



## Summary

The item cost is calculated in 2 different steps when creating items with a Production Order in Orchestrated. This article will explain both ways.

### Explanations

#### 1) Cost when receiving the item from Production

The original cost for the item is calculated based on the Base Quantities of the components that will be used to create the product item. The Base Quantity is the Planned total amount of the component to be issued divided by the Planned number of units to be produced. So for example, if you use 1,000 lbs of raw material A to make 10 units of liquid, then the base quantity is  $1,000/10=100$  lbs.

The Base Quantities used to calculate the item cost come from the quantities set on that specific Production Order, and does not necessarily match the Bill of Materials or other Production Orders for the same item. Because of this, multiple Production Orders for the same item processed at the same time could still give different item costs if the quantities were adjusted on one of the orders.

The cost of your finished item is then  $(\text{Base Quantity of Component \#1} * \text{Cost of Component \#1}) + (\text{Base Quantity of Component \#2} * \text{Cost of Component \#2}) + (\text{Base Quantity of Component \#3} * \text{Cost of Component \#3}) + \dots = \text{Cost of Product Item}$ .

#### 2) Cost when Production Order is Closed

After production is finished and the Production Order status is changed to "Closed", Orchestrated will re-evaluate the cost of the Product Item to account for any variances between the Planned Quantities and Actual Quantities during production. Depending on whether or not the product item is still in stock when the Production Order is closed, this can have 3 different effects:

##### a) The full quantity of the Product item is still in stock

In this case, the product item's cost is adjusted to match the total cost of all the components that it consumed.

Example: 1 unit Product Item X is typically created using 10 units of Component A(Cost of \$1) and 5 units of Component B(Cost of \$2), so these are the numbers set as the Base Quantities. During today's production, I made 1 unit of X and the cost was set as \$20 based on the costs/base quantities. My efficiency was higher than normal and I only actually used 9 units of A and 5 of B. When I close the Production Order, the cost of X is adjusted to be  $(9*\$1)+(5*\$2)= \$19$  because that was the cost of the components used to make it.

##### b) Some of the product item was sold/used in production/transferred to another warehouse



In this case, the cost of the items remaining in stock will be adjusted to match their components cost and the other items will stay at the original cost. This is because once the item has been removed from stock, the cost can not be updated retroactively. The difference between the component cost and product cost for the items that were already removed will be posted to a Production Variance account.

Example: Same situation as part a above, but I produced 2 units of Item X and 1 unit was sold immediately after I produced it and before I was able to close the Production Order. So in this case, the 1 unit of X still in stock would have its cost adjusted to \$19. The 1 unit that was already sold would still have a value of \$20 because it can't be adjusted after it leaves inventory, and \$1 would be posted to the Production Variance account.

c) All of the Product item was sold/used in production/transferred to another warehouse

In this case, the Product item cost is not updated because the item is no longer in stock. The difference between the Component and Product costs will be posted to the Production Variance account.

Example: Same situation as part b above, but both units were sold before the Production Order is closed. The item cost for both units remains at \$20, the originally calculated cost, and \$2 is posted to the Production Variance account.

The reason item costs are calculated with this method is because issuing components and receiving the Product item do not necessarily have to occur in order, or all at once. The Item Cost can not be finalized until the user confirms that no more items will be issued or received by closing the Production Order.

So for example, let's say I am planning to produce 10 units of Item X from above. I issue out 100 units of Component A and 50 units of Component B, the typical amount used to make 10 units of Item X. I then start receiving Item X into stock as I finish producing each unit. The system has no way to know how many units I will actually receive, so it estimates the cost as I receive each one. Then at the end of the day when I close the Production Order, the system does the math to determine how much it actually cost me to create each unit. If I created 10 units like I planned, then the Item Cost is correct and nothing needs to be done. But if I end up with 9 or 11 instead, the Item Cost needs to be adjusted to match what it actually cost me to make the item.

Version 4.5.1.0