

Chapter 2 :- Material Cost.

Meaning of Material

Material is all commodities/physical objects used to make the final product. It may be direct (or) indirect.

Objectives of System of material control

1. Minimising interruption in production process

2. Optimisation of material cost

3. Reduction in wastages

4. Adequate information

5. Completion of order in time

Elements of Material Control

1. Material Procurement control

2. Material storage control

3. Material usage control

Material Control involves efficient functioning of the fllg operations:-

* Purchasing of materials

* Receiving of materials

* Inspection of materials

* Storage of materials

* Issuing materials

* Maintenance of inventory records

* Stock Audit

1. Material Procurement Control

A. Bill of Materials

It is also known as Material specification list (or) Materials List.

It is prepared by engineering (or) planning Dept. It is a detailed list specifying the standard quantities and qualities of materials & components required for producing a product (or) carrying out of job.

Uses of Bill of material.

- Marketing (purchase) Dept → material purchased on specifications mentioned
- Production Dept → is planned to nature, volume of material req to, used
- Stores Dept → reference document while issuing materials to requisitioning dept
- Cost/Accounting Dept → used to estimate cost & profit

B. Material Requisition Note

It is also known as material requisition slip. It is prepared by the prodⁿ dept & materials are withdrawn on the basis of material Requisition list (or) BOM. It is a voucher of authority used to get materials issued from store.

C. Purchase Requisition

The materials purchased will be used by the prodⁿ Depts, these should be constant co-ordination b/w the prod purchase & prodⁿ Dept.

A purchase requisition is a form used for making a formal request to the purchasing dept to purchase materials.

Process:-

- * A complete list of materials & stores required should be drawn up, which should be reviewed periodically.
- * On the basis of standing order, item is included in standard list, it becomes the duty of the purchase dept to arrange for fresh supplies before existing stocks are exhausted.
- * Any change in consumption pattern should be informed to purchase dept.
- * For control over buying of regular store materials, inventory control system is to determine stock levels to be maintained & no. of quantities to be ordered.
- * For special materials, required for a special order (SO) purpose, it is desirable that the concerned technical dept should prepare materials specifications lists (quantity, size & order of materials).

D. Inviting Quotation / Request for Proposal (RFP) / Notification Inviting Tender (NIT)

i. What to purchase?

Materials are purchased on requisition recd from stores (or) depts.

In case materials used regularly, the materials are purchased on standard operating procedures (SOP)

ii. When to purchase?

- * supply of materials i.e., how easily the materials are available in the market.
- * lead time i.e., time required to get the order from supplier's place to prodⁿ place.
- * Consumption pattern of materials are the imp. factors which affects the timing of purchase.

iii. How much to purchase?

The quantity of materials to be ordered depends on the factors

iv. Where to purchase?

The supplier selection process be such transparent & fair that all suppliers are treated equal to get opportunity in participation in Tender process.

v. At what price to purchase?

Where the lowest bidder for the material is selected.

E. Selection of Quotation / Proposal.

After invitation of tender from the vendors, interested vendors who are fulfilling all the criteria mentioned in tender notice send their price quotations / proposals to the purchase dept. On the receipt of quotations, a comparative statement is prepared factors - price, quantity, quality, time of delivery, mode of transportation, payment, reputation of supplier etc.

F. Preparation and Execution of Purchase order.

It is a written request to the supplier to supply specified materials at specified rates & within specified time, copies of purchase order are given to store (or) order indenting dept.

G. Receipt and Inspection of Materials. pg no. 12.12

Valuation of Material Receipts

After the procurement of materials from the supplier actual material cost is calculated. Ascertainment of cost of material purchased is called valuation of materials receipts.

Treatment of items associated with purchase of materials is tabulated.

1. Discounts & Subsidy

<u>Items</u>	<u>Treatment</u>
a) Trade discount	Deducted from purchase price (PP) if it is not shown as deduction in the invoice.
b) Quantity Discount	Deducted from PP if not shown as deduction
c) Cash Discount	Not deducted from PP, treated as Int. & finance charges
d) Subsidy/Grant/ Incentives	Deducted from the cost of Purchase

3 Duties and Taxes

e) Road tax / Toll tax

If paid by buyer, is included with cost of purchase

f) GST

GST is paid on supply of Goods & provision of services & collected from the buyers. It is excluded from cost of purchase if credit for the same is available. Unless mentioned specifically it should not form part of COP

g) Custom Duty

Added with purchase cost.

3. Penalty & charges

h) Demurrage

It is an abnormal cost & not included with COP

i) Detention charges / fine

j) Penalty

Not included with the COP

4. Other expenditures

k) Insurance charges

Added with COP

l) Commission (or) brokerage paid

Added with COP

m) Freight Inwards

Added with COP, directly attributable to procurement of material.

n) Cost of containers

- Non-returnable containers :- added with COP
- Returnable containers :- containers are returned & their costs are refunded, then should not be considered in the COP.
- If the amt of refund on returning the container is $<$ the amt paid, then short fall is added with COP.

o) Shortage

- Shortage due to normal reasons :- losses due to breaking of bulk, evaporation, (or) any unavoidable conditions etc.
- Shortage due to Abnormal reasons :- due to material mishandling, pilferage (or) any avoidable reasons.

Sky & Co. an unregistered supplier under GST, purchased material from Vye Ltd which is registered under GST. The following info. is available for one lot of 5,000 UNPK of material purchased:

Listed price of one lot	2,50,000
Trade discount	@ 10% on listed price (-)
CGST & SGST (credit not available)	12% (6% CGST + 6% SGST) (+)
Cash discount	@ 10% X
(will be given only if payment is made within 30 days)	
Toll Tax paid	5,000 +
Freight & Insurance	17,000 +
Demurrage paid to transporter	5,000 X
Commission & brokerage on purchases	10,000 +
Amt deposited for returnable container	30,000 +
Amt of refund on returning the container	20,000
other exps	@ 2% of Total cost +

20% of material shortage is due to normal reasons (-)

The payment to the supplier was made within 21 days of the purchase. You are required to calculate cost per unit of material purchased by Sky &

Solution:- Computation of cost per unit of material.

	₹
Listed price	2,50,000
less:- Trade discount @ 10%	25,000
	2,25,000
Add:- CGST & SGST @ 6% on 2,25,000 each	13,500
	13,500
	2,52,000
Add:- Toll tax paid	5,000
Freight & Insurance	17,000
Demurrage paid	-
Commission	10,000
	2,84,000
Add:- cost of returnable container:-	
Amt deposited	30,000
less:- Amt refunded (20,000)	10,000
	2,94,000

Add:- other exps @ 2% $\rightarrow 2,94,000 \times 2$	6,000	6.00
	98	
	3,00,000	
Less:- Shortage due to normal reasons. (5,000 \times 20%) \rightarrow 1,000		
available units to utilize \rightarrow 4,000.		

$$\therefore \text{cost per unit} = \frac{3,00,000}{4,000} = ₹ 75/\text{unit.}$$

R. Material Storage and Records.

It is not enough only to purchase material of the required quality. If purchased material subsequently deteriorates in quality because of bad storage, the loss is even more than what might arise from purchase of bad quality of materials.

Apart from preservation of quality, the storekeeper also ensures safe custody of the material. It should be the function of storekeeper that the right quantity of materials always should be available in stock.

Duties of Store Keeper

- General control over stock
- Safe custody of materials.
- Maintaining records
- Initiate purchase requisition
- * Maintaining adequate level of stock
- Issue of materials
- Stock verification & reconciliation

Store records pg no. 2.19 - 2.20

It may be maintained in 3 forms:-

- * Bin cards
- * Stock Control cards
- * Store ledger

Inventory Control

The Chartered Institute of Mgt Accountants (CIMA) defines inventory control as "The function of ensuring that sufficient goods are retained in stock to meet all requirements without carrying unnecessarily large stocks."

Inventory Control - By setting Quantitative Levels

A. Re-order stock level

$$\text{ROL} = \text{max. consumption} \times \text{Max. Re-order period} \quad (\text{or})$$

$$\text{ROL} = \text{Min. stock level} + (\text{Avg. rate of consumption} \times \text{Avg. Re-order period})$$

Max. consumption :- Max. rate of material consumption

Max. Re-order :- max. time to get order from supplier to stores

Min. stock level :- MST that must be maintained all the time.

Avg. rate of consumption :- In prodⁿ activity, known as normal consumption/usage

Avg. Re-order period :- Avg. time to get an order from supplier to the stores, known as normal period.

C. Minimum Stock level

$$\text{MSL} = \text{Re-order stock level} - (\text{Avg. consumption Rate} \times \text{Avg. Re-order period})$$

D. Maximum Stock level

$$\text{MST} = \text{Re-order level} + \text{Re-order quantity} - (\text{Min. consumption Rate} \times \text{Minimum Re-order period})$$

E. Average Inventory level

$$\text{ASL} = \text{Min Stock level} + \frac{1}{2} \text{Re-order quantity}$$

$$\text{ASL} = \frac{\text{Max. stock level} + \text{Min. Stock level}}{2}$$

F. Danger Level

$$\text{Danger level} = \text{Avg. consumption} \times \text{Lead time for emergency purchase.}$$

B. Re-order Quantity

$$\text{EOQ} = \sqrt{\frac{2 \times A \times O}{C}}$$

A = Annual consumption

O = cost per order

C = Carrying cost per unit.

Just in Time (JIT) Inventory Management.

JIT is a system of inventory mgt with an approach to have zero inventories in stores. According to this approach material should only be purchased when it is actually required for prodⁿ.

JIT is based on two principles:-

- i. Produce goods only when it is required &
- ii. the products should be delivered to customers at the time only when they want.

It is also known as 'Demand pull' (or) 'Pull through' system of prodⁿ.

InventorY control - on the basis of Relative communication.

a) ABC analysis :- on the basis of value & frequency of inventorY. Items are classified into the flg categories :-

- i. A category :- Quantity less than 10% but value more than 70%.
- ii. B category :- Quantity less than 20% but value about 20%.
- iii. C category :- Quantity about 70% but value less than 10%.

I - 8 Statement of Total Cost and Ranking

Item	Units	% of total Units	Unit Cost (£)	Total cost (£)	% of Total Cost	Ranking
1	7000	3.1963	5.00	35,000	9.8378	4
2	24,000	10.9589	3.00	72,000	20.2378	2
3	1,500	0.6849	10.00	15,000	4.2162	7
4	600	0.2739	22.00	13,200	3.7163	8
5	38,000	17.3516	1.50	57,000	16.0216	3
6	40,000	18.2648	0.50	20,000	5.6216	6
7	60,000	27.3973	0.20	12,000	3.3730	9
8	3,000	1.3698	3.50	10,500	2.9513	11
9	300	0.1369	8.00	2,400	0.6746	12
10	29,000	13.2420	0.40	11,600	3.2605	10
11	11,500	5.2511	7.10	81,650	22.9509	1
12	4,100	1.8721	6.50	25,700	7.1451	5
	2,19,000	100	67.4	3,55,770	100	

Basis for selective control

₹50,000 & above - A items

₹15,000 to 50,000 - B items

Below ₹15,000 - C items

Rank - 1, 2, 3, Item no:- 11, 2, 5 => A category

Rank - 4, 5, 6, 7, Item no:- 1, 12, 6, 3 => B category

Rank - 8, 9, 10, 11, 12, Item no:- 4, 7, 10, 8, 9 => C category

- b) Fast moving, slow moving and Non-moving (FSN) inventory
 - c) Vital, Essential and Desirable (VED)
 - d) High cost, Medium cost, low cost (HML) Inventory
-

Physical control

12.10 (-)

- a) Two Bin system
- b) Establishment of system of Budgets
- c) Perpetual inventory records & continuous stock verification.
- d) Continuous stock verification.

Handwritten notes and calculations, including a table with columns for 'Quantity' and 'Value'.

Quantity	Value
100	1000
200	2000
300	3000
400	4000
500	5000

Valuation of Material Issues

a) Cost price Methods

i. Specific price method

ii. First-in First-out (FIFO) method.

Eg:-

Date	Particulars
1/1/23	opening st. 1000 units @ ₹5 each
3/1/23	Purchases 900 units @ ₹6 each
7/1/23	Issued 1200 units
11/1/23	Purchased 800 units @ ₹6.20 each
13/1/23	Issued 1000 units.

Under FIFO Method

Date	Receipts			Issues			Balance		
	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)
1/1/23							1000	5	5,000
3/1/23	900	6	5,400				1000	5	5,000
							900	6	5,400
7/1/23				1000	5	5,000			
				200	6	1,200	700	6	4,200
11/1/23	800	6.20	4,960				700	6	4,200
							800	6.20	4,960
13/1/23				700	6	4,200			
				300	6.20	1,860	500	6.20	3,100

iii. Last-in last-out (LIFO) Method.

Eg:-

Date	Particulars
1/3/23	Op. st 1000 units @ ₹20 each
3/3/23	Purchased 800 units @ ₹21 each
9/3/23	Issued 1200 units
12/3/23	Purchased 1600 units @ ₹24 each
15/3/23	Issued 1000 units
20/3/23	Issued 600 units
25/3/23	Purchased 1000 units @ ₹25 each
30/3/23	Issued 800 units.

Under LIFO.

Date	Receipts			Issues			Balances		
	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)
1/3/23							1000	20	20,000
3/3/23	800	21	16,800				1000	20	20,000
							800	21	16,800
9/3/23				800	21	16,800			
				400	20	8,000	600	20	12,000
12/3/23	1600	24	38,400				600	20	12,000
							1600	24	38,400
15/3/23				1000	24	24,000	600	20	12,000
							600	24	14,400
20/3/23				600	24	14,400	600	20	12,000
25/3/23	1000	25	25,000				600	20	12,000
							1000	25	25,000
30/3/23				800	25	20,000	600	20	12,000
							200	25	5,000

b) Average price Methods

i. Simple Average price method

eg:- Date Particulars

1/9/22 opening stock 1200 units @ ₹14 each

5/9/22 Purchased 600 units @ ₹15 each.

7/9/22 Issued 1000 units

13/9/22 Purchased 1800 units @ ₹16 each

18/9/22 Issued 1200 units

21/9/22 Issued 400 units

26/9/22 Purchased 800 units @ ₹18 each

29/9/22 Issued 1000 units

Date	Receipts			Issues			Balance		
	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)
1/9/22							1200	14	16,800
5/9/22	600	15	9,000				1800	-	25,800
7/9/22				1000	14.5	14,500	800	-	11,300
13/9/22	1800	16	28,800				2,600	-	40,100
18/9/22				1200	15	18,000	1,400	-	22,100

21/9/22				400	16	64,000	1000	-	15,700
26/9/22	800	18	14,400				1800	-	30,100
29/9/22				1000	17	17,000	800	-	13,100

ii. Weighted Average price Method.

Eg:-

Date	Particulars
1/3/23	opening st. 1000 units @ ₹20 each
3/3/23	Purchased 800 units @ ₹21 each
9/3/23	Issued 1200 units
12/3/23	Purchased 1600 units @ ₹24 each
15/3/23	Issued 1000 units
20/3/23	Issued 600 units
25/3/23	Purchased 1000 units @ ₹25 each
30/3/23	Issued 800 units

Date	Receipts			Issued			Balance		
	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)
1/3/23							1000	20	20,000
3/3/23	800	21	16,800				1,800	20.44	36,800
9/3/23				1200	20.44	24,528	600	20.45	12,272
12/3/23	1600	24	38,400				2,200	23.03	50,672
15/3/23				1000	23.03	23,030	1,200	23.03	27,642
20/3/23				600	23.03	13,818	600	23.04	13,824
25/3/23	1000	25	25,000				1,600	24.26	38,824
30/3/23				800	24.26	19,408	800	24.27	19,416

I-14

Store ledger of Imbrios India Ltd. under weighted Avg. method.

Date	Receipts			Issues			Balances		
	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)	Qty	Rate	Amt(₹)
September 7							6000	285	17,10,000
8				4875	285	13,89,375	1,125	285	3,20,625
9	17,500	276	48,30,000				18,625	276.54	51,50,625
10				12,000	276.54	33,18,480	6,625	276.55	18,32,145
12	2,375	276.54	65,6783				9,000	276.54	24,88,928

15	7000	288	25,92,000				18,000	282.27	50,80,928
17				700	288	2,01,600	17,300	282.04	48,79,328
20				9,500	282.04	26,79,380	7,800	282.04	31,99,948
30				900	282.04	2,53,836	6,900	282.04	19,46,112
				300			6,600	282.86	19,46,112