

# The procedure for calculating the unit cost of finished products in the automotive industry and the finished products calculation

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**Abstract:** This article discusses the procedure for calculating the unit cost of finished products in the automotive industry, as well as the procedure for accounting for finished products. In particular, the article describes in detail the of unit cost price indicator essence, foreign experience in this regard, the categories of production costs elements, calculations types and their reflection order.

**Keywords.** Automotive industry, international standard, finished product, cost price, efficiency, product unit, profitability, production costs.

## 1.0 Introduction

In the world economy globalization, significant research has been conducted to improve the accounting methodology for inventories, including the finished products cost price and their sales processes. As a result of this research, important rules and advanced methods for recognizing and evaluating finished products, proceeds from their sale, receivables from customers were introduced, their introduction into international standards and improving the information quality and reliability on finished products and receipts in financial statements. However, the finished products cost unification, a unified approach to pricing and financial reporting formats that do not meet all requirements have not been developed, as well as best practices in accounting for finished products worldwide and the full international standards implementation in developing countries.

One of the important indicators of enterprises activity is the unit price. The unit cost of a product describes the product effectiveness and is described as the most important indicator in decision making. The unit price indicator essence is determined by:

- product unit cost price is an indicator related to trade secrets, it is not disclosed, only provided to authorized managers for decision making;
- unit cost cost determines the product efficiency and its competitiveness. Achieving a decrease in the unit price of the product leads to an increase in the enterprise profitability level;
- calculating the unit cost of a product is the ultimate goal of the whole product cost price calculation process. The methodological procedure for calculating the unit cost of a product requires many factors consideration, based on the production characteristics, the advanced methods and techniques application;
- on the basis of information on the unit price of the product, decisions are made to continue or reduce or terminate this product development, if any, to find reserves to reduce the unit price of the product. Therefore, it is very important that the product unit information is sufficiently objective and grounded.

In Russian practice, the concept of full cost price is applied, and it is defined as follows:

**“Full cost price = The sum of production costs + Sales costs**

If we expand this formula on cost items, it will look like this:

**Full cost price = Raw materials and supplies + Costs of energy carriers + Depreciation allowances + Basic staff salaries + Management and support staff salaries + deductions on work + **Сбит** and cost of sales services + Transportation costs + other expenses**

**Unit cost price = Full cost price / Product unit quantity**

**Unit cost price = (Production costs/ produced product unit) + (Commercial expenses / Quantity of sold units)”<sup>1</sup>**

In our opinion, it is expedient to calculate the unit cost of the product relative to the production cost.

**1-for example.** There are no initial and final production remnants. The production cost (material, labor and overproduction) during the month is 180,000 currency. During the reporting period, 10,000 products units were produced. In this case, the unit price of the product is 180 currency:

In this example, the unit cost determination of a product is shown in the simple case, i.e., it is used in the initial and final production balances absence. However, in practice, production continues uninterrupted, i.e. it cannot be stopped until production is completed for a certain period of time in order to determine the unit cost price of the product. In process production, it is inevitable that there will be work in progress at any time during production, i.e. there will be work in

<sup>1</sup> Cost calculation formula. // <https://myfin.by/wiki/term/formula-rascheta-sebestoimosti>

progress at the beginning and end of the period. At such times, it becomes impossible to determine the unit of output by dividing the total production cost by the unit of finished product derived from production. This is because part of the production costs incurred during the reporting period will also apply to work in progress. In such cases, it is necessary to estimate the cost price of finished products and the cost price of work in progress, as well as the unit cost of the product on its elements.

For cost calculation purposes, cost price elements are divided into three categories:

1. 1. Material costs;
2. Labor costs;
3. Overhead production costs.

The cost of materials is transferred to the product at the beginning of the process, labor costs and production overheads increase in this process. Therefore, unit pricing should be performed on each component of cost pricing. In this case, the unit price of the product on the material is realized per unit of material included in the production. Due to the continuous addition of labor costs and overhead costs, it is necessary to take into account the degree of readiness of the unit of finished products and the unit of materials in work in progress. For the purposes of calculating the cost price of the finished product, it is accepted to call the indicator, which includes the sum of labor costs and **overhead costs**, the processing cost:

$$\text{Processing costs} = \text{Labor costs} + \text{overhead production costs (2.3)}$$

In order to calculate the unit cost of a product on its individual components, the elements of production costs can be divided into two major categories:

1. Material costs;
2. Processing costs.

We consider in the examples the procedure for calculating the unit price of the finished product on the elements of costs.

**Example 2.** For example, the car company produces Damas cars. Materials and components are included in the first process. The finished product is transferred to the second section, where the product is further processed to give it a finished look. During April, the first division produced 1,200 units of product. There is no initial residue. Expenditures of the department in April are as follows: direct material costs 43 285 465 thousand sums; processing costs 10 436 848 thousand sums.

**Determination required:** Determining the unit cost of a finished product (FP) unit by cost price elements.

**Solution:** To determine the cost price of the finished product by cost price elements, we create the following calculation table:

Cost price elements	Amount (thousand soms)	FP unit	FP unit cost price (sum)
1	2	3	4 = 2/3
Materials and components	43285465	1200	36071221
Processing costs	10436848	1200	8697373
<b>Total cost price</b>	<b>53722313</b>	<b>1200</b>	<b>44768594</b>

**Conclusion:** The table shows that the unit price of the product was 44768594 soums (53722313/1200). This is 36071221 soums (43285465/1200) directly on the material item and 8697373 soums (8697373/1200) on the processing item when analyzed on cost price elements. The cost price of the product unit on the cost price elements gives the cost price of the total product unit 44768594 soums (36071221 + 8697373).

Determining the cost of finished goods and work in progress at the end of the reporting period is a key issue in cost accounting. Therefore, process calculations will need to be able to show ways to calculate the cost of fully completed and partially completed and uncompleted products.

If there is work in progress in process costing, it is expedient to calculate the equivalent unit in calculating the unit cost of the product. The amount of **equivalent units** is the set of units that are taken into account when converting fully completed and partially completed units into a complete product unit in this process.

In process costing, it is advisable to calculate the cost of the product on the basis of the equivalent unit cost price in the following five steps (Figure 1):

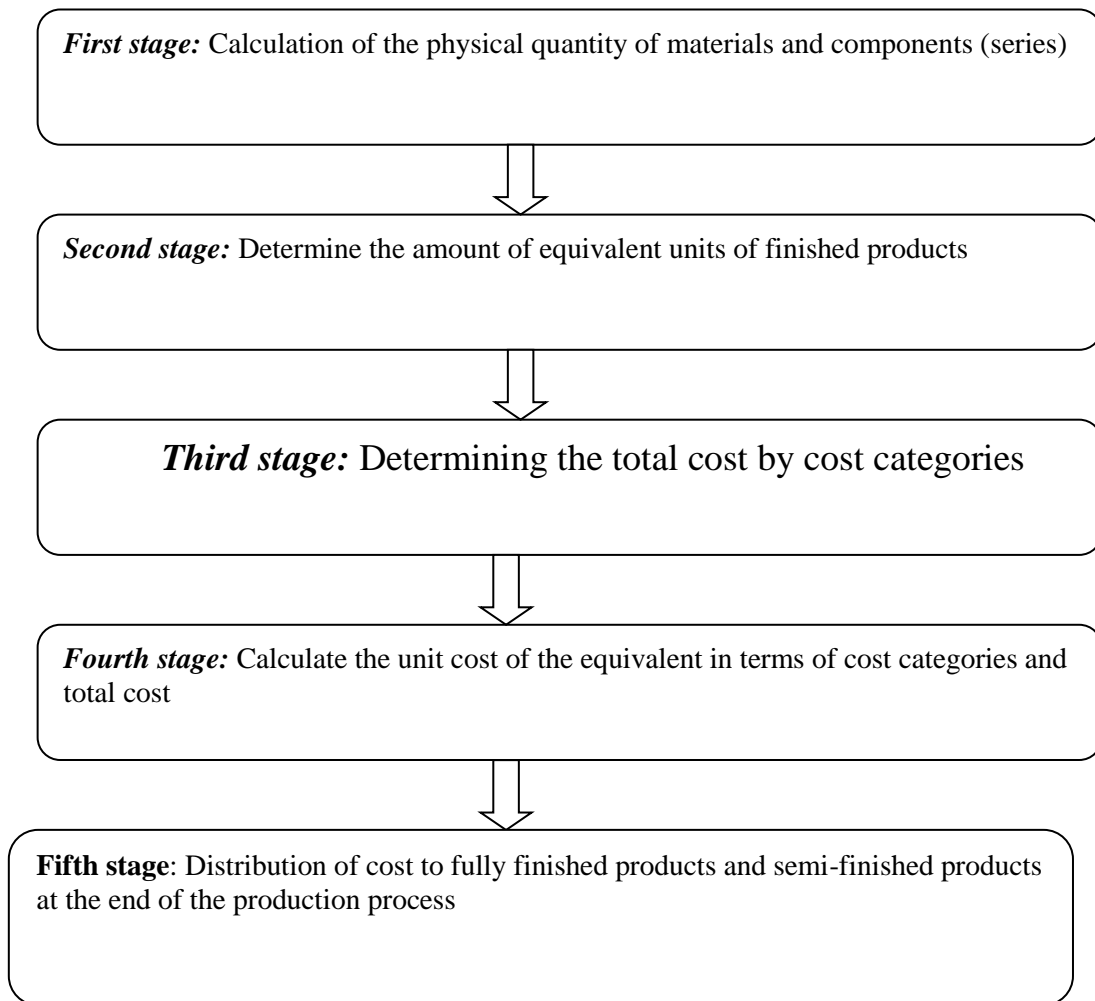


Figure 1. Stages of calculating the cost price of finished products.<sup>2</sup>

**Example 3.** In another case, not all of the 1,200 units at the car plant during April were ready. For example, 150 units of product were not ready for this process by the end of April. All direct costs are included at the beginning of the process, only at the end of the process, only 25% of the cost of processing 150 units of unprepared products is incurred, i.e. these products only  $\frac{1}{4}$  part are ready.

**Required.** What is the cost price of the out-of-process products and the remaining product units at the end of the reporting month?

**Solve.**

The processes to be carried out in the first and second stages are listed in the table below (Table 1).

Table 1

Cost items	Step 1. Started and completed units	Step 2.	
		At the end of the production process	Equivalent unit for calculating cost price
Materials and components (series)	1050	150	1200
Processing costs (direct labor and УИЧХ)	1050	37.5 (150 комплект 25% ёки $\frac{1}{4}$ қисмга тайёр)*	1087.5
Total physical unit quantity (pieces)	1200		

<sup>2</sup> Based on best practices in cost accounting

Notes: \* This describes the level of processing of the units available at the end of the production process.  $150 \text{ physical units} \times 25\% \text{ of the actual cost of processing costs} (150 \times 25\% / 100\%) = 37.5 \text{ conditional units}$ .

This Table 1 shows the movement of the physical units of the products in the first stage. During the reporting month, 1,050 sets of units were fully completed and transferred to another process, and 150 sets of units were partially completed, i.e.,  $\frac{1}{4}$  part. As noted above, it is advisable to measure the unit of output produced in equivalent units rather than in physical units. As a result, the units in the production process must be converted into the finished product equivalent. This means that 150 semi-finished products are equivalent to 37.5 finished products ( $150 \times \frac{1}{4} = 37.5$ ). In such cases, when calculating the unit cost of the product on the basis of processing material, the amount of finished product is 1087.5 complete units ( $1050 + 150$ ).

Conclusion: The above calculations show that the equivalent unit for direct material costs shown in Table 2 is 1200 units and the equivalent unit for processing costs is 1087.5 units. This means that a quarter of the processing costs are added to the final balance of the production process.

Table 2 below shows the cost price report of the product produced. This report outlines steps 3 and 4.

Table 2

The equivalent unit cost of the product produced is the cost price calculation. (thousand sums)

Cost price categories	Step 3. In terms of cost items and total cost price	Including	
		Phase 2. Equivalent unit quantity	Step 4. The cost price of a product equivalent unit
Direct materials and components	43285465	1200	36071.2
Processing (direct labor and УИЧХ)	10436848	1087.5	9597.1
Finished product cost price	53722313		45668.3

**Conclusion:** It can be concluded from the data in Table 2 that the equivalent unit cost of the product is 45668.3 thousand sums ( $36071.2 + 9597.1$ ). In process costing, the unit cost of a product is calculated in two parts: the first part directly on the material 36071.2 thousand sums ( $43285465 / 1200$ ); the second part on processing material 9597.1 thousand sums ( $10436848 / 1087.5$ ). These indicators are the basis for determining the cost price of finished products transferred to another process and finished products at the end of the period. To do this, we prepare a report on the cost price of the finished product (Table 3).

Table 3

Report on the cost price of the finished product (thousand sums)

Indicators (Step 5)	Equivalent unit quantity	Equivalent unit cost price	Total cost price
Finished and processed product. ( $1050 \times 45668.3$ )	1050	45668.3	47951738.6
Incomplete production, at the end of the period (150 unit):			
Direct materials ( $150 \times 36071.2$ ) (thousand sums)	150	36071.2	5410683.1
Processing costs ( $150 \times \frac{1}{4}$ )	37.5	9597.1	359891.3
<b>Total cost price</b>			<b>53722313</b>

**Conclusion:** As can be seen from the table data, in step 5:

1. It was determined that the cost price of the produced, ie fully completed and transferred to another process or finished product is  $1050 \times 45668.3 = 47951738.6$  thousand sums;

2. Incomplete production at the end of the period was calculated separately for two elements of costs:

2.1. Direct material costs are  $150 \text{ units} \times 36071.2 \text{ thousand sums} = 5410683.1 \text{ currency}$ ;

2.2. As for processing costs, it is  $37.5 \times 9597.1 = 359891.3$  thousand sums. Since 150 units are 25% ready, the equivalent as the finished product will be 37.5 units ( $150 \text{ units} \times 25\%$ ).

The total cost price consists of the cost price of finished goods transferred to another process and the cost price of work in progress at the end of the period. This will be 53722313 thousand sums ( $47951738.6 + 5410683.1 + 359891.3$ ). This figure should be equal to the total figure in step 3. In our example, we can see that the total amount in step 3 of Table

2.10 is also 53722313 thousand soums. The existence of this equation indicates that the calculations were performed correctly.

Once the cost price of the finished products is determined, they are accepted as finished goods in account 2810 "Finished goods in stock". In the account 2810 "Finished goods in the warehouse" finished products are accounted for at the actual cost of production. We present the key accounting entries in БХМС №21 and suggestions for their improvement in the table below (Table 4).

**Table 4**  
**Accounting entries for income and expenditure of finished products in a continuous accounting system on the example of GM Uzbekistan JSC**

The content of business operations	21-сон БХМС			Offered		
	Д-Т	К-Т	Amount	Д-Т	К-Т	Amount
1. When finished products that meet the requirements of the standards are received at the actual cost price (thousand soums)	2810	2010	47951738.6	2810	2010	47711337.8
2. Deduction of the cost price of the finished product sold	9110	2810	35456946.4	9110	2810	35456946.4
3. When defective units that partially or completely do not meet the requirements of the standard are imported				2840	2010	240400.8
4. When it is not possible to correct defective units				2510	2840	-
5. When defective units are sold, the cost price of the finished goods sold is deducted.				9110	2840	-
6. When defective units are taken for recycling				2010	2840	240400.8

Analyzing the data in this Table 4, the current БХМС № 21 does not provide for the defective units accounting derived from production. Companies establish controls through the quality control department to ensure that product quality meets international standards. The staff of this department inspects the quality of each manufactured vehicle for compliance with international ISO standards. Even if any production is highly organized, it is natural for defective units to occur in the production process. Defective units are goods that do not fully or partially meet the requirements of this quality standard. The main causes of defective units are:

the amount of normal defect output, which is in the normative amount (uncorrectable);

production organization, deterioration or equipment and technology obsolescence, lack of control, shortcomings in the organization of production, as well as the attitude of workers to indifference or insufficient work experience, and other cases (correctable).

Therefore, since defective units are inevitable, we suggest opening account 2840 "Defective finished products" in the chart of accounts to account for them. If a defective product is received from production, we reflect it in the debit of account 2840. There are three ways to write them off:

The first is that irreparable defective products, which are the enterprise loss, and it is advisable to transfer these costs to the account 2510 "General production costs", which takes into account the overproduction costs.

Second, if this can be corrected, they will be taken back into production, i.e., taken to the 2010 "Main Production". As a result, repair costs, such as components, wages and other expenses, are accumulated in the debit of the 2010 account. Therefore, the production cost price of the product again increases the repair cost.

Third, a defective product can be sold at a price lower than the price of a defective product that meets the standard requirements. In such cases, the proceeds from the sale are used to cover the cost price, and the portion of the proceeds from the sale that does not cover the cost price is transferred to overhead costs. The accounting entries proposed above meet the requirements of international standards and serve to accurately determine the cost price of products derived from production.

Based on the methodology improving study for calculating the finished products cost in the automotive industry, the following conclusions were made:

1. Based on the research, an editorial definition "It is a monetary expression of the inventories used in the production of goods (works, services) and the direct labor and other indirect resources expended on their processing, as a result of which the cost price of the product is formed" of production cost of finished products was developed. The development of this definition serves to bring the terms in line with international requirements.

2. Based on the study of advanced foreign experience, it was noted that the cost price of the finished product consists of the sum of three cost price elements: direct material costs (direct); direct labor costs (direct); overhead costs

(indirect). These elements of cost pricing of finished products allow the use of process calculation methods and advanced methods of calculating the cost price of the product.

3. In the process of research in the periodic system of accounting for finished products to introduce new accounting in order to determine the cost of production, materials and components, as well as the purchase price of stocks, and using these accounts to determine the purchase price of stocks, cost of materials and components the development of accounting records serves to improve the methodology for determining the cost price of finished products.

4. On the basis of advanced foreign experience, it was to compile a report on the equivalent unit cost of the product in automotive enterprises, fully completed units and the method of calculating the cost of unfinished production at the end of the reporting period. These proposals serve to improve the methodology for calculating the process cost of finished products.

5. As a result of the study, the accounting system of income and expenditure of finished products in the automotive industry in the continuous accounting system, as well as accounting for defective units in separate accounts and reflecting the processes associated with their elimination in accounting accounts will increase efficiency.

These conclusions implementation in the automotive enterprises practice will allow to control the product cost price, to find opportunities to reduce it, as well as to make quality decisions on the cost price.

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