



MATERIAL AND STORES

In the previous lesson you have learnt about the cost sheet and its various components. You must have noticed that cost of material is the major constituent of cost. It requires special mention so that its cost can be controlled properly. This will involve the proper handling of the store material and the pricing of materials issued to various jobs undertaken. In this lesson you will learn about materials and stores i.e. about stores and the level of stock and their valuations.



OBJECTIVES

After studying this lesson, you will be able to:

- state the meaning of materials and stores;
- explain the classification and codification for storage of materials;
- explain the different stock levels;
- explain the methods of pricing of material issues.

30.1 MEANING AND CLASSIFICATION AND CODIFICATION

The substance from which the product is made is termed as material. It may be in a raw or a manufactured state. It forms an integral part of finished product. Materials are used for manufacturing goods. In most cases material is an important constituent of total cost. Hence, material cost is the main component of the cost of production. Materials may be direct or indirect:

- **Direct materials**

Direct material means cost of raw material used or consumed in production. It is not necessary that all materials purchased in a particular period is used in production (in that period itself).

● Indirect materials

Indirect Material is that material which cannot be easily identified and related with a particular product, job, and process.

Stores and material are used interchangeably. However, both the terms differ. A store has a wider meaning than materials. Store is a place in which the materials are stored. Different types of materials are kept in the stores. It includes raw material, tools, equipments, repair, and maintenance of parts factory supplies, components, Fixtures, Jigs etc. Sometimes, it also includes finished goods, and semi finished goods within the scope of this term. Thus items kept in the store are called stores.

Classification and codification

The storekeeper keeps the material in the store. The duties of storekeeper include accepting, identifying, classifying, and placing of materials. Efficient storage requires the consideration of the following :

Checking of material

He should verify the materials received with consignment note, inspection report and materials received report. Therefore, he should send the copy of materials received report received by him, after due verification to the Accounts Department for payment purposes.

Classification and codification

Classification and codification of materials is necessary for keeping the material in store. All items in the stores department are properly classified and codified to prevent mixing of one type of materials with the other and minimise the cost of retrieval. Materials are classified according to nature in appropriate categories, e.g., Materials related with engineering are classified as bronze, copper, steel, and mild steel etc., and each category is further classified suitably. To save time in handling of materials, a written document known as material manual, is prepared in which description and code number to each store item is given. Following are the methods of coding of materials:

- Alphabetical method
- Numerical method
- Alphabetical-cum-Numerical method





Notes

● **Alphabetical method**

In this method first alphabet letters are used for codification of each category of materials. For example, steel wire is coded as SW or steam coal is coded as SC etc.

● **Numerical method**

This method is used where materials accounting is to be mechanised by use of punched cards or computers. For numerical coding a list is prepared for various departments and allotting to each of them a suitable number. The first two digits of the code number represent the department for which the materials are meant and other two digits state the name of material as mentioned in the standard list or materials manual. For example, if code is 2341 it means Material No.41 [copper wire] is to be used in Department No.23.

Alphabetical-cum-Numerical method

In this method, a combination of these two methods is used for coding of materials. For example, a steel wire of gauge 4mm quality A stored in rack/bin No.22, is given the code number SW4A/22. Such a method gives exact information than any of the above two methods. Codification of materials helps in two ways:

- (i) In absence of coding the title of an account may have to be written a number of times. This results in avoidable clerical work, particularly in case of lengthy account titles.
- (ii) Secrecy about the exact nature of the transaction from the office employees is maintained.



INTEXT QUESTIONS 30.1

Fill in the blanks with suitable words :

- (i) The substance part from which the product is made is termed as
- (ii) Material is an important component of cost.
- (iii) Store is a place in which the are stored.

- (iv) The duties of are accepting, identifying, classifying and placing of materials.
- (v) The accepts materials after matching and proper checking.
- (vi) Materials are classified according to in appropriate categories.

30.2 STOCK LEVELS

The store is divided into different sections, each is meant for one particular type of material. Each section has some containers for keeping different varieties of that particular type of material. These containers are termed as Bins or Racks, Each bin/rack should be appropriately numbered and indexed for easy identification. For example, the store has a separate section for bolts. The different sizes of bolts are kept in the different bins. To facilitate the location of section and various materials, it is better if location plans are exhibited at the entrance of the store room

Stocks levels

Maximum and minimum stock Level

To avoid over and under investment in materials, the management decides the maximum quantity of materials to be kept in the store. The limits of minimum/maximum quantity set by the management should be strictly observed by the storekeeper.

Maximum stock Level

The maximum level is the largest quantity of a certain material which should be kept in the store at any point of time. Maximum stock level is computed as follows:

$$\text{Maximum stock level} = \text{Reorder level} + \text{Reorder quantity} - [\text{Minimum consumption} \times \text{minimum reorder period}]$$

Or

$$\text{Maximum stock level} = \text{Economic order quantity} + \text{Minimum stock}$$

Minimum stock Level

The minimum stock level is the lowest quantitative balance of material which must be kept at all times so that the assembly line may not be stopped





Notes

on account of non-availability of materials. It is decided by taking into account the followings:

- Re-order level
- Average stock level

Minimum stock level is computed as follows:

$$\text{Minimum stock level} = \text{Re-order level} - [\text{Normal consumption} \times \text{average Reorder period}]$$

● **Re-order level**

It is the point at which if material in store is reached, the order of further supply of material must be placed. This point is fixed between maximum level and minimum level. This point automatically initiates the process of placing a fresh order. Re-order level depends on the following factors:

- (i) Maximum usage
- (ii) Time interval i.e. the anticipated time lag between the date of issuing orders and the receipt of materials.

$$\text{Re-order level} = \text{Maximum re-order period} \times \text{Maximum usage}$$

● **Average stock level**

This level indicates the average stock held by the firm. It is calculated with the help of following:

$$\text{Average stock level} = 1/2 [\text{Maximum stock level} + \text{Minimum stock level}]$$

Or

$$\text{Average stock level} = \text{Minimum stock level} + 1/2 \text{ Re-order Quantity}$$

Illustration 1

The following information received from Monika industries in respect of Material No.ST45:

Normal consumption	400 units per week
Maximum consumption	600 units per week
Minimum consumption	200 units per week
Re-order period	6 to 8 weeks
Re-order Quantity	2000 units



Notes

Economic order quantity

The economic order quantity (EOQ) is the size of the purchase order which gives maximum economy in purchasing material. It is also termed as standard order quantity. It is fixed after taking into consideration the following points:

(i) Ordering cost

Cost of placing a order refers to the cost incurred for acquiring materials. It depends upon number of orders placed and the number of items ordered. If the order size is larger in quantity, orders placing cost per unit is lower and if order size is smaller in quantity, order placing cost per unit is higher: It includes cost of preparing and placing an order, cost of transportation, cost of receiving and inspecting the materials.

(ii) Carrying cost

It is the cost that is incurred in maintaining a given level of stock. It includes cost of handling materials, insurance premium, cost of storage space, obsolescence losses etc., larger size of stock, higher the stock carrying cost per unit per annum and vice versa.

EOQ is calculated as follows:

$$EOQ = \sqrt{\frac{2AB}{C}}$$

Where, A = Annual consumption

B = Buying cost per order

C = Carrying cost per unit per annum

EOQ = Economic order Quantity

Illustration 2

Satyam, a machine manufacturer, purchases 3600 units of a certain component for his annual usage. The order placing cost is Rs.200 and cost of carrying one unit for a year is Rs. 4. Calculate the economic order quantity.

Solution

$$EOQ = \sqrt{\frac{2AB}{C}}$$

where A = 3600 units

B = Rs 200

C = Rs 4



Notes

$$\begin{aligned}
 &= \sqrt{\frac{2 \times 3600 \times 200}{4}} \\
 &= \sqrt{\frac{14,40,000}{4}} \\
 &= \sqrt{3,60,000} \\
 &= 600 \text{ units}
 \end{aligned}$$

**INTEXT QUESTIONS 30.2**

Fill in the blanks with suitable words

- (i) The level is the largest quantity of a certain material which should be kept in the store at any one time.
- (ii) The minimum level is the quantitative balance of material which must be kept at all times.
- (iii) Re-order Level point is fixed between level and level.
- (iv) Average stock level = stock level + 1/2 Re-order Quantity.
- (v) Economic order quantity is also termed as order quantity.

30.3 METHODS OF PRICING OF THE ISSUE OF MATERIALS

Different methods are in use concerning the pricing of materials issued from the store. They are as follows:

- First-in, First-out [FIFO]
- Last-in, First out [LIFO]
- **First-in, First-out [FIFO]**

It is based on the assumption that the materials purchased and received first are issued first to the job. After the first lot of material is used for production, the next lot is taken for the supply. This assumption is made for the purpose of assigning cost of material to a job/process/product. The price of first purchase for all the issues is same until the material of first purchase is entirely issued to various jobs, cost of materials issued represents the cost of earlier purchases. Cost of closing stock shows the cost of latest purchases.



Notes

It is not necessary that the physical movement of the stock be in the order of first in and first out.

Advantages of FIFO Method

A good system of stock management requires that the oldest units are issued first and stock consists of the latest purchases. This system is found in the FIFO method of pricing the issues. No profit or loss occurs merely on the use of this method. The stock of material represents the recent purchases, hence its value is based on present price.

Disadvantages of FIFO Method

Under this method, the objective of matching of cost with revenues is not achieved. If the prices of materials are rising fast, the current production cost may be understated. If the sales price is fixed, then sales revenue is not generating enough income to cover the cost of purchases of raw material. It involves difficult calculation and hence increasing the possibility of clerical mistake. Comparison between similar jobs is very difficult if material issued to the jobs is of different prices.

The FIFO method is suitable, where the size and cost of raw material units are large, materials are identified and belonging to a particular lot and not more than two or three different prices of material are on hand at one time.

Illustration 3

A firm maintains its stores ledger on the basis of FIFO method. Following is the summary of the receipts and issues of raw materials during the month of April 2006:

April 01	Opening balance 300 units @ Rs.22 per unit
” 03	Issue vide Material requisition No. 14, 150 units.
” 08	Purchase order No.07, 200 units @ 25 per unit.
” 12	Purchase order No.09, 400 units @ 23 per unit
” 17	Issue vide Material requisition No. 16, 500 units.
” 20	Issue vide Material requisition No. 18, 100 units.
” 23	Purchase order No. 11, 600 units @ 20 per unit.
” 25	Issue vide Material requisition No.26, 600 units.
” 28	Purchase order No.12, 200 units @ 26 per unit.
” 29	Issue vide Material requisition No.32, 300 units.
” 30	Shortage 10 units

**Solution**

Stores Ledger Sheet [FIFO Method]

Date	Particulars	Receipts			Issues			Balance	
		Qty	Rate Rs	Amount Rs	Qty	Rate Rs	Amount Rs	Qty Rs	Amount Rs
2006									
Apr101	Balance	300	22	6600	—	—	—	300	6600
03	M.R. No. 14	—	—	—	150	22	3300	150	3300
08	P.O. No.07	200	25	5000	—	—	—	350	8300
12	P.O.No.09	400	23	9200	—	—	—	750	17500
17	M. R. No. 16	—	—	—	150	22	3300		
					200	25	5000		
					150	23	3450	250	5750
20	M. R. No. 18	—	—	—	100	23	2300	150	3450
23	P.O. No. 11	600	20	12000	—	—	—	750	15450
25	M.R. No.26	—	—	—	150	23	3450		
					450	20	9000	150	3000
28	P.O.No.12	200	26	5200	—	—	350	8200	
29	M.R. No.32	—	—	—	150	20	3000		
					150	26	3900	50	1300
30	Shortage	—	—	—	10	26	260	40	*1040
	Total	1700		38000	1660		36960	40	1040

* 40 units @ Rs.26 = Rs.1040

Value of closing stock = Rs. 1040 (40 units @ Rs 26)

- **Last-in, First out [LIFO]**

It is based on the assumption that the material purchased and received last are issued first to the job. The cost of last lot of materials received is used to price the materials issued until the stock of that lot is exhausted. Thereafter the next lot for pricing is used, and so on through successive lots. The stock is priced at the oldest cost.

Advantages of LIFO Method

This method takes current market prices while issuing materials to different jobs. Actual cost of materials is charged to production, therefore no profit or loss results on account of this method. This method helps in reducing the burden of income tax during the period of price rise. It provides a better matching of current cost with current revenues.

Notes



Notes

Disadvantages of LIFO Method

The profit of a firm is manipulated with this method in operation. This method involves considerable amount of clerical work because of complications in calculating prices. The stock in hand is valued at a price which might have become out of date when compared with the current stock prices. Thus the financial position of the business until is wrongly stated.

Illustration 4

A firm maintains its stores ledger on LIFO method basis. Following is the summary of the receipts and issues of raw materials during the month of June 2006:

- 01 Opening balance 200 units @ Rs.18 per unit
- 03 Purchase order No.09, 300 units @ 20 per unit.
- 07 Issued vide Material requisition No. 14, 250 units.
- 11 Purchase order No.15, 400 units @ 22 per unit
- 16 Issued vide Material requisition No. 16, 550 units.
- 19 Purchase order No.21, 600 units @ 20 per unit.
- 22 Issued vide Material requisition No. 18, 300 units
- 24 Issued vide Purchase order No.24, 300 units @ 25
- 26 Material requisition No.26, 500 units.
- 28 Purchase order No.27, 200 units @ 27 per unit.
- 29 Issued vide Material requisition No.32, 300 units.
- 30 Purchase order No.30, 150 Units @ 30 per unit

Solution

Stores Ledger Sheet [LIFO Method]

Date	Particulars	Receipts			Issues			Balance	
		Qty	Rate Rs	Amount Rs	Qty	Rate Rs	Amount Rs	Qty Rs	Amount Rs
2006									
June 01									
June 01	Balance	200	18	3600	—	—	—	200	3600
03	P.O. No.09	300	20	6000	—	—	—	500	9600
07	M.R. No. 14	—	—	—	250	20	5000	250	4600
11	P.O. No.09	400	22	8800	—	—	—	650	13400
16	M.R. No. 16	—	—	—	400	22	8800		



					50	20	1000		
					100	18	1800	100	1800
19	P.O. No.21	600	20	12000	—	—	—	700	13800
22	M.R. No. 18	—	—	—	300	20	6000	400	7800
24	P.O. No.24	300	25	7500	—	—	—	700	15300
26	M.R. No.26	—	—	—	300	25	7500		
					200	20	4000	200	3800
28	P.O. No.27	200	27	5400	—	—	—	400	9200
29	M.R. No.32	—	—	—	200	27	5400		
					100	20	2000	100	1800
30	P.O. No.30	150	30	4500	—	—	—	250	*6300
	Total	2150		47800	1900		41500	250	6300

Notes

Closing stock consists of 100 Units @ Rs.18 = Rs. 1800

150 Units @ Rs.30 = Rs. 4500

Rs. 6300



INTEXT QUESTIONS 30.3

Fill in the blank with suitable words.

- (i) method is based on the assumption that the materials purchased and received first are issued first to the job.
- (ii) In FIFO, Cost of closing stock shows the cost of purchases.
- (iii) No occurs merely on use of FIFO method.
- (iv) In FIFO the objective of of cost with revenues is not achieved.
- (v) LIFO method takes market prices while issuing materials to different jobs.
- (vi) The of a firm is manipulated with LIFO method in operation.



WHAT YOU HAVE LEARNT

Materials and store

- The substance part from which the product is made is termed as material. It may be raw or part of finished product. The meaning of stores and material are used interchangeably. However, both the terms



Notes

differ. A store has wider meaning than materials. Different types of materials are kept in the stores

● **Bins and Racks**

The store is divided into different sections, each is meant for one particular type of material. Each section has some containers for keeping different varieties of that particular type of material. These containers are termed as Bin or Rack.

● **Stocks levels**

Maximum stock level = Reorder level + EOQ – [Minimum consumption × Minimum reorder period]

Minimum stock level = Re-order level – [Normal consumption × average Re-order period]

Re-ordering level = Maximum re-order period × Maximum usage

Average stock level = 1/2 [Maximum level + Minimum level]

or

Average stock level = Minimum stock level + 1/2 Re-order Quantity

● **Economic order quantity**

The economic order quantity is the size of the order which gives maximum economy in purchasing material.

$$EOQ = \sqrt{\frac{2AB}{C}}$$

● **Methods of Pricing of the issue of materials**

1. First-in, First-out [FIFO]
2. Last-in, First out [LIFO]



TERMINAL QUESTIONS

1. State the meaning of materials and stores.
2. Explain the Classification and codification of storage of materials.
3. State the meaning of Bin and racks.
4. Explain the different stock levels.
6. State the meaning of Economic order quantity (EOQ).

**Notes**

6. The following information received from Rohit industries in respect of Material No.CW45 :

Normal consumption	800 units per week
Maximum consumption	1200 units per week
Minimum consumption	400 units per week
Re-order period	4 to 6 weeks
Re-order Quantity [EOQ]	3000 units

Calculate:

- | | |
|--------------------|-------------------------|
| (a) Re-order level | (b) Maximum level |
| (c) Minimum level | (d) Average stock level |
7. Life Care, a machine manufacturer purchases 1600 units of certain component for his annual usage. The order placing cost is Rs.200 and cost of carrying one unit for a year is Rs.4. Calculate the economic ordering quantity (EOQ).
8. Jindal Machine Ltd maintains its stores ledger on the FIFO method. Following is a summary of the receipts and issues of raw materials during the month of June 2006:

June 2006

- 01 Opening balance 400 units @ Rs.20 per unit
- 04 Material requisition No. 17, 100 units.
- 06 Purchase order No.28, 200 units @ 22 per unit.
- 13 Purchase order No.31, 400 units @ 21 per unit
- 16 Material requisition No. 19, 600 units.
- 21 Material requisition No. 22, 50 units.
- 23 Purchase order No.36, 500 units @ 23 per unit.
- 26 Material requisition No.27, 450 units.
- 28 Purchase order No.42, 200 units @ 26 per unit.
- 29 Material requisition No.30, 200 units.
- 30 Shortage 15 units



Notes

9. Mohit Steel Ltd maintains its stores ledger on the LIFO method. Following is a summary of the receipts and issues of raw materials during the month of July 2006:

July

2006

- 01 Opening balance 600 units @ Rs. 18 per unit
- 06 Material requisition No. 09, 200 units.
- 08 Purchase order No.55, 400 units @ 22 per unit.
- 11 Purchase order No.59, 600 units @ 20 per unit
- 13 Material requisition No. 12, 900 units.
- 17 Material requisition No. 16, 250 units.
- 22 Purchase order No.68, 400 units @ 25 per unit.
- 25 Material requisition No.21, 550 units.
- 27 Purchase order No.76, 1400 units @ 26 per unit.
- 29 Material requisition No.23, 400 units.
- 31 Shortage 05 units



ANSWERS TO INTEXT QUESTIONS

Intext Questions 30.1

- (i) material, (ii) total, (iii) materials,
- (iv) storekeeper, (v) storekeeper (vi) nature

Intext Questions 30.2

- (i) maximum, (ii) lowest,
- (iii) maximum, minimum, (iv) minimum, (v) standard.

Intext Questions 30.3

- (i) FIFO, (ii) latest, (iii) profit or loss,
- (iv) matching, (v) current, (vi) profit.

Answers to Terminal Questions

- 6. (a) 7200 units (b) 8600 units (c) 3200 units (d) 5900 units
- 7. EOQ = 400 units
- 8. Cost of stock Rs 7155 i.e. 85 units @ 231 and 200 units @ 26
- 9. Cost of stock Rs 1710 i.e. 95 units @ 18