

# **Advanced Cost Accounting**

**Cihan University**

**Fall 2023**

**Equivalent Units of Production and Production Report –**

**FIFO Method**

## Production Report – FIFO Method

**WEIGHTED-AVERAGE METHOD** A process costing method that blends together units and costs from both the current and prior periods.

**FIFO METHOD** A process costing method in which equivalent units and unit costs relate only to work done during the current period. The FIFO method is generally considered more accurate than the weighted-average method, but it is more complex.

The formula for computing the equivalent units of production under the FIFO method is:

<p><b>Equivalent units of production</b> = Equivalent units to complete beginning work in process inventory *</p> <p>+ Units started and completed during the period</p> <p>+ Equivalent units in ending work in process inventory</p>
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Equivalent units to complete beginning work in process inventory	=	Units in beginning work in process inventory	×	(	100%	-	Percentage completion of beginning work in process inventory	)
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NOTE: a separate calculation is made for each cost category in each processing department.

## Cost per Equivalent Unit

Cost per equivalent unit	=	Cost added during the period
		Equivalent units of production

Unlike the weighted-average method, in the FIFO method the cost per equivalent unit is based only on the costs incurred in the department in the current period.

Shaping Department		
	Materials	Conversion
Cost added during the period	\$ 368,800	\$ 350,900
÷ Equivalent units of production	4,850	4,840
= Cost per equivalent unit	\$76	\$72.5

**Illustration 1:**

Consider the following details regarding Shaping department for January 2015 operation:

Shaping and Milling Department	Units	Percentage Complete	
		Materials	Conversion
Beginning work in process	200	55%	30%
Units started into production during the period	5,000		
Units completed during the period and transferred to the next department	4,800	100%	100%
Ending work in process	400	40%	25%

**Requirement:** Calculate the equivalent units of production.

**Solution:**

	Materials	Conversion
Equivalent units to complete beginning WIP:		
Materials: 200 units × 45% (100% - 55%)	90	
Conversion: 200 units × 70% (100% - 30%)		140
Units started and completed during the period	4,600	4,600
Equivalent units in ending work in process:		
Materials: 400 units × 40% complete	160	
Conversion: 400 units × 25% complete		100
Equivalent units of production	<u>4,850</u>	<u>4,840</u>

**NOTE:** the department completed and transferred 4,800 units to the Graphics Application Department during January. Because 200 of these units came from the beginning inventory, the Shaping Department must have started and completed 4,600 units during January.

The 200 units in the beginning inventory were 55% complete with respect to materials and only 30% complete with respect to conversion costs when the month started.

Thus, to complete these units the department must have added another 45% of materials costs ( $100\% - 55\% = 45\%$ ) and another 70% of conversion costs ( $100\% - 30\% = 70\%$ ).

**Illustration 2:**

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Rwan Inc. produces clear plastic containers for pharmacies in a process that starts in the Molding Department. Data concerning that department's operations in the most recent period appear below:

Beginning work in process:

Units in process . . . . .	500
Stage of completion with respect to materials . . . . .	80%
Stage of completion with respect to conversion . . . . .	40%
Units started into production during the month . . . . .	153,600
Units completed and transferred out . . . . .	153,700

Ending work in process:

Units in process . . . . .	400
Stage of completion with respect to materials . . . . .	75%
Stage of completion with respect to conversion . . . . .	20%

**Requirement:** Using the FIFO method in process costing system, compute the equivalent units of production for the period for the Molding Department.

**Solution:**

	Materials	Conversion
<b>Equivalent units to complete beginning WIP:</b>		
<b>Materials: 500 units × 20% (100% - 80%)</b>	100	
<b>Conversion: 500units × 60% (100% - 40%)</b>		300
<b>Units started and completed during the period</b>	153,200	153,200
<b>Equivalent units in ending work in process:</b>		
<b>Materials: 400 units × 75% complete</b>	300	
<b>Conversion: 400 units × 20% complete</b>		80
<b>Equivalent units of production</b>	<u>153,600</u>	<u>153,580</u>

**X Production Department  
Production Report for time period of XXX (FIFO Method)**

**Step1: Unit Reconciliation (Quantity Schedule and Equivalent Units)**

	Quantity Schedule		
<b>Units to be accounted for:</b>			
Beginning work in process	xxx		
+ Started into production	<u>xxx</u>		
<b>Total units to be accounted for</b>	<u>xxxx</u>		
		Equivalent Units	
		Materials	Conversion
<b>Units accounted for:</b>			
Equivalent units to complete beginning WIP	xxx	xx	xx
+Units started and completed during the period	xxx	xxx	xxx
+Equivalent unit in ending work in process	<u>xxx</u>	<u>xx</u>	<u>xx</u>
<b>Total units accounted for</b>	<u>xxxx</u>	<u>xxxx</u>	<u>xxxx</u>



## Step 2: Compute costs per equivalent unit

	Total Cost	Materials	Conversion
<b>Cost to be accounted for:</b>			
Cost added during the period	<u>xxx</u>	xx	xx
<b>Total Cost to be accounted for</b>	<u>xxx</u>		
÷ Total units accounted for		<u>xx</u>	<u>xx</u>
<b>= Cost per equivalent unit</b>		<u>xx</u>	<u>xx</u>
<b>Cost of Unit</b>		<u>xxx</u>	

## Step 3: Cost allocation (Cost Reconciliation)

	Total Cost	Equivalent Units	
		Materials	Conversion
<b>Cost accounted for:</b>			
<b>Cost to complete beginning WIP</b>			
Materials	xxx	xx	
Conversion	<u>xxx</u>		xx
	xxx		
<b>Cost of units started and completed</b>	xxx	xx	xx
<b>Ending Work in process</b>			
Materials	xx	xx	
Conversion	<u>xx</u>		xx
	xxx		
<b>Total cost accounted for</b>	<u>xxxx</u>		

**Illustration 3:**

Consider the following details regarding Shaping department for January 2015 operation:

<b>Work in process, January 1</b>	
Units in process	200
Stage of completion regarding materials	55%
Stage of completion regarding conversion	30%
<b>Cost in the beginning WIP inventory:</b>	
Materials cost	\$ 9,600
Conversion cost	<u>5,575</u>
Total cost in the beginning WIP inventory	<u>\$ 15,175</u>
<b>Units started into production during January</b>	5,000
<b>Units completed and transferred out</b>	4,800
<b>Costs added to production during January:</b>	
Materials cost	\$368,600
Conversion cost	<u>350,900</u>
Total cost added in the department	<u>\$719,500</u>
<b>Work in process, January 31</b>	
Units in process	400
Stage of completion regarding materials	40%
Stage of completion regarding conversion	25%

**Requirements:** Prepare production report for the Shaping department for January, using FiFo method.

**Illustration 4:**

Peshang Corporation uses the FIFO method in its process costing system. The following data are for the most recent month of operations in one of the company's processing departments:

Details	Units
Units in beginning inventory	400
Units started into production	3,000
Units in ending inventory	300
Units transferred to the next department	3,100

	Materials	Conversion
Percentage completion of beginning inventory	80%	40%
Percentage completion of ending inventory	70%	60%

The cost of beginning inventory according to the company's costing system was \$11,040 of which \$8,120 was for materials and the remainder was for conversion cost. The costs added during the month amounted to \$132,730. The costs per equivalent unit for the month were:

	Materials	Conversion
Cost per equivalent unit	\$25.40	\$18.20

**Requirements:**

1. Compute the total cost per equivalent unit for the month.
2. Compute the equivalent units of material and of conversion costs in the ending inventory.
3. Compute the equivalent units of material and of conversion costs that were required to complete the beginning inventory.
4. Determine the number of units started and completed during the month.
5. Determine the costs of ending inventory and units transferred out.

**Illustration 5:**

Pasha Company makes super-premium cake mixes that go through two processing departments, Blending and Packaging.

The following activity was recorded in the Blending Department during March 2015:

***Production data:***

Units in process, March 1 (materials 100% complete; conversion 30% complete) . .	10,000
Units started into production . . . . .	170,000
Units in process, March 31 (materials 100% complete; conversion 40% complete) .	20,000

***Cost data:***

Work in process inventory, March 1:

Materials cost . . . . .	\$8,500
Conversion cost . . . . .	\$4,900

***Cost added during the month:***

Materials cost . . . . .	\$139,400
Conversion cost . . . . .	\$244,200

All materials are added at the beginning of work in the Blending Department. The company uses the FIFO method in its process costing system.

**Requirements:**

Prepare production report for the Blending department for March, using FiFo method



End of this Chapter!