

## Assignment to 3.2.1.2 - Solution -

The following table shows the movements in the stock of a specific raw material:

Month	Beginning inventory [units of quantity]	Inflows [units of quantity]	Average price per unit of inflows	Inflows [units of currency]	Outflows [units of quantity]
January	0	10	18,00	180,00	8
February	2	9	24,00	216,00	6
March	5	4	30,00	120,00	8
April	1	12	18,00	216,00	10
May	3	12	16,00	192,00	8
June	7	10	22,00	220,00	11
July	6	10	23,00	230,00	13
August	3	9	27,00	243,00	12
September	0	10	20,00	200,00	10
October	0	10	19,00	190,00	7
November	3	9	26,00	234,00	5
December	7	5	32,00	160,00	2
<b>Ending inventory</b>	10				
<b>Total</b>		110		2.401,00	100

Generally holds:

Beginning inventory + Inflows – Outflows = Ending inventory

Rearranged:

Beginning inventory + Inflows = Ending inventory + Outflows

The valuation of beginning inventory and inflows is independent of the method of valuation applied in the current period. So, according to above equation, the value of ending inventory + outflows is not affected by the method applied, too. The sum of both is always the same. The method of valuation applied only influences the borderline between ending inventory and outflows. If, for example, the outflows are valued as high as possible, the ending inventory is valued as low as possible, and vice versa – the sum of both being always the same.

1. Which is the cost of raw materials per year according to total average pricing?

In total average pricing all outflows and the ending inventory are priced at the same value, the total average price. Since ending inventory + outflows are equal to beginning inventory + inflows, this price is just the same as the average price of beginning inventory + inflows.

The average price is

$$\frac{\text{Beginning inventory + inflows [currency units]}}{\text{Beginning inventory + inflows [quantity units]}}$$

This is the cost per unit. To answer the question for the total material cost per year, this fraction has to be multiplied by the quantities of outflows:

$$\frac{\text{Beginning inventory + inflows [currency units]}}{\text{Beginning inventory + inflows [quantity units]}} \cdot \text{outflows}$$

In figures:

$$\frac{2.401}{110} \cdot 100 = 2.182,73$$

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2. Which is the cost of raw materials per year according to total FIFO pricing?

Again, the general formula is helpful. Rearranging the formula for the outflows gives

$$\text{Outflows} = \text{Beginning inventory} + \text{inflows} - \text{ending inventory}$$

The solution can be found either by using the left side of this equation, applying the FIFO algorithm step by step, or the right side of the equation can be used: Since the values of beginning inventory and inflows are independent of the method applied, these values can be inserted easily. The ending inventory and the outflows add up to this sum, and since the outflows are as early as possible, the remaining items were bought as late as possible. The ending inventory is 10 units, and the latest bought items were 5 in December at 32,00 and 9 in November at 26,00, 5 of those being still in stock. Thus total cost of the year can be calculated by adding the values of beginning inventory and inflows, deducting 5 units at 32,00 and further 5 units at 26,00. In figures:

$$2.401 - 5 \cdot 32 - 5 \cdot 26 = 2.111,00$$

3. Which is the cost of raw materials per year according to total LIFO pricing?

According to the considerations above, since the items bought last were used, the oldest units are still stocked. So we have

$$2.401 - 10 \cdot 18 = 2.221,00$$

4. Which is the cost of raw materials per year according to total HIFO pricing?

Since the units with the highest prices were used, we find only the cheapest ones still in stock:

$$2.401 - 10 \cdot 16 = 2.241,00$$