**Decision Making: methods and tools**

**Management Accounting**

*Process Costing*

The Hope Company produces two types of solar cream (Normal for the Mediterranean Sea and Super for the Tropical Sea). It uses a continuous production cycle, based of two phases. During the first phase, raw materials for both type of cream are blended and a first therapeutic treatment is carried out. During the second phase, special additives are added to raw materials previously blended and a new heat treatment is implemented.

During the month of November, raw materials, uniformly added during the first phase, are:

* 10.000 kg of X;
* 6.000 kg of Y;
* 4.000 kg of Z

During this first phase is not possible to distinguish between the two types of cream (N and S). 20.000 kg of products enter the first phase, but only 16.000 kg (part of the 20.000 kg) end this phase. Remaining 4.000 kg have to end this phase and their degree of completion is 80%.

Product that ends the first phase, enters the second one as raw material. In this second phase, two additives (A and G) are added and, according to their degree of concentration, the cream N or S is produced. Here is it possible to distinguish between N and S. N absorbs only the 60% of the resources absorbed by S. During the month of November we know that:

* 10.000 kg ends the second phase producing N cream
* 4.000 kg ends the second phase producing S cream
* 2.000 kg have to ends the second phase ( S cream) and the related degree of completion is 80%.

Initial inventories of finished goods at the beginning of November are 2.000 kg of N (tot. value 30.000€) and 1.000kg of S (tot. value 17.000€). Initial inventories of raw materials are 4.000kg of X (tot. value 8.000€), 2.000kg of Y (tot. value 10.000€) and 1.000kg of Z (tot. value 6.000€). In November the company sells 9.000 kg of N cream (price 18 €/kg) and 3.500 kg of S cream (price 25 €/kg).

We also know that:

* In the first phase there are 2 workers (monthly cost per worker, 4.000€) and 1 supervisor (monthly cost 7.000€); in the second phase there are 4 workers (monthly cost per worker, 4.000€) and 2 supervisors (monthly cost per worker, 7.000€).
* Unitary costs of raw materials are:
* 2 €/kg for X;
* 5 €/kg for Y;
* 6 €/kg for Z
* In November the company purchases:
* 8.000 kg of X;
* 6.000 kg of Y;
* 5.000 kg of Z;

Total cost of additives used in the second phase is 10.000€ for A and 5.000€ for G;

* Depreciation of plants used in the first phase is 40.024€ each month, while plants used in the second phase are already depreciated
* Cost of energy in the first phase are 3€/kg, while, the total cost of energy in the second phase is 40.028€;
* The Company uses the FIFO logic for the valorization of inventories
* Total administrative and selling costs for the month of November are 12.000 €

You are required to determine

* **Manufacturing full costs** (unitary cost) of the products (only for completed batches)
* The **value of final inventories** of direct materials, WiP and finished goods
* **Gross profit** and **Net result**

**Detection of Kge**

KgE (1st phase)= 16.000 + (4.000\*0,8)= 19.200 kge

KgE(2nd phase)= 4.000 + (10.000\*0,6) + (2.000\*0,8)= 11.600 kge

**Detection of the Full unitary cost**

Cost (1st phase)= 2\*4.000 + 7.000 + 2\*10.000 + 5\*6.000 + 6\*4.000 + 40.024 + 3\*19.200= 186.624€

C kge (1st phase)= 186.624€/ 19.200 kge= 9,72€/kg

Cost (2nd phase)= 4\*4.000 + 2\*7.000 + 10.000 + 5.000 + 40.028= 85.024€

C kge (2nd phase)= 85.024€/ 11.600 kge= 7,33€/kg

Full Unitary Cost (N)= 9,72 + 7,33\*0,6= 14,118 €/kg

Full Unitary Cost (S)= 9,72 + 7,33= 17,05€/kg

**Value of inventories** (finished goods, WIP and direct materials)

Finished goods

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **In. Inventor.** | **Produced Q.** | **Sold Q.** | **Final Inventor.** | **Value** |
| N | 2.000 kg | 10.000 kg  | 9.000 kg | 3.000 kg | **42.354€** |
| S | 1.000 kg | 4.000 kg | 3.500 kg | 1.500 kg | **25.575€** |

Inv. Of finished goods= 42.354 + 25.575= 67.929 €

WIP

WIP (1st phase)= 4.000 \* 0,8 \* 9,72 = 31.104 €

WIP (S)= 2.000 \* 9,72 + 2.000 \* 0,8 \* 7,33 = 31.168 €

Inv. Of WIP= 31.104 + 31.168= 62.272 €

Direct materials

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **In. Inventor.** | **Purchase Q.** | **Consumed Q.** | **Final Inv.** | **Value** |
| ***X*** | 4.000 kg | 8.000 kg | 10.000 kg | 2.000 kg | **4.000 €** |
| ***Y*** | 2.000 kg | 6.000 kg | 6.000 kg | 2.000 kg | **10.000 €** |
| ***Z*** | 1.000 kg | 5.000 kg | 4.000 kg | 2.000 kg | **12.000 €** |

Inv. Of direct materials= 4.000 + 10.000 + 12.000= 26.000 €

Gross profit and net result

Net sale= (9.000\*18) + (3.500\*25)= 249.500 €

Cost of sale

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Value of In. Inv.** | **Kg produced and sold** | **Unitary full cost** | **Tot cost** |
| ***N*** | 30.000 € | 7.000 kg | 14,118 €/kg | **128.826 €** |
| ***S*** | 17.000 € | 2.500 kg | 17,05 €/kg | **59.625 €** |

Cost of sale= 128.826 + 59.625= 188.451 €.

Gross profit= 249.500 - 188.451= 61.049 €

Net sale= 61.049 – 12.000= 49.049 €