

Briefing Document on Process Costing – FIFO

Process costing is a method of costing we use for homogeneous products that we make in large volumes. Instead of tracking costs to a single product (for example, a pen), we track costs to each department and then determine:

- How much costs went through the department; and,
- How many units went through the department.

An example of how to prepare a production report using the FIFO method is provided below:

Unit information – starting:

BWIP (units)	600
Stage of completion – materials	60%
Stage of completion – conversion	53%

Two important notes here:

1) Conversion refers to direct labor plus overhead

2) The percentage of completion in BWIP is used here since we are doing FIFO – for weighted average method we ignore percentage of completion for BWIP!

Costs in beginning inventory:

Materials	\$976
Conversion	272

Units started in production during month	4,000
Units started and completed	???? *see below for calculation (know for exam)

Costs added to production during month:

Materials	\$11,440
Conversion	6,644

Note here: *Conversion* is the term we use in reports when we add Labour + Overhead

Unit information – ending:

EWIP (units)	1,200
Stage of completion – materials	40%
Stage of completion – conversion	20%

Let's calculate Units completed and transferred out. Since we started with 600 units, and started another 4,000, that makes 4,600 units available. As there were 1,200 in EWIP, that means that $4,600 - 1,200 = 3,400$ units were completed and transferred out.

With this information, we can prepare a production schedule that has a few sections. We will start with the Section 1, which deals only with equivalent units:

Section 1: Equivalent Units	Physical Units	Direct Materials	Conversion Costs
Units accounted for:			
BWIP transferred out	600	240	282

Remember that “Physical Units” means any unit started, regardless of percentage of completion. Most of the information in the chart is taken from the information provided in the question. Carefully note how equivalent units above was calculated: you need to take the BWIP percentage of completion, and subtract it from 1.0 to get the number you need. Why? Because we are looking for how much of the units we completed this period. So, if it was 40% complete in BWIP, we must have added the other 60% this period (1.0 – .4). That is how we arrived at the 240 you see above for Direct Materials [(1.0 – .4) * 600]. Conversion Costs: [(1.0 – .53) * 600].

We can now complete Section 1 by focusing on units started and completed, as well as EWIP:

Section 1: Equivalent Units	Physical Units	Direct Materials	Conversion Costs
Units accounted for:			
BWIP transferred out	600	240	282
Units started and completed	2,800	2,800	2,800
Units in EWIP inventory	1,200	480	240

Units started and completed are calculated as follows: we know that total units transferred out is 3,400 (see bottom of Page 1). Since we started with 600 units already in progress, that means that units that were both started and completed is $3,400 - 600 = 2,800$. It is important to calculate this number since these units went from 0% to 100% completion in the period, so the math is easy as we just copy the number in Physical Units across to Direct Materials and Conversion Costs (see the three 2,800’s side-by-side above).

EWIP calculate is fairly straightforward: we take the EWIP number from the “Physical Units” column and multiple y the percentage of completion to get equivalent units. Direct Materials is $1,200 * 40\% = 480$; Conversion is $1,200 * 20\% = 240$.

Finally, we sum the columns to get total equivalent units for materials and conversion (see chart below):

Section 1: Equivalent Units	Physical Units	Direct Materials	Conversion Costs
Units accounted for:			
BWIP transferred out	600	240	282
Units started and completed	2,800	2,800	2,800
Units in EWIP inventory	1,200	480	240
Total equivalent units:		3,520	3,322

Now, we turn the focus to costs. The chart below shows Section 1 and now we add Section 2 (Costs):

Section 1: Equivalent Units	Physical Units	Direct Materials	Conversion Costs
Units accounted for:			
BWIP transferred out	600	240	282
Units started and completed	2,800	2,800	2,800
Units in EWIP inventory	1,200	480	240
Total equivalent units:		3,520	3,322
Section 2: Costs	Total	Direct Materials	Conversion Costs
Costs to be accounted for:			
Costs in BWIP	1,248	976	272
Costs incurred during the period	18,084	11,440	6,644
Total costs to be accounted for:	19,332	12,416	6,916

The numbers shaded in orange come from the information provided in the question (from Page 1). You add BWIP costs plus costs incurred during the period to get total costs (where you see 12,416 and 6,916). You should also sum across to complete the Total costs column.

Now, we want to calculate the cost per equivalent unit. Below we show Section 3 of the chart:

Section 3: Cost Per Equivalent Unit	Total	Direct Materials	Conversion Costs
Costs incurred during the period	18,084	11,440	6,644
Total equivalent units accounted for		3,520	3,322
Cost per equivalent unit:		\$3.25	\$2.00

You will notice that we only include costs incurred during the period. This is consistent with the fact that the equivalent units calculated is also for work done only in the current

period (i.e. apples to apples). If unsure, review Section 1 as a reminder that we eliminated work done last period.

This brings us to our final section, Section 4, where we calculate and summarize costs transferred out and costs of EWIP:

Section 4: Cost Assignment	Total	Direct Materials	Conversion Costs
Beginning costs transferred out	1,248	976	272
Current costs transferred out	16,044	9,880	6,164
Total costs transferred out	17,292	10,856	6,436
Costs of EWIP	2,040	1,560	480
Total costs accounted for	19,332	12,416	6,916

Beginning costs transferred out can be found in Section 2 above (Costs in BWIP). You can simply copy this line down. To calculate Current costs transferred out, you need to go to Section 1, add the units in BWIP + Units started and completed (in this example, for Direct materials that is 240 + 2,800), then multiply by the Cost per equivalent unit (For Direct materials: \$3.25). Repeat for Conversion (units is 282 + 2,800; cost per equivalent unit is \$2.00).

The next line, Total costs transferred out, simply adds the first two lines.

Costs of EWIP is calculated by taking Units in EWIP inventory (from Section 1) and again multiple it be Cost per equivalent unit for each of Direct materials and Conversion.

The final line, Total costs accounted for, adds the two lines above it. this line should match the line in Section 2, Total costs accounted for. A complete report is included on the next page:

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Units in EWIP inventory	1,200	480	240
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