables stores.

Materials can be classified into two types:

(i) Direct Material: All materials which become an integral part of the finish product and which can be conveniently assigned to specific physical unit is termed as 'Direct Material'. These materials directly enter the production and form part of the finished product. For example, wood for furniture, bricks, stones and cement for house, cloth for garments etc.

Direct materials include the following

(a) Materials specifically purchased for a job, process or order;
(b) Parts and components used in assembling a product i.e. tyres of motor car, batteries for UPS etc.
(c) Materials transferred from one cost centre to another;
(d) Primary packing materials like, cartons, card-board boxes etc.

(ii) Indirect Materials: All those materials which cannot be classified as direct materials. Indirect materials cannot be directly allocated but are apportioned to the cost centres. Indirect materials are:

(a) Consumables, lubricants, grease, oil etc;
(b) Minor items like thread in dress making, nails in shoe making etc.
(c) Small tools for general use.

Distinction between Direct Materials and Indirect Materials:

Direct Materials	Indirect Materials
1. It is a part of prime cost. 2. It is primary for the production. 3. It varies with changes in output. (Variable cost) 4. It can be controlled. 5. It can be identified with finished product.	1. It is a part of overheads. 2. It is supplementary for the production. 3. It remains fixed. (Fixed Cost) 4. It cannot be easily controlled. 5. It cannot be identified with the finished product.

Material Control/ Material Cost Control:

According to the Indian Association of Materials Management, 64% of the cost of a product is constituted by the material cost. Thus, the importance of materials control lies in the fact that any saving made in the cost of materials will go a long way in reducing the cost of production and improving the profitability of a concern

Material control is a system which ensures that right quality of materials is available in the right quantity at the right time and right place with right amount of investment. It is systematic control over purchasing, storing, and issuing of materials so as to have the minimum possible cost of materials. Thus, material control is exercised at three stages:-

(i) Purchasing of materials- Purchasing control;
(ii) Storing of materials- Store control;
(iii) Issuing of materials- Issuing Control or material costing.

Purchase Control:

Purchase Control covers control on all aspects of purchase department. The purchase department plays a very important role in purchasing materials. The responsibilities for purchasing all types of materials are entrusted to this department. Purchase department or purchasing may be centralized, decentralized and Centralized- Decentralized.

Centralized Purchasing: Centralized purchasing refers to purchase of materials under one purchase department headed by a competent purchase manager. All the purchases should be made by that department to avoid duplication, overlapping and the non-uniform procurement. All other departments

year in which the loss was incurred
- Can be adjusted only against Income from business or profession
- Not necessary to continue the business at the time of set off in future years
- Cannot be carried forward if the return is not filed within the original due date.

Speculative Business Loss :

- Can be carry forward up to next 4 assessment years from the assessment year in which the loss was incurred
- Can be adjusted only against Income from speculative business
- Cannot be carried forward if the return is not filed within the original due date.
- Not necessary to continue the business at the time of set off in future years

Specified Business Loss under 35AD :

- No time limit to carry forward the losses from the specified business under

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Set Off and Carry Forward of Losses

35AD
- Not necessary to continue the business at the time of set off in future years
- Cannot be carried forward if the return is not filed within the original due date
- Can be adjusted only against Income from specified business under 35AD

Capital Losses :

- Can be carry forward up to next 8 assessment years from the assessment year in which the loss was incurred
- Long-term capital losses can be adjusted only against long-term capital gains.
- Short-term capital losses can be set off against long-term capital gains as well as short-term capital gains
- Cannot be carried forward if the return is not filed within the original due date

Losses from owning and maintaining race-horses:

- Can be carry forward up to next 4 assessment years from the assessment year in which the loss was incurred
- Cannot be carried forward if the return is not filed within the original due date
- Can only be set off against income from owning and maintaining race-horses only

Points to note:

1.A taxpayer incurring a loss from a source, income from which is otherwise exempt from tax, cannot set off these losses against profit from any taxable source of income

2. Losses cannot be set off against casual income i.e. crossword puzzles, winning from lotteries, races, card games, betting etc.

or

Minimum Stock Level x ½ of Re-order Quantity.

2. ABC Analysis: (Selective Inventory Control) or Always Better Control Method:

The concept of ABC analysis was developed by Pareto, an Italian philosopher in the nineteenth century. This analysis based on the principle of "Vital few & Trivial *(worthless)* many". When this technique is used as a tool of material control, the materials are classified into three categories such as:

Category-A items: These items are small in number but high in usage value, where these consist 8% of store but cover 75% of total cost of stores (Vital few).

Category B items: These items are medium in number and medium usage value, where these consist 25% of store but cover 20% of total cost of stores (Normal item)

Category-C items: These items are high in number but low usage value, where these consist 67% of store but cover 5% of total cost of stores (Trivial many)

According to this technique, a strict control is exercised over 'A' category materials under the supervision of an experienced person, a moderate control is exercised over 'B' category materials and relatively lesser degree of control over 'C' category materials. The object of carrying out ABC analysis is to develop policy guidelines for selective controls.

Advantages of ABC Analysis:

1. A strict control is exercised on costlier items,(in A category items)
2. It saves time & cost by exercising economic system of control over low value items (C category items)
3. It is suitable, when resources and staff are less.
4. It ensures optimum investment in inventory but placing frequent order of costlier items.
5. It helps in the maintenance of high inventory turnover rate.

3. Economic Order Quantity (EOQ):

This technique of material control helps in deciding the purchase of most favourable quantity of materials when fresh suppliers are required. The quantity of materials to be ordered at a time is affected by two conflicting cost, termed as "Ordering cost" and "Inventory carrying cost". The cost carrying inventory will be less when the quantity of materials bought is also less and vice-versa. Therefore, EOQ is the quantity of materials where Ordering cost of the materials and Carrying cost of the materials are minimum, hence total cost of the materials will be minimised.

The following formula is used to calculate EOQ:

$$EOQ = \sqrt{\frac{2AO}{I}}$$

Where,

A = Annual Usage/ Consumption

O= Ordering Cost per order.

Ordering costs include:

(i) Cost of placing order,
(ii) Cost of Transportation,
(iii) Cost of receiving goods,
(iv) Cost of inspecting goods,
(v) Cost of follow-up of orders.

I = Inventory Carrying Cost per unit.

Inventory costs include:

(i) Cost of store place/space;
(ii) Cost of handling materials;
(iii) Cost of insurance;
(iv) Cost of investment in store,
(v) Cost of deterioration and damage of store;
(vi) Cost of store staff.

Assumptions in EOQ:

1. The supply of goods is satisfactory, i.e. goods can be purchased whenever these are needed;
2. The quantity to be purchased by the concern is certain;
3. The prices of the goods are stable.
4. Ordering costs are constant;
5. Carrying costs are constant;
6. Lead period/ time is zero.

Material Cost and Control

4. Perpetual/ Continuous Inventory control:

This a technique of recording stores balances after every receipt and issue, to facilitate regular stock taking. Under this method the balance of materials as shown by the bin card and store ledger card is compared along with the actual quantity of materials in stock. The book balance and the physically verified balance must agree with each other. The discrepancy if any, prompt action is taken to avoid such deficits.

Under this system, to verify the materials on a regular basis, a team may be constituted which verifies the stock continuously throughout the year in accordance with a predetermined programme.

1. Issue price do not reflect current market price;
2. If the prices fluctuate frequently, this method may lead to clerical errors;
3. During inflation, this method is not suitable due to high replacement cost of materials.

2. Last in First out (LIFO): This method is exactly the opposite of FIFO method. For pricing the

materials issues the price of the latest batch or lot of materials is adopted. If this lot exhausts then the price of the earlier lot is made use of.

Advantages of LIFO method:

1. It is simple to understand and easy to operate;
2. This method is suitable during inflation (rising prices);
3. Issue price reflects current market price;
4. This method recovers cost from the production because actual cost material is charge to production.

Disadvantages of LIFO Method:

1. If the prices fluctuate frequently, this method may lead to clerical errors;
2. During deflation, this method is not suitable;
3. This method cannot be operated when the invoice price does not reach before issues are to be priced.

Techniques of Material Control:

The important techniques used to exercise control over cost of materials are as follows:

1. Level Setting,
2. ABC Analysis,
3. Economic Order Quantity (EOQ),
4. Perpetual/ Continuous Inventory Control,
5. VED Analysis,
6. Input-output Ratio Analysis, etc.

1. Level Setting:

This technique of material control is helpful in avoiding overstocking and understocking of materials in storeroom. The stock levels are fixed by the management and it is the duty of storekeeper to observe them. These levels are as follows:

(i) Re-order Level: This is the level at which a fresh order for materials are prepared and placed with a suppliers. This level is calculated by the following way:
Re-order Level = Minimum Level + (Normal Consumption x Normal Re-order Period)

Or, = Maximum usages x Maximum Reorder period.

(ii) Minimum Level (Safety Stock). This represent the minimum quantity of the material which must be maintained in hand at all times.
Minimum Level = Re-order Level - (Normal Consumption x Normal Re-order Period)

(iii) Maximum Level: It is the level beyond which storage of raw materials are not allowed to go.
Maximum Level = Re-order Level + Re-order Quantity – (Minimum Consumption x Minimum Re-order Period)

(iv) Danger Level: This level is fixed in between minimum level and zero level. This level is particularly fixed to control the materials during the period of emergency so that urgent and priority orders are not held up.
Danger Level = Average Consumption x Maximum Re-order Period for emergency purchases.

(v) Average Stock Level: The average stock level is calculated by the following formula:
Average Stock Level = ½ (Minimum Level + Maximum Level)

or

Minimum Stock Level + ½ of Re-order Quantity.

2. ABC Analysis: (Selective Inventory Control) or Always Better Control Method:

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Category-B Items: These items are medium in number and medium usage value, where these

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3. The prices of the goods are stable
4. Ordering costs are constant;
5. Carrying costs are constant;
6. Lead period/ time is zero.

4. Perpetual/ Continuous Inventory control:

This a technique of recording stores balances after every receipt and issue, to facilitate regular stock taking. Under this method the balance of materials as shown by the bin card and store ledger card is compared along with the actual quantity of materials in stock. The book balance and the physically verified balance must agree with each other. The discrepancy if any, prompt action is taken to avoid such deficits.

Under this system, to verify the materials on a regular basis, a team may be constituted which verifies the stock continuously throughout the year in accordance with a predetermined programme. Having verified the materials, a store audit note is prepared by the team.

Advantages of Perpetual Inventory Control:

1. The long and costly work of stock taking is avoided;
2. A detailed and reliable check on the stock is obtained;
3. It is not necessary to stop production during the period of stock verification;
4. Discrepancies are readily located and appropriate measures can be taken;
5. It helps in avoiding understocking and overstocking.

Limitations of Perpetual Inventory Control:

1. The system is expensive for a small concern;
2. The information about actual stock of a particular item on a particular day may not be available due some genuine reasons.

Distinction between Periodic Inventory System and Perpetual Inventory System:

Periodic Inventory System	Perpetual inventory System
1. It is periodical verification done at the end of the year.	1. It is a continuous process spread over the year.
2. It is ascertained on the basis of an actual count/ verification of materials.	2. It is ascertained on the basis of records.
3. It requires closing down of work for stock taking.	3. It does not require closing down of work for stock taking.
4. It does not facilitate the continuous stock checking.	4. It facilitates the continuous stock checking.
5. It is simple and inexpensive.	5. It is elaborate and expensive.
6. It is conducted by ordinary staff.	6. It is conducted by audit and account staff.

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sub-divided into small space called 'Bin'.

(II) Store Ledger Card/ Account:

(a) Meaning: Store Ledger is kept in the Costing Department and is identical with the bin card expect that receipts, Issues and balances are shown along with their money values. This contains an account for ever item of stores and makes a record of the receipts, issues and balances, both in quantity and value. Thus, this ledger provides the information for the pricing of materials issued and the money value at an time of each item in stores.

Are Bin Cards necessary at all? Explain.

Some Persons argue that where a store ledger is maintained, the bin card is a duplicate record and as such it should not maintain. This is wrong and is against the basis principles of store accounting on account of the following reasons:

1. The storekeeper is responsible for the maintenance of stores and as such he should have a stock record under him.
2. The storekeeper is held responsible for the difference in the physical stock and the stock record, which can be shown by the Bin cards.
3. The store ledger is not kept up-to-date because posting of transactions are made periodically, where bin cards provide up to date balance of stock.
4. Bin cards and store ledger act as a cross check on each other because of stock disclosed by bin cards should be agree with the balance shown by the store ledger.

Thus, the accuracy of both records is essential for store control.

Issuing Control or Material Costing- Issuing of Materials:

Materials are kept in stores so that the storekeeper may issue them whenever these are required by the production departments. Materials issued from the stores should be price at the value at which they are carried in stock. But the issued materials may not be of one purchase rate. If the same purchased price is paid for all lots of a given material, no difficulty would be encountered in the valuation of that material when it is issued. But the price always changes in accordance with the market conditions. That is why it creates a problem for issuing department. There are many methods of pricing material issues, the most important being:

1. First in First out (FIFO)
2. Last in First out (LIFO)
3. Highest in First out (HIFO)
4. Next in First out (NIFO)
5. Average Cost
6. Inflated Price
7. Specific Price
8. Base Stock Method
9. Replacement Price Method
10. Realisable Value Method
11. Standard Price Method
12. Market Price Method.

1. First in First out (FIFO): Under this method, the issues of materials are priced according to the chronological order of purchased rate of materials. The underlying principle is that purchase price of the earlier consignment is used first for issue of materials and once this consignment exhausts the price of the next consignment is taken up.

Advantages of FIFO Method:

1. It is simple to understand and easy to operate;
2. It is suitable in the time of deflation (falling prices), due to lower replacement cost of the materials;
3. The value of closing stock will reflect current market price;
4. This method gives correct cost of materials consumed.

Disadvantages of FIFO Method:

1. Issue price do not reflect current market price;
2. If the prices fluctuate frequently, this method may lead to clerical errors;
3. During inflation, this method is not suitable due to high replacement cost of materials.

2. Last in First out (LIFO): This method is exactly the opposite of FIFO method. For pricing the

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Purchase Control covers control on all aspects of purchase department. The purchase department plays a very important role in purchasing materials. The responsibilities for purchasing all types of materials are entrusted to this department. Purchase department or purchasing may be centralized, decentralized and Centralized- Decentralized

Centralized Purchasing: Centralized purchasing refers to purchase of materials under one purchase department headed by a competent purchase manager. All the purchases should be made by that department to avoid duplication, overlapping and the non-uniform procurement. All other departments

which require materials and tools should send requisitions to the centralized purchasing department to make timely and suitable purchases.

Advantages of Centralized Purchasing:

1. Bulk purchasing results in reduced price of materials on account of trade discount, economics in transporting;
2. Better control on purchasing is possible;
3. Specialized knowledge and skill personnel can be appointed;
4. All records with regard to purchase are kept at one place under the supervision of the purchase officer.
5. It avoids duplication and overlapping and helps in uniform purchasing

Disadvantages of Centralized purchasing.

1. The benefits arising out of local purchase cannot be availed of;
2. Delay in purchasing and supplying;
3. Emergency purchases cannot be made under this system;
4. There are chances of misunderstanding between purchasing department and other departments;
5. It will lead to high initial cost or establishment cost of purchasing department

Decentralized Purchasing: Under decentralized purchasing system purchases are made by the different department independently. Decentralized purchasing is applicable to those manufacturing concerns which operate several plants in different locations manufacturing different products and each plant requiring different types of materials. Each department will have a purchasing authority who enjoys the freedom of making purchase of materials required by their department.

Centralized Decentralized System: Firms which have more than one plant located in and around heterogeneous products, adopt this system of purchasing. Though such plants produce different products there are some materials which are common to all plant. Under this system, purchases are partially centralized and partially decentralized but it is necessary to make clear that which type of materials are to be bought by the centralized buying officer and which type of materials by departmental buying officer.

Procedure to be followed for procurement of materials till the payment of bill:

Storing of materials and Store control.

Meaning of store:

Storage refers to the act of storing materials for safe custody till these are issued to the production and others departments. The place where materials are kept is known as 'store'. The person who is incharge of store is known as 'storekeeper'.

The 'location' of the store should be carefully planned out and it should be housed in a position which is very near to the Receiving Department so that transportation charges are at a minimum and should be convenient for the suppliers of materials too.

The 'layout' of the store should be divided into various racks, which should be further sub-divided into small space called 'Bin'.

(ii) Store Ledger Card/ Account:

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